ACADEMIC PROGRAM REVIEW
SELF-STUDY REPORT
2017

Professional Program in Biotechnology
Texas A&M University
Jack E. Brown Engineering Building
College Station, TX 77843-3122
Executive Summary

This self-study report provides an overview of the interdisciplinary Professional Program in Biotechnology (PPiB) at Texas A&M University, and its progress toward fulfilling its core academic mission. This report focuses on activities since the previous academic program review in 2010, with the aim of identifying strengths and opportunities for future enhancement.

The curriculum has been reorganized to provide more flexibility in selection of electives (increased from 3 to 9 credit hours) and business coursework (more flexibility in selection of the required 12 credit hours, as compared with the previous fixed course sequence). The content and organization of the professional portfolio reflection (a key part of each student’s final exam) has also been updated to focus on development of materials pertinent for a job interview. More broadly, we have engaged in a reflection of the need, importance, and outcomes of the program’s technical core courses.

Professional development opportunities have continued to evolve and become enhanced, centered around an annual student development conference held in conjunction with our Industry Advisory Board. Field trips to local biotechnology companies, an annual student poster session and research conference, and a growing lecture series have also been implemented.

The institutional model of financial support for interdisciplinary programs has also undergone a major evolution since 2010, with introduction of a formula based on enrollment, graduation rate, and faculty engagement. This model, combined with a program fee established in 2012, have provided stable sustained support for operational expenses.

The number of students admitted to the program has remained relatively constant in the vicinity of 20 in each fall cohort. Academic metrics (test scores, GPA) have also remained relatively constant. Approximately 60% of the incoming students are female, with a majority being international.

Since the 2010 program review, the PPiB has developed a sustainable, systematic, regular, and organized assessment, and continuous improvement process for its graduate program and curriculum to achieve its mission, objectives, and educational outcomes. The review of program outcomes occurs informally on a yearly basis as part of the yearly program assessment.

Looking ahead, strengths of the program include a broad range of professional opportunities available at Texas A&M at the interface of science and business, sustained stable financial support, a growing local biotech industry and technology commercialization ecosystem, and institutional support of interdisciplinary education and research. Challenges include domestic student recruitment, keeping faculty engaged and matched with students having mutual interests, establishment of other “deep dive” courses to enhance student technical competencies, and expanded ability to provide student financial support.
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1. Introduction

1.1. Message from the Program Chair

The professional Program in Biotechnology (PPiB) welcomes you to Texas A&M University and thanks you for your service as external reviewers of our graduate professional program. We are pleased to have you assess our program and identify opportunities to continue to improve and enhance it. This self-study report was prepared for your review and reflects an evaluation of our professional program during the period since our last academic program review in 2010. It includes a brief history and background of the university, college, and program; and detailed information about our students, faculty, industry advisory council, and facilities. The report also provides a description of the program curriculum, admission process, academic enhancement opportunities, and key academic analytics such as degrees awarded as well as a brief analysis of the overall professional program.

The academic program review offers an excellent opportunity for us to identify ways to maintain the current high standards of the program, and to learn from the vast experience of the review team bringing the perspective of similar programs and professionals in biotechnology field. Thus, we look forward to your feedback and await your recommendations on how we might improve our program as we continue to strive for excellence.

We will be glad to answer any questions you might have and provide any additional information you might need. I look forward to meeting with you and during your visit on March 5 – 8, 2017. If you have any questions or require additional information, please do not hesitate to let me know.

We realize this is a time-consuming task and thank you again for your service.

Victor M. Ugaz, Ph.D.
Professor
Chair, TAMU Professional Program in Biotechnology
Artie McFerrin Department of Chemical Engineering
Holder of the Charles D. Holland’ 53 Professorship
Holder of the Thaman Professorship
1.2. Charge to the Peer Review Team

Please use this report as a starting point to examine our program and make recommendations that will help guide improvements. Your resources are the self-study report prepared by the program, copies of materials from the program’s last review, information you gain through personal interactions while visiting Texas A&M University, copies of assessment plans and goal-setting documents at the program, college, and/or university level, and any additional information you may request. Within the broad charge of recommending how the program can continue to improve, some specific questions that we would like you to address are:

- Based on the data/information provided in the self-study report or gathered by the external review team, what are the program’s overall strengths and weaknesses?

- How well do the program’s strategic goals and priorities align with those of its college and with those of Texas A&M University?

- How would you compare this program with its peers?

- What improvements (including student learning and faculty development) has the program made since the previous program review?

- With only current resources or a modest infusion of new ones, what specific recommendations could improve the program’s performance, marginally or significantly?
2. Institutional Overview

2.1. Texas A&M University

Texas A&M University (TAMU), which attracted a mere six students when it opened in 1876 as Texas’ first public institution of higher learning, is now one of the top five largest institutions in the nation with a 60,435-member student body at the College Station campus including 14,943 graduate students (Fall 2016 data).

Texas A&M University serves as a flagship of the Texas A&M University System. The A&M system is one of the largest systems of higher education in the nation, with a statewide network of 11 universities, a campus in Doha, Qatar, and seven state agencies including the Texas Engineering Experiment Station, the research arm of the Dwight Look College of Engineering. A&M System members educate more than 148,000 students and reach another 22 million people through service each year. With more than 26,000 faculty and staff, the A&M System has a physical presence in 250 of the state’s 254 counties and a programmatic presence in every one. System-wide, externally funded research expenditures exceeded $946 million to help drive the state’s economy. More than one in five students in a public university in Texas is enrolled in an A&M System institution. Texas A&M consistently ranks in the forefront among public universities in Texas in retention rates—keeping students enrolled and on course for graduation both overall and for African-American and Hispanic students. A&M System students receive about $580 million in scholarships and grants annually. The A&M System awarded 32,560 degrees in FY 2016. The A&M System’s faculty includes recipients of the Nobel Prize, National Medal of Science, Pulitzer Prize, World Food Prize and the Wolf Prize, as well as members in the National Academy of Sciences and the National Academy of Engineering.

Texas A&M University consists of 16 colleges and schools, where teaching and research go hand in hand as it carries out its commitments as a land-, sea-, and space-grant institution—one of a select few universities to hold all three federal mandates. Its investment in research places it high in the rankings by the National Science Foundation and other federal agencies. The university’s research endeavors are complemented by a strong and growing graduate education program.

2.2. Dwight Look College of Engineering

The Dwight Look College of Engineering ranks 2nd in the nation in research expenditures and Texas A&M also ranks in the top 10 in its endowment (over $5B). The Texas A&M College of Engineering is one of the largest engineering schools in the country, ranking second in undergraduate enrollment and fifth in graduate enrollment by the American Society for Engineering Education (ASEE) in its 2015 survey. The College of Engineering consistently ranks among the nation's top public undergraduate and graduate engineering programs, according to U.S. News & World Report.
The Dwight Look College of Engineering on the College Station campus enrolled a total of 16,551 students, of which 21.4% (3,534) are pursuing graduate degrees. College of Engineering Dean, Dr. M. Katherine Banks, has created the 25 by 25 Initiative (25x25), which is planned to increase enrollment of engineering students to 25,000 by 2025 in order to provide increased access for qualified students to pursue engineering education. Beyond growth in the undergraduate programs, 25 by 25 targets a 15% growth in Master’s students and a 5% growth in Ph.D. students in the College.

The Dwight Look College of Engineering at Texas A&M University includes fourteen departments – Aerospace Engineering, Biomedical Engineering, Biological and Agricultural Engineering, Chemical Engineering, Civil Engineering, Computer Science, Electrical and Computer Engineering, Engineering Technology and Industrial Distribution, Industrial and Systems Engineering, Materials Science and Engineering, Mechanical Engineering, Nuclear Engineering, Ocean Engineering and Petroleum Engineering. The College of Engineering is the largest college on the Texas A&M campus, and one of the largest in the country, with more than 15,000 engineering students enrolled. Texas A&M is ranked 14th nationally in the number of National Merit Scholars, and more than 50 percent of the university’s National Merit Scholars are engineering students. The college is ranked seventh in engineering graduate programs and eighth in undergraduate engineering programs among public institutions by U.S. News & World Report.

The Dwight Look College of Engineering at Texas A&M has more than 500 faculty members, several of whom are National Academy of Engineering members, and fellows of their respective professional societies. They are also editors of their respective flagship journals and are recognized at national and international levels for their contributions. Since 2003, 73 faculty members have received the prestigious Faculty Early Career Development (CAREER) Award from the National Science Foundation. This award supports junior faculty by simulating the discovery process in which the excitement of research is enhanced by inspired teaching and enthusiastic learning. And since 2003, four junior faculty members have received the Presidential Early Career Awards for Scientists and Engineers (PECASE), the highest honor bestowed by the United States government on young professionals in the early stages of their independent research careers.

College of Engineering researchers have established preeminence in the areas of energy, homeland and national security, engineering the ultra-small and space exploration. Underlying technologies that propelled the college to the forefront of the above research areas include mathematical modeling and simulation, optimization, mechanics, sensors, structures, robotics, autonomous vehicles, communications and networks, process engineering, materials, and computational sciences. Having established national and international reputations in these areas, TAMU researchers have expanded into the areas of sustainable advanced energy systems; national security; health care; infrastructure and transportation; and informatics and knowledge economy. The quality of TAMU research activities is highlighted by the direct impact of the research on technology; volume of peer reviewed research funding from highly competitive sources; volume of publications in high impact refereed journals; number of patents; volume of widely used textbooks; and national rankings of engineering programs.
2.3. Graduate Interdisciplinary Programs

At Texas A&M University, graduate degrees are awarded by traditional discipline-based academic departments, as well as by Graduate Interdisciplinary Faculties. Graduate Interdisciplinary Faculties are relatively new to Texas A&M with the earliest such faculty being officially recognized only in 1989. Their formation is primarily a faculty-driven process, when faculty members and researchers from diverse academic departments who have overlapping programmatic interests, come together to capitalize on their collective strengths.

According to University rules, an Interdisciplinary Degree Program (IDP) involves a group of faculty from more than one discipline representing single or multiple colleges, organized for the purpose of enhancing research and scholarly activities and overseeing graduate education for a degree program not offered at any existing academic unit.

These interdisciplinary faculties have to mature and document their abilities to administer a graduate program before they are authorized to award graduate degrees. The process for an interdisciplinary faculty to establish and administer a graduate degree program involves meeting specific university-level requirements and approvals at various levels within the university, prior to its approval at the state-level by the Texas Higher Education Coordinating Board. Oversight of IDPs falls under the responsibility of the Council of Participating Deans, which consists of the deans of the colleges having faculty participating in the IDP, together with the Dean of Faculties and Associate Provost and Provost for Graduate Studies. Faculty participation in an IDP may be incorporated into promotion, tenure, and merit raise decisions based upon recommendations of the IDP. In addition, graduate degrees granted by IDPs are also subject to external review as part of the University’s commitment to academic excellence.

Presently, there are 11 Interdisciplinary Degree Programs at the University namely,

- Agribusiness (Master of Agribusiness) (MAB)
- Agribusiness and Managerial Economics (PhD)
- Biotechnology (Master of Biotechnology) (MBIOT)
- Ecology and Revolutionary Biology (PhD)
- Energy (MS)
- Genetics (MS & PhD)
- Marine Biology (MS &PhD)
- Molecular and Environmental Plant Sciences (MS & PhD)
- Neuroscience (MS & PhD)
- Toxicology (MS & PhD)
- Water Management and Hydrological Sciences (MS & PhD)
3. Professional Program in Biotechnology Structure

3.1. Mission Statement

3.1.1. Program-level Mission Statement

The mission of Professional Program in Biotechnology (PPIB) at Texas A&M is to educate and prepare students for national and international leadership roles in industry, business, academia and government; to attract top graduate students to professional science master’s degree in biotechnology; to develop new directions in biotechnology engineering education and curriculum; to be a valuable resource and service base to the State and the biotechnology profession; and to prepare students to solve problems of social and economic importance.

3.1.2. University-level Mission Statement

Texas A&M University (TAMU) is dedicated to the discovery, development, communication, and application of knowledge in a wide range of academic and professional fields. Its mission of providing the highest quality undergraduate and graduate programs is inseparable from its mission of developing new understandings through research and creativity. It prepares students to assume roles in leadership, responsibility and service to society. Texas A&M assumes as its historic trust the maintenance of freedom of inquiry and an intellectual environment nurturing the human mind and spirit. It welcomes and seeks to serve persons of all racial, ethnic and geographic groups as it addresses the needs of an increasingly diverse population and a global economy. In the 21st century, Texas A&M University seeks to assume a place of preeminence among public universities while respecting its history and traditions.

The program- and university-level mission statements are interwoven by a shared commitment to educate students, prepare them to assume leadership roles at the forefront of their professions, bringing innovation and creativity to education and training, and providing critically needed intellectual capital to address the workforce needs of the State and profession.

3.2. Program Overview

The Professional Program in Biotechnology (PPIB) at Texas A&M University (TAMU) is a Professional Science Master’s program. It is a non-thesis degree program; however, students are required to complete a mandatory 10-week internship and a Professional Portfolio.

The PPIB prepares science-trained professionals for careers in the rapidly-growing life science industries. These fields require professionals who possess a unique combination of knowledge and skill, not only of science, but also of business and communication. This mix of competencies is not readily available in most traditional life science degree programs. The PPIB at TAMU aims to fulfill this critical need for a specially-trained workforce. Students are also eligible to obtain a Certificate in Business or a Certificate in Entrepreneurship upon completion of their studies.
The central premise behind establishment of the PPiB is to offer an attractive alternative for outstanding students who are not interested in the traditional research-oriented path through graduate school or professional school, but are more driven toward industry careers. This program was therefore created with the goal of opening doors to students who are interested in professional science careers with the potential to attain management positions within the companies where they work. The Texas Higher Education Coordinating Board approved the Professional Program in Biotechnology (PPiB) to offer the Master of Biotechnology (MBIOT) degree at Texas A&M University beginning with the class of 2001. To date, nearly 200 students have graduated from the program.

The PPiB prepares graduates with an understanding of science, business, management, and communication through an interdisciplinary program of graduate classes and extracurricular experiences. The students enroll in classes offered across the University. Students gain practical experience through required laboratory courses, on-campus directed study opportunities, and a mandatory professional internship. The program is structured to provide formal and informal components to ensure that students think critically, solve problems creatively, work in teams cooperatively, and communicate and present effectively. This unique skillset, not readily available in traditional life science degree programs, enables graduates to hit the ground running as they embark on their careers, so that they quickly become indispensable assets to the workforce.

By offering an interdisciplinary curriculum, the program is designed to establish a foundation that will allow graduates to advance rapidly in the industry. It also provides an additional post-baccalaureate option for TAMU students. The critical components of the program are:

- 39 credit hours of science and business courses
- Hands-on laboratory courses in biotechnology protocols
- Semester-long research experience in laboratory
- Ten week-long industry/professional internship
- Completion of a Professional Portfolio
- Active industry input via the PPiB Industry Advisory Council

3.3. University-level Administration of the PPiB

Interdisciplinary degree programs (IDPs), unlike conventional department-based programs, are a hybrid and rely on host academic departments to provide administrative support staff, accounting, office space, and computer facilities (Figure 1). The level of support varies depending on the program and the department providing support. The current University
administrative structure for managing IDPs, including the PPiB, requires that each IDP operates under a host Department and College/Unit, whose Dean reports to the Provost. The IDPs also report to the Dean of Faculties and Associate Provost for major policy issues. Since 2011, the PPiB has been hosted within the Artie McFerrin Department of Chemical Engineering in the Dwight Look College of Engineering. The Department of Chemical Engineering provides office space, administrative support, and business/accounting functions pertinent to daily operations.

Figure 1. Organizational structure of Interdisciplinary Degree Programs at Texas A&M University.
3.4. Administrative Structure of the PPiB

3.4.1. Program Chair

The PPiB is administered through a four-member elected Executive Committee and an elected Chair. The Chair of PPiB administers yearly academic reviews through the WEAVE online system, through the Program Coordinator administers program funds and approves spending, attends Graduate Instruction Committee meetings, represents the PPiB at Office of Graduate and Professional Studies (OGAPS) meetings, acts as the official advisor to graduate students, approves degree plans, and final exams. The chair crafts graduate admission offer letters, nominates students for graduate fellowships through the PPiB, and officially grants admission to students into the program that have been selected by the Admissions Committee.

3.4.2. Program Coordinator

Dr. Larissa Pchenitchnaia was hired in November 2013 as a full-time Program Coordinator, whose duties span advising, program management, and accounting functions. General roles and responsibilities include with coordinating and overseeing the planning, development and implementation of all PPiB activities, providing professional-level administrative support to key faculty, research staff and administrative personnel. The Coordinator assists with implementing programs to facilitate program goals, assists in planning events, assists in preparing budgets for programs and events, responds to inquiries regarding program offerings, coordinates program communications and marketing, assists in proposal preparation and reporting, compiles program statistics, assists in updating training materials, assists in the maintenance of program records and databases, assists with evaluating current programs against program goals and objectives, identifies and recommends program improvements, and performs other duties as assigned.

3.4.3. Executive Committee

The executive committee works with the Program Chair to determine and implement policy for the good of the Faculty of Biotechnology and represent the interests of the faculty generally to various University committees and other agencies.

PPiB Executive Committee Membership

- Luc Bergman, College of Agriculture and Life Sciences
- Victoria Buenger, Mays Business School
- Wenshe Liu, College of Science
- Judith Ball, College of Veterinary Medicine and Biomedical Sciences, Member at Large
- Sakhila Banu, College of Veterinary Medicine and Biomedical Sciences, Member at Large
- Michael Criscitello, College of Veterinary Medicine and Biomedical Sciences
3.4.4. Industry Advisory Council

An Industry Advisory Council is actively involved in the Biotechnology program. Membership to the Advisory Council is by invitation. There is no financial commitment either by Advisory Council members, or by TAMU. Current membership of the Industry Advisory Council is listed in Table 1.

**Table 1.** PPiB Advisory Council Membership, 2016 – 2017.

<table>
<thead>
<tr>
<th>NAME</th>
<th>TITLE</th>
<th>COMPANY</th>
</tr>
</thead>
<tbody>
<tr>
<td>Nathan Dewsbury</td>
<td>Owner/GM</td>
<td>Novis Animal Solutions, LLC, College Station, TX</td>
</tr>
<tr>
<td>Jerry Farrell, Ph.D.</td>
<td>Chief Operating Officer</td>
<td>FUJIFILM Diosynth Biotechnology Texas, LLC College Station, TX</td>
</tr>
<tr>
<td>John Ferreira</td>
<td>VP Quality Operations, Business Development</td>
<td>MDx BioAnalytical Laboratory, Inc. College Station, TX</td>
</tr>
<tr>
<td>Tyson Fetzer</td>
<td>Senior Manager of Manufacturing</td>
<td>Sanofi Genzyme Boston, MA</td>
</tr>
<tr>
<td>Gary Krishnan, Ph.D.</td>
<td>Chief Scientific Officer</td>
<td>Eli Lilly &amp; Company Indianapolis, IN</td>
</tr>
<tr>
<td>Susan Magdaleno, Ph.D.</td>
<td>R&amp;D Senior Manager, Scientist</td>
<td>Thermo Fisher Scientific Austin, TX</td>
</tr>
<tr>
<td>Sylvain Marcel, Ph.D.</td>
<td>Senior Scientist</td>
<td>iBio CMO LLC Bryan, TX</td>
</tr>
<tr>
<td>Madison Mauze</td>
<td>VP Business Development</td>
<td>Celltex Therapeutics Corporation Houston, TX</td>
</tr>
<tr>
<td>Deepthi Mikkili</td>
<td>Manager, Clinical Data Management</td>
<td>Amgen Thousand Oaks, CA</td>
</tr>
<tr>
<td>Gunjot Rana</td>
<td>Global Product Manager</td>
<td>Luminex Corp. Austin, TX</td>
</tr>
<tr>
<td>Christie Sayes, Ph.D.</td>
<td>Associate Professor of Environmental Science</td>
<td>Baylor University Waco, TX</td>
</tr>
<tr>
<td>Barbara Thomas Smith</td>
<td>Owner</td>
<td>Barbara Thomas Smith, LLC The Woodlands, TX</td>
</tr>
<tr>
<td>Cody L. Wilson, Ph.D.</td>
<td>Senior Director, Food Safety Center of Excellence</td>
<td>The Coca-Cola Company Atlanta, GA</td>
</tr>
<tr>
<td>Ty K. Witten, Ph.D.</td>
<td>Cotton, Soybean, Specialty Crop, and Seed Treatment Systems Lead</td>
<td>Monsanto Company St. Louis, MO</td>
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</tbody>
</table>
3.5. Institutional Allocations and Program Expenditures

The PPiB, like all interdisciplinary programs, receives funding directly from the Office of Graduate and Professional Studies (OGAPS). This funding model, adopted beginning in FY 2012, is based on the following formula that considers enrollment, graduation rate, and faculty engagement.

Total IDP allocation = $15,000 base allocation [“chair support”] + $300* (# students) + $250* (# unique faculty advisory committee chairs/co-chairs) [“staff support”] + $12* (# weighted student credit hours) [“graduate enhancement”] + $240* (# master’s students enrolled) + $400* (# master’s students graduated) [“strategic support”]

The chair support category is intended to represent the base level of effort required to manage an interdisciplinary degree program. The staff support category represents the level of administrative effort scaled by enrollment and number of unique faculty members actively engaged in student advising. The graduate enhancement category reflects overall enrollment quantified by weighted credit hours. Finally, the strategic support category reflects the progress toward producing graduates from the program. Strategic supplements may also be allocated to IDPs depending on available funds during a particular fiscal year, which are typically used for targeted recruitment and student support. Beginning in FY 2012, a program fee of $530 per student per semester (fall and spring semesters only) was introduced as an additional line of sustained support for program operations (see Section 6.1 for additional discussion).

An overview of program income and expenditures during the past 5 years is provided in Table 2. These data indicate that the PPiB has maintained a financially sound position, with resources to pursue strategic opportunities. For example, funds have been recently allocated for advisory council members to travel attend our student development conferences, to establish an annual student poster symposium, for a professionally facilitated etiquette dinner, and to achieve parity for instruction of BIOT 645 (Biotechnology Writing). Strategies for further allocations are described in Section 9.

| Table 2. 5-year Summary of PPiB Program Income and Expenditures. |
|---------------------|---------------------|---------------------|---------------------|---------------------|---------------------|
| Income              |                    |                    |                    |                    |                    |
| Base Allocation     | $68,452.00         | $64,184.00         | $67,496.00         | $81,194.00         | $84,637.00         |
| Program Fee         | $29,150.00         | $36,040.00         | $36,570.00         | $36,570.00         | $35,510.00         |
| Total               | $97,602.00         | $100,224.00        | $104,066.00        | $117,764.00        | $120,147.00        |
| Expenditures        |                    |                    |                    |                    |                    |
| Salaries            | $60,536.30         | $52,597.82         | $90,470.60         | $88,275.64         | $90,803.95         |
| Supplies            | $5,383.80          | $6,334.71          | $3,913.40          | $5,838.28          | $5,850.55          |
| Total               | $65,920.10         | $58,932.53         | $94,384.00         | $94,113.92         | $96,654.50         |
3.6. Overview of Progress Since Previous Academic Program Review

An academic program review of the Professional Program in Biotechnology (PPiB) at Texas A&M took place on February 7 – 10, 2010. The review team was charged with examining the department and its programs and making recommendations to help in planning improvements. The team recognized the program’s value and contribution to the strategic missions of the University and biotechnology industry within the State of Texas. Sustained involvement of the Industry Advisory Council and the Office of Technology Commercialization were also noted as key strengths.

Additionally, the review team provided recommendations to address challenges in three overarching areas: (1) curriculum and student experience, (2) management and sustained support of the program and (3) recruitment and admissions. These recommendations were aimed at enhancing the program’s stature and ensuring that the degree continues to represent a value and asset to students and stakeholders.

The PPiB has continued to engage faculty and stakeholders to leverage the review team’s feedback and recommendations, ensuring continued responsiveness to the envisioned program outcomes and a broader faculty- and stakeholder-driven vision. Examples of key actions include the following.

- Engagement of the Program Faculty to engage in frank discussions about our curriculum and how it aligns with the Program’s broader vision.
- Engagement of the Program’s Industry Advisory Council to seek input about the curriculum and how it can be optimally structured to empower graduates with a superior skill-set that is responsive and sought after by the biotechnology industry.
- Overhauling the program’s continuous improvement plan to enable measurable assessment of program objectives, strengths, and weaknesses.
- Putting forward an institutional Program Fee request to provide a sustained line of funding for the Program Coordinator, an instrumental position solely focused on student support.
4. PPiB Curriculum and Student Experience

4.1. Program Educational Objectives
The PPiB educational objectives are consistent with the mission of the program, the needs of the program’s various constituencies (students, faculty, alumni, employers of graduates and co-op and intern students, advisory board members) and program outcomes.

1. **Career Preparation.** PPiB graduates will have foundation for breadth and depth across the range of advanced science, business and engineering topics for successful biotechnology careers in industry, business, academia and government.

2. **Communication, Leadership, and Teamwork.** PPiB graduates will be effective communicators and have appropriate leadership, project management and teamwork skills.

3. **Integrity and Professional Impact.** PPiB graduates will have a sense of responsibility and ethical conduct to their profession and an appreciation for the impact of their profession on society both nationally and internationally.

4.2. Program Outcomes
The PPiB has documented student outcomes that prepare PPiB graduates to attain the program educational objectives. By the end of the program, PPiB students will have:

1. An ability to apply knowledge of advanced biological sciences and to use the scientific techniques and tools necessary for biotechnology practice
2. An ability to apply knowledge and skills of leadership, business and management in the biotechnology profession
3. An ability to analyze and interpret data
4. An ability to function on multidisciplinary teams
5. An ability to identify, formulate, and solve problems important in biotechnology practice
6. An understanding of professional and ethical responsibility
7. An ability to communicate effectively
8. An understanding of the impact of biotechnology practice in a scientific, economic and societal context

The inter-relationship between the program educational objectives and program outcomes is summarized in Table 3.
Table 3. Relationship between PPiB Program Outcomes and Program Educational Objectives.

<table>
<thead>
<tr>
<th>Program Outcomes</th>
<th>Program Educational Objectives</th>
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<tbody>
<tr>
<td>1. an ability to apply knowledge of advanced biological sciences and to use the</td>
<td>x</td>
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<tr>
<td>scientific techniques and tools necessary for biotechnology practice</td>
<td></td>
</tr>
<tr>
<td>2. an ability to apply knowledge and skills of leadership, business and management</td>
<td>x</td>
</tr>
<tr>
<td>in the biotechnology profession</td>
<td></td>
</tr>
<tr>
<td>3. an ability to analyze and interpret data</td>
<td>x</td>
</tr>
<tr>
<td>4. an ability to function on multidisciplinary teams</td>
<td></td>
</tr>
<tr>
<td>5. an ability to identify, formulate, and solve problems important in biotechnology practice</td>
<td>x</td>
</tr>
<tr>
<td>6. an understanding of professional and ethical responsibility</td>
<td></td>
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<td>7. an ability to communicate effectively</td>
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<tr>
<td>8. an understanding of the impact of biotechnology practice in a scientific,</td>
<td></td>
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<tr>
<td>economic and societal context</td>
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</table>

4.3. Organization of Curriculum

A key challenge identified by the review team was that the curriculum lacked flexibility to accommodate students' special interests. The densely packed curriculum provides students with very little opportunity for electives barring them from pursuing special interests in biotechnology, whether on the science side or the business side.

Prior to the 2010 program review, the 39 credit hours of the PPiB curriculum was organized to include a 3-part Biotechnology Principles and Techniques sequence (BIOT 601, 602; and 603; 4
credit hours each) and 12 credit hours of rigidly specified business core courses (accounting, finance, marketing, and management). As shown in Table 4, this structure left only 3 credit hours available for students to choose electives based on their interests and professional goals.

As shown in Table 5, the post-2011 PPiB curriculum has been updated by (1) removing BIOT 602, (2) replacing BIOT 603 with a 3-credit hour directed studies experience (BIOT 685), and (3) reducing the BOT 681 seminar requirement from two semesters to one semester. These modifications now provide 9 credit hours of student-selected elective coursework. Additionally, students now have flexibility to structure the required 12 credit hours of business coursework toward either core fundamentals (accounting, finance, marketing, and management), entrepreneurship, or a mixture of both. Further, although it is not a program requirement, students may arrange the business course sequence to satisfy the requirements to earn a Certificate in Business (http://mays.tamu.edu/certificate-in-business/) or Certificate in Entrepreneurship (http://mays.tamu.edu/center-for-new-ventures-and-entrepreneurship/graduate-certificate-in-entrepreneurship/) offered by the Mays Business School.

An additional curriculum update made in response to the 2010 program review has been to embed a bioethics training requirement. Initially this was added through a dedicated 1 credit hour Bioethics Seminar course. This arrangement, however, was not ideal due to uncertainties associated with instructor availability that made it challenging to ensure that the required course could be offered on a regular basis. The program therefore adopted the Responsible Conduct of Research (RCR) training program offered through the Collaborative Institutional Training Initiative (CITI). The RCR series covers core norms, principles, regulations, and rules governing the practice of research. The National Institutes of Health (NIH), the National Science Foundation (NSF), and the U.S. Department of Agriculture (USDA) require certain categories of researchers to receive RCR training. RCR is increasingly viewed as an essential component of training, regardless of a researcher’s source of funding. In addition to addressing the need to provide bioethics competencies, this training prepares students for hands-on laboratory work both on-campus (as part of the required directed studies experience) and in the workplace (as part of the required professional internship experience). The online delivery of the course content also ensures that it will be consistently available to students, who are required to complete the training during the first week of class during the semester when they enter the program.

### 4.4. Rationale for Organization of the Current PPiB Curriculum

The PPiB Curriculum is organized with the aim of establishing a solid foundation of technical and business skills, and providing opportunities for them to be applied in a professional context. This combination of fundamental and applied experiences is envisioned to set our apart from those graduating from research-focused degree programs.

- **Fall semester 1.** Students enter as a common cohort and take coursework involving fundamental molecular biology (BIOT 635) and applied laboratory techniques (BIOT 601). These courses provide a common set of core competencies to all students regardless of their undergraduate major. Students also obtain training in written and oral communications (BIOT 645), and begin guided career and professional explorations (BIOT 681).
- **Spring semester.** Students begin required business coursework. Students also begin to apply fundamentals from the fall semester in an immersive practical context supporting their professional goals (BIOT 685).

- **Summer semester.** Students continue to apply fundamentals in a professional context via the required internship experience.

- **Fall semester 2.** Students complete remaining required and elective coursework. Students also complete final exam consisting of a written Professional Portfolio and oral presentation to the student’s committee members.

---

**Table 4. Pre-2010 PPiB Curriculum.**

<table>
<thead>
<tr>
<th>Course Prefix</th>
<th>Course Name</th>
<th>Credit Hours</th>
<th>Offered</th>
</tr>
</thead>
<tbody>
<tr>
<td>BIOT 601</td>
<td>Biotechnology Principles and Techniques I</td>
<td>4</td>
<td>fall</td>
</tr>
<tr>
<td>BIOT 635</td>
<td>Molecular Biotechnology</td>
<td>3</td>
<td>fall</td>
</tr>
<tr>
<td>BIOT 645</td>
<td>Biotechnology Writing</td>
<td>3</td>
<td>fall</td>
</tr>
<tr>
<td>BIOT 681</td>
<td>Biotechnology Seminar</td>
<td>1</td>
<td>fall</td>
</tr>
<tr>
<td>BIOT 602</td>
<td>Biotechnology Principles and Techniques II</td>
<td>4</td>
<td>spring</td>
</tr>
<tr>
<td>ACCT 640</td>
<td>Accounting Concepts and Procedures</td>
<td>3</td>
<td>spring</td>
</tr>
<tr>
<td>BIOT 603 or BIOT 685</td>
<td>Applied Principles of Biotechnology</td>
<td>4</td>
<td>spring</td>
</tr>
<tr>
<td>BIOT 684</td>
<td>Directed Professional Internship</td>
<td>4</td>
<td>summer</td>
</tr>
<tr>
<td>FINC 635*</td>
<td>Financial Management for Non-Business Majors</td>
<td>3</td>
<td>summer</td>
</tr>
<tr>
<td>MGMT 655</td>
<td>Survey of Management</td>
<td>3</td>
<td>fall</td>
</tr>
<tr>
<td>MKTG 621</td>
<td>Survey of Marketing</td>
<td>3</td>
<td>fall</td>
</tr>
<tr>
<td>BIOT 681</td>
<td>Biotechnology Seminar</td>
<td>1</td>
<td>fall</td>
</tr>
</tbody>
</table>

**Electives**

| Electives | Business, science or technology courses | 3 |

program total                                                                 39
Table 5. Post-2011 PPiB Curriculum.

**Required Courses**

<table>
<thead>
<tr>
<th>Course Prefix</th>
<th>Course Name</th>
<th>Credit Hours</th>
<th>Offered</th>
</tr>
</thead>
<tbody>
<tr>
<td>BIOT 601</td>
<td>Biotechnology Principles and Techniques I</td>
<td>4</td>
<td>fall</td>
</tr>
<tr>
<td>BIOT 635</td>
<td>Molecular Biotechnology</td>
<td>3</td>
<td>fall</td>
</tr>
<tr>
<td>BIOT 645</td>
<td>Biotechnology Writing</td>
<td>3</td>
<td>fall</td>
</tr>
<tr>
<td>BIOT 681</td>
<td>Biotechnology Seminar</td>
<td>1</td>
<td>fall</td>
</tr>
<tr>
<td>BIOT 684</td>
<td>Directed Professional Internship</td>
<td>4</td>
<td>summer</td>
</tr>
<tr>
<td>BIOT 685</td>
<td>Directed Studies</td>
<td>3</td>
<td>all</td>
</tr>
<tr>
<td>N/A</td>
<td>Online CITI Responsible Conduct of Research</td>
<td>N/A</td>
<td>fall</td>
</tr>
<tr>
<td>600 level</td>
<td>Business courses*</td>
<td>12</td>
<td></td>
</tr>
</tbody>
</table>

**Electives**

| Electives                          | Business, science or technology courses                                    | 9            |         |
|                                   | program total                                                               | 39           |         |

*By selecting a particular set of business courses, students may earn one of the following certificates through the Mays Business School

**Certificate in Business**

<table>
<thead>
<tr>
<th>Course Prefix</th>
<th>Course Name</th>
<th>Credit Hours</th>
<th>Offered</th>
</tr>
</thead>
<tbody>
<tr>
<td>ACCT 640</td>
<td>Accounting Concepts and Procedures</td>
<td>3</td>
<td>all</td>
</tr>
<tr>
<td>FINC 635*</td>
<td>Financial Management for Non-Business Majors</td>
<td>3</td>
<td>all</td>
</tr>
<tr>
<td>MGMT 655</td>
<td>Survey of Management</td>
<td>3</td>
<td>all</td>
</tr>
<tr>
<td>MKTG 621</td>
<td>Survey of Marketing</td>
<td>3</td>
<td>all</td>
</tr>
</tbody>
</table>

* ACCT 640 is pre-requisite for FINC 635

**Certificate in Entrepreneurship** (12 credit hours selected from the following)

<table>
<thead>
<tr>
<th>Course Prefix</th>
<th>Course Name</th>
<th>Credit Hours</th>
<th>Offered</th>
</tr>
</thead>
<tbody>
<tr>
<td>MGMT 632</td>
<td>Technology Commercialization</td>
<td>3</td>
<td>all</td>
</tr>
<tr>
<td>MGMT 637</td>
<td>Foundations of Entrepreneurship</td>
<td>3</td>
<td>all</td>
</tr>
<tr>
<td>MGMT 638</td>
<td>Strategic Entrepreneurship</td>
<td>3</td>
<td>spring</td>
</tr>
<tr>
<td>MGMT 639</td>
<td>Negotiations in Competitive Environments</td>
<td>3</td>
<td>all</td>
</tr>
<tr>
<td>MGMT 640</td>
<td>Managing for Creativity and Innovation</td>
<td>3</td>
<td>fall</td>
</tr>
<tr>
<td>FINC 644</td>
<td>Funding New Ventures</td>
<td>3</td>
<td>spring</td>
</tr>
<tr>
<td>MGMT 658</td>
<td>Managing Projects</td>
<td>3</td>
<td>all</td>
</tr>
<tr>
<td>MGMT 675</td>
<td>Leadership in Organizations</td>
<td>3</td>
<td>fall</td>
</tr>
</tbody>
</table>
4.5. Overview of Required Coursework in the PPiB Curriculum

Biotechnology Classes (see Appendix A for syllabi)
Basic theories and techniques essential to laboratory research in agricultural, environmental or medical biotechnology such as laboratory safety and records keeping, genome informatics, DNA analysis, RNA analysis, protein analysis and analysis of biological systems. Prerequisite: Graduate classification and approval of instructor.

BIOT 635. Molecular Biotechnology. Credit 3.
Theory and application of molecular biotechnology; consideration of the structure and function of cellular components and methods to characterize these components with reference to examples in industry. Prerequisite: Approval of instructor.

Development of biotechnology writing and editorial skills; communication of specialized information to the public and peers. Prerequisite: Graduate classification and approval of instructor.

Review and discussion of current topics in biotechnology industries, with focus on skills essential to success in the corporate environment such as communication, interviewing and interpersonal skills. Prerequisite: Graduate classification and approval of instructor.

A directed internship in an organization to provide students with on-the-job training with professionals in organizational settings appropriate to the student’s professional objectives. Prerequisite: Approval of the Chair of the Faculty of Biotechnology.

BIOT 685. Directed Studies. Credit 1 to 4.
Training and experience in biotechnology; topics can include laboratory research, scientific literature reviews, biotechnology market surveys, and training in technology commercialization. Prerequisite: Approval of instructor.

Accounting Classes
Accounting concepts and relationships essential to administrative decisions; use of accounting statements and reports as policymaking and policy execution tools. Classification 6 students and non-business graduate students may enroll in this course. Prerequisite: Graduate classification.

Finance Classes
External and internal factors affecting financial decision-making in the firm; fundamental concepts of accounting and managerial economics. Prerequisite: ACCT 640 or equivalent or approval of instructor.

FINC 644. Funding New Ventures. Credit 3.
This course provides an introduction to the general phenomena of small business and entrepreneurship. The central focus of this course will be to provide students an understanding of entrepreneurship and the financing of entrepreneurial ventures. The course will address the types of financing available at different stages of the new venture. Classification 6 students may not enroll in this course.

Management Classes
Management concepts and applications important to managers in all types and sizes of organizations; includes: strategic planning, goal setting, control and managerial ethics; decision making, organizing, human resource management, including staffing, performance appraisal and compensation; leadership, motivation, communication and group processes; achieving organizational quality and managing in a global environment. Prerequisite: Graduate classification. Note: This course may not be used for elective credit by a master’s candidate in business administration.

MGMT 632. Technology Commercialization. Credit 3.
Focus on technology, process of evaluating raw technology viability, converting raw technology into commercially viable products and services; course includes model on Small Business Innovation Research (SBIR) grant program; develops competencies skills to evaluate technology’s commercial viability; brings viable technologies to commercial success. Prerequisite: Graduate classification.

Process of launching a new venture; process by which opportunities can be discovered and selected; attributes of entrepreneurs and new venture teams; process of developing business plan; core entrepreneurial strategies—business level, organizational design, marketing, financial; strives to develop competencies, concepts, operational tools relevant to creating, implementing new ventures. Prerequisite: Graduate classification.

MGMT 638. Strategic Entrepreneurship. Credit 1 to 3.
Emphasis on a firm’s need to be both entrepreneurial (identifying opportunities in the market) and strategic (taking actions to gain a competitive advantage) in order to create value for stakeholders; includes: developing an entrepreneurial mindset; building an entrepreneurial culture; managing resources (building a resource portfolio, bundling resources to create capabilities and leveraging the capabilities to exploit the opportunities identified); creating innovations. Prerequisite: Graduate classification.
MGMT 639. Negotiations in Competitive Environments. Credit 1 to 3.
Understanding prescriptive and descriptive negotiation theory as it applies to dyadic and multi-party negotiations, to buyer-seller transactions, dispute resolution, development of negotiation strategy and management of integrative and distributive aspects of the negotiation process. Prerequisite: Graduate classification.

Examines factors that may foster or stifle individual, team, or organizational creative performance, and presents techniques that may improve the student’s creative thinking skills. Prerequisite: Graduate classification.

Application of management processes to complex interdisciplinary organizational environments through the study of program and project management; adoptions of traditional management theories to the project environment; master typical project management microcomputer software for project planning; resource allocation; project budgeting; and control of project cost, schedule and performance. Prerequisite: Graduate classification.

MGMT 675. Leadership in Organizations. Credit 1 to 3.
Review of research on procedures, styles and methods of leadership, supervision, management and administration; all aspects of leader role behavior, both in practice and in research; areas in need of further research. May be repeated for up to 3 hours’ credit. Prerequisite: Graduate classification.

Marketing Classes
MKTG 621. Survey of Marketing. Credit 3.
Marketing concepts and functions from the point of view of the organization and the economy. Prerequisite: Graduate classification. Note: This course may not be used for elective credit by a master’s candidate in business administration.

4.6. Directed Professional Internship

BIOT 684 – Directed Professional Internship is a cornerstone of the PPiB curriculum because it immerses students in a professional setting so that they can learn from real-world work experiences. The objectives of the internship are two-fold. First, it enables students to apply their training to make identifiable contributions of practical concern to the organization offering the internship (i.e., solving a problem or creating a new product or knowledge of value to the biotech industry). Secondly, the internship allows students to function in a non-academic environment with a different culture and approach to management, public relations, and other endeavors. This ability to navigate the professional workplace empowers students with confidence as they begin the process of seeking full-time employment.
The PPiB requires a minimum of 10 weeks of full-time employment (40 hours/week) for successful completion of the internship requirement. Internships cannot be for part-time positions, even if the number of weeks worked is extended beyond ten. The internship can be paid or unpaid. The preference is for students to obtain internship employment in the biotech industry; however, employment at other academic institutions or Texas A&M University affiliates, such as the Institute of Biosciences and Technology or the Office of Technology Commercialization, is acceptable.

The internship is typically scheduled during the summer between the first and second years of study in the program (a list of recent internship sites is provided in Table 6). This timing allows students to take advantage of the fact that the majority of formal, dedicated internship programs of companies are offered during the summer. There are a limited number of internships and co-ops offered during the fall and spring semesters, and these can also be structured to satisfy the internship requirement. Note, however, that a student may not be employed at Texas A&M University as a teaching assistant and serve an internship during the same semester. Students may take extended co-op experience over two semesters, with the second semester of BIOT 684 counting as a program elective, or a student may take a second semester of an elective BIOT 684 at a different site. To be approved, the elective internship must be off-campus, under the supervision of the same faculty chair, and must not cause a delay in graduation beyond two academic years. Prior to the internship, whether required or elective, the student sets goals for the experience, which are formalized in the PPiB Learning Agreement along with a listing of responsibilities for all parties to the agreement.

An additional degree requirement for the PPiB is the creation of a professional portfolio. This document contains a section in which students reflect on program competencies and a section dedicated to reflections on the internship experience. Upon completion of the portfolio, students give a public presentation on their internship experience followed by an oral exam by their faculty committee members. The committee members will ask further questions to assess mastery of science and business principles, and their application in the internship experience. Students doing two internships at different sites are required to reflect on both experiences in the portfolio and include both in the presentation given during the final exam.

Before being allowed to register for BIOT 684, students are required to complete two documents and submit them to the program coordinator for review and approval: (1) the Internship Description Form, and (2) the PPiB Learning Agreement (copies provided in course syllabus in Appendix A). The Internship Description Form contains basic information about the internship including the job title, when and where the internship will take place, and contact information for the student, mentor and company. Students are also asked to submit a copy of their offer letter with the Internship Description Form.

The PPiB Learning Agreement provides a listing of all the responsibilities of the various parties—the student, faculty advisor (committee chair), onsite supervisor, and program office—during the internship experience. It also frames the goals of the internship in terms of concrete “learning objectives.” These are written as broad objectives with specific activities or tasks that will accomplish the objective. They also document how the site supervisor will evaluate the student’s goals and deadlines for accomplishing the tasks. The Learning Agreement is signed by
all parties (student, site supervisor, faculty advisor, and program coordinator) and returned to the program coordinator. Like the Internship Description Form, it must be received by the program office before students are allowed to register for BIOT 684.

Half-way through, and at the conclusion of the internship, the site supervisor completes an evaluation of student performance. The intent of this evaluation is to provide the student with information that can be used to improve their work, and it also provides a basis for counseling and guidance of the student. The student and site supervisor both sign these evaluations and submit them to the program coordinator and to the student’s faculty advisor. Lastly, upon completion of the internship, students submit a Student Evaluation of Site. This feedback helps the program to ensure that only quality internship sites are offered to students.

International students require additional procedures in order to arrange their internships. If the internship is during the summer, off-campus and paid, Curricular Practical Training (CPT) forms must be submitted to International Student Services (ISS) by F-1 students. J-1 (sponsored) students have similar requirements to obtain permission for off-campus employment. If an F-1 international student is completing an internship in the fall or spring, they must submit CPT forms and apply for a full course waiver, either from the Registrar’s Office or ISS, since they will be dropping below the required 9 credit hours of enrollment. The Program Coordinator assists students in navigating the requirements based upon the nature and timing of their internship plans.

Table 6. List of Recent Internship Locations and Companies.

<table>
<thead>
<tr>
<th>Company/Site</th>
<th>Location</th>
</tr>
</thead>
<tbody>
<tr>
<td>Monsanto</td>
<td>Woodland, California</td>
</tr>
<tr>
<td>Zoetis</td>
<td>Durham, North Carolina</td>
</tr>
<tr>
<td>MD Anderson Cancer Research Center</td>
<td>Houston, Texas</td>
</tr>
<tr>
<td>Caliber Biotherapeutics</td>
<td>College Station, Texas</td>
</tr>
<tr>
<td>Pfizer</td>
<td>Cambridge, Massachusetts</td>
</tr>
<tr>
<td>Synageva Biopharma</td>
<td>Lexington, Massachusetts</td>
</tr>
<tr>
<td>Department of Veterinary Pathology</td>
<td>TAMU, College Station, Texas</td>
</tr>
<tr>
<td>New England Biolabs</td>
<td>Ipswich, Massachusetts</td>
</tr>
<tr>
<td>USDA, Insect Control and Cotton Disease Research Unit</td>
<td>College Station, Texas</td>
</tr>
<tr>
<td>Company Name</td>
<td>Location</td>
</tr>
<tr>
<td>--------------------------------------------------</td>
<td>---------------------------------</td>
</tr>
<tr>
<td>Glycos Biotechnologies</td>
<td>Houston, Texas</td>
</tr>
<tr>
<td>Kalon Biotherapeutics</td>
<td>College Station, Texas</td>
</tr>
<tr>
<td>TAMU Health Science Center</td>
<td>TAMU, College Station, Texas</td>
</tr>
<tr>
<td>Sigma-Aldrich</td>
<td>St. Louis, Missouri</td>
</tr>
<tr>
<td>TAMU Health Science Center, Office of Technology Translation</td>
<td>TAMU, College Station, Texas</td>
</tr>
<tr>
<td>InGeneron, Inc.</td>
<td>Houston, Texas</td>
</tr>
<tr>
<td>National Center for Therapeutics Manufacturing</td>
<td>College Station, Texas</td>
</tr>
<tr>
<td>Bio-Rad, Inc.</td>
<td>Hercules, California</td>
</tr>
<tr>
<td>Department of Animal Science</td>
<td>TAMU, College Station, Texas</td>
</tr>
<tr>
<td>Office of Technology Commercialization</td>
<td>TAMU, College Station, Texas</td>
</tr>
<tr>
<td>K Global Fibers</td>
<td>Bryan, Texas</td>
</tr>
<tr>
<td>Office of Safety and Security</td>
<td>Office of Safety and Security, TAMU, College Station, Texas</td>
</tr>
<tr>
<td>SRC, Inc.</td>
<td>North Syracuse, New York</td>
</tr>
<tr>
<td>New Orleans BioInnovation Center</td>
<td>New Orleans, Louisiana</td>
</tr>
<tr>
<td>Novavax, Inc.</td>
<td>Gaithersburg, Maryland</td>
</tr>
<tr>
<td>Applied Biosensors</td>
<td>Salt Lake City, Utah</td>
</tr>
<tr>
<td>TAMU Health Science Center, Institute of Biosciences and Technologies</td>
<td>Houston, Texas</td>
</tr>
<tr>
<td>Affymetrix</td>
<td>Cleveland, Ohio</td>
</tr>
<tr>
<td>Gilead Sciences</td>
<td>Foster City, California</td>
</tr>
<tr>
<td>Fort Worth Nature Center and Refuge</td>
<td>Fort Worth, Texas</td>
</tr>
<tr>
<td>Center for Translational Research in Aging and Longevity</td>
<td>TAMU, College Station, Texas</td>
</tr>
<tr>
<td>XYBION</td>
<td>Bensalem, Pennsylvania</td>
</tr>
<tr>
<td>Company Name</td>
<td>Location</td>
</tr>
<tr>
<td>--------------------------------------</td>
<td>-----------------------------------</td>
</tr>
<tr>
<td>ST Genetics</td>
<td>Navasota, Texas</td>
</tr>
<tr>
<td>Luminex Corporation</td>
<td>Austin, Texas</td>
</tr>
<tr>
<td>Bened Biomedical Co. Ltd.</td>
<td>Taipei City, Taiwan</td>
</tr>
<tr>
<td>Medicenna</td>
<td>Houston, Texas</td>
</tr>
<tr>
<td>DryLet</td>
<td>Houston, Texas</td>
</tr>
<tr>
<td>Kleberg Animal and Food Science Center</td>
<td>TAMU, College Station, Texas</td>
</tr>
<tr>
<td>Research Valley Partnership, Inc.</td>
<td>College Station, Texas</td>
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<tr>
<td>Synthecon</td>
<td>Houston, Texas</td>
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<tr>
<td>Ecolyse</td>
<td>College Station, Texas</td>
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<tr>
<td>Agennix, Inc.</td>
<td>Houston, Texas</td>
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<tr>
<td>Opexa Therapeutics</td>
<td>The Woodlands, Texas</td>
</tr>
<tr>
<td>CS Bio</td>
<td>Menlo Park, California</td>
</tr>
<tr>
<td>Thar Pharmaceuticals</td>
<td>Pittsburgh, Pennsylvania</td>
</tr>
<tr>
<td>Aerosol Technology Laboratory</td>
<td>TAMU, College Station, Texas</td>
</tr>
</tbody>
</table>

### 4.7. Professional Portfolio

The purpose of the portfolio assignment is to collect in one place all the accomplishments of a student’s biotechnology career. Much of the portfolio consists of reflection on the skills and competencies students have obtained through coursework, informal learning experiences, and the internship. In response to the 2010 program review, the format of the portfolio was significantly revised to focus on development of materials important for a job interview. In addition to showcasing a student’s technical and professional accomplishments, the portfolio provides a resource for students to quickly recall specific occasions when they applied program competencies (e.g., solving an ethical problem or working productively as part of a team to solve a problem).

The portfolio consists of a cover sheet, a table of contents, internship preparation documents, a section reflecting on biotechnology program professional competencies, another section reflecting on the internship experience itself, evaluations from the internship, and the PowerPoint presentation slides given at the final exam.
4.7.1. Internship Preparation Documents
1. Resume. Students include a 2 – 3 page resume including educational background, honors or recognition achieved, work experience, special skills, membership in organizations or other relevant information.

2. References. Students provide a list of names and contact information for 3-4 people that would be willing to provide a professional reference or recommendation. Examples would be a student’s faculty advisor or other faculty they interacted with, and former employers.

3. PPiB Learning Agreement. This is the document that lists the learning objectives for the student’s internship.

4.7.2. Reflection on Competencies
In this section of the portfolio, students thoughtfully reflect on their experiences in the biotechnology graduate program. There are four core competencies that the PPiB curriculum is designed to develop in our students. These competencies are essential for success in business and other professional endeavors. Upon graduation, we expect that students should have acquired skills and abilities in the areas of (1) problem-solving, (2) teamwork, (3) communication, and (4) bioethics.

For each of the four program competencies, students compose a 2 – 3 page essay explaining how they have acquired the competency during their time in the biotechnology program. Students may describe experiences from any class, and also draw from experiences associated with work and organizational/leadership activities at Texas A&M. For example, students could reflect on how they analyzed a problem in a biotechnology lab, solved an ethical problem encountered as a part of a directed studies experience, or how you organized and worked as a team on a Biotechnology Society project. In addition, you complete a 2 – 3 page essay on a fifth competency they acquired that they believe is a valuable skill in the marketplace. An example might be leadership or organizational skills. A description of each program competency is provided below.

1. Problem-solving ability. The ability to think through problems and devise solutions is an important asset involving the following skills.
   • Critical thinking—the ability to clearly analyze a problem or situation and make a logical, well-informed choice.
   • Creative thinking—the ability to find innovative solutions to problems.
   • Consensus building—using techniques to enhance cooperation in a group.
   • Personal judgment—understanding the role of values and emotions in decision-making.

2. Teamwork. The ability to work in a multidisciplinary team or group is critical in today’s workplace. Examples of applying this competency include the following.
   • Collaborating on a project
• Serving as a team leader
• Managing conflict in a team
• Motivating a team
• Delegating responsibility

3. Communication. Excellent written and oral communication skills are highly sought after by employers. Examples of applying this competency include the following.
  • Effective speaking and listening
  • Effective presentation of goals and ideas to an audience
  • Effective use of technology and media
  • Effective writing of letters, memos, reports or position papers
  • Effective use of graphs, tables, or graphics to explain complex phenomena

4. Bioethics. This is a standard of conduct, or code of morals, for life science research. Students are asked to reflect on occasions in their graduate study when they became aware of a controversial issue and its relationship to biotechnology. Students also may reflect more broadly on contemporary issues such as limitations to the use of technology.

4.7.3. Reflection on Internship
This section of the portfolio begins with an introduction that describes the company or institution where the student worked, and what their responsibilities were during the internship. Next, students examine each of their learning objectives and the activities associated with each goal. In the course of this reflection, students describe the methods or procedures they used and the success or outcomes that followed, provide the results of experiments, describe protocols or other materials/deliverables produced, and discuss any limitations or failures encountered in the course of attaining their goals. If applicable, students also provide an analysis of accounting, finance, marketing, and management principles they used or observed at their internship site. Students are encouraged to connect concepts learned in classes with their internship experience, particularly highlighting occasions when they apply teamwork, analytical, and communication skills, or knowledge of bioethics. Students conclude by critiquing their experience, consider any additional learning that would be helpful, and provide recommendations for future students interning at their site.

The reflective nature of the portfolio means that students primarily describe specific activities, the outcome of those activities, and what they personally learned. Students are also instructed to carefully document and cite sources for background information or other materials introduced into the document. Plagiarism is treated as a serious infraction of the Aggie Honor Code. If a student’s advisory committee detects plagiarism, depending on the situation, consequences can range from re-submission of the portfolio to failure to meet degree requirements for the MBIOT degree.
In order to ensure confidentiality of data and business information, each student’s onsite is asked to supervisor review their PowerPoint presentation and contact the program office to communicate their approval and confirm that no material of a confidential nature is included. This verification is required before the final exam is allowed to commence.

4.8. Final Examination

Students must submit a Request and Announcement of Final Examination form to the Texas A&M Office of Graduate and Professional Studies prior to the specified semester deadline. The request must be received 10 working days before the exam. Students are instructed to discuss deadlines for drafts of the portfolio with their faculty advisor to aid in scheduling sufficient time for thoughtful review and ultimately production of a high-quality portfolio and learning experience. The completed portfolio must be submitted in proper format to all committee members and the program coordinator one week prior to the final oral exam and portfolio presentation. Students are also encouraged to complete reflections on program competencies soon after completion of the activity, and that to submit them to your faculty advisor for review and feedback during the internship semester.

Following the public presentation of the internship experience, the student meets in private with their committee where they are questioned further about their experiences and competencies associated with both science and business principles applicable to their work. The committee members may also ask students about coursework or competencies discussed in their portfolio and their relationship to the internship. When the committee is satisfied that they have sufficient information to make a decision, the committee deliberates and assigns a final pass/fail grade on the exam. If the committee feels that a student was unprepared or performed poorly, a second examination can be requested. No more than two attempts to pass the final examination are permitted.

4.9. Responsibilities of Committee Chair and Members

Although the MBIOT degree is a non-thesis master’s degree, students must establish a 3-member faculty advisory committee consisting one chair and two members selected from the membership of the PPiB affiliated faculty. The advisory committee is formally established during the first semester in the program as part the degree plan that all students must submit to the Office of Graduate and Professional Studies, which also includes those courses to be applied toward the degree. The primary roles of the advisory committee chair and members are summarized below.

Committee Chair (Table 7)
- Meets with the student to discuss career plans, expectations for degree plan and portfolio, possible electives for the degree plan, committee membership, possible faculty for BIOT 685 (Directed Studies), and suggestions for internship sites.
- Serves as resource for professional mentoring and advice.
• Approves the degree plan, any petitions, and the request and announcement of final examination.
• Serves as BIOT 684 (Directed Professional Internship) instructor and approves the student’s internship Learning Agreement.
• Reviews and edits portfolio for content and language using the guidelines in the current Internship and Portfolio Handbook.
• Chairs the student’s presentation and oral exam, sets ground rules for the exam and tallies votes, and signs off on the final exam paperwork.

Committee Members (Table 8)
• Approve student’s degree plan (following pre-approval by program coordinator and committee chair) and any petitions for change in coursework or committee members.
• Serve as resource for professional mentoring and advice.
• Review portfolio in order to familiarize themselves with content prior to the student’s exam.
• Attend and participate in final exam.

Table 7. Recent Faculty Committee Chair Assignments (Fall 14, Fall 15 and Fall 16 Cohorts).

<table>
<thead>
<tr>
<th>Committee Chair</th>
<th>Department</th>
<th>College</th>
</tr>
</thead>
<tbody>
<tr>
<td>Dr. Rodolfo Aramayo</td>
<td>Department of Biology</td>
<td>Science</td>
</tr>
<tr>
<td>Dr. Giri Athrey</td>
<td>Poultry Science</td>
<td>Agriculture and Life Sciences</td>
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<tr>
<td>Dr. Judith Ball</td>
<td>Veterinary Physiology &amp; Pharmacology</td>
<td>Veterinary Medicine and Biomedical Sciences</td>
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<tr>
<td>Dr. Sakhila Banu</td>
<td>Veterinary Integrative Biosciences</td>
<td>Veterinary Medicine and Biomedical Sciences</td>
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<tr>
<td>Dr. Luc Berghman</td>
<td>Poultry Science</td>
<td>Agriculture and Life Sciences</td>
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<td>Dr. James Cai</td>
<td>Veterinary Integrative Biosciences</td>
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<td>Dr. Robert Chapkin</td>
<td>Nutrition and Food Sciences</td>
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<td>Dr. Ernest Cothran</td>
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<tr>
<td>Dr. Michael Criscitiello</td>
<td>Veterinary Pathobiology</td>
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<tr>
<td>Dr. James Derr</td>
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<tr>
<td>Dr. Robin Fuchs-Young</td>
<td>Molecular and Cellular Medicine &amp; Institute of Biosciences and Technology</td>
<td>TAMU Health Science Center</td>
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<tr>
<td>Dr. Barbara Gastel</td>
<td>Veterinary Integrative Biosciences</td>
<td>Veterinary Medicine and Biomedical Sciences</td>
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<tr>
<td>Dr. Terry Gentry</td>
<td>Soil and Crop Sciences</td>
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<td>Dr. Clare Gill</td>
<td>Animal Science</td>
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<tr>
<td>Dr. Mark Holtzapple</td>
<td>Department of Chemical Engineering</td>
<td>Engineering</td>
</tr>
<tr>
<td>Dr. Charles Johnson</td>
<td>Director, Center for Bioinformatics and Genomic Systems Engineering</td>
<td>Agriculture and Life Sciences</td>
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<tr>
<td>Dr. Katy Kao</td>
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</tr>
<tr>
<td>Dr. Pushkar Lele</td>
<td>Chemical Engineering</td>
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<td>Dr. Wenshe Liu</td>
<td>Chemistry</td>
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<tr>
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<td>Ecosystem Science and Management</td>
<td>Agriculture and Life Sciences</td>
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<td>Dr. Clint Magill</td>
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<td>Dr. Rajesh Miranda</td>
<td>Neuroscience &amp; Experimental Therapeutics</td>
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<td>Dr. Desmond Ng</td>
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<td>Dr. Suresh Pillai</td>
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<td>Dr. Michael Pishko</td>
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<td>Dr. Evelyn Tiffany-Castiglioni</td>
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<td>Dr. Victor Ugaz</td>
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<td>Engineering</td>
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<td>Dr. Jane Welsh</td>
<td>Veterinary Integrative Biosciences</td>
<td>Veterinary Medicine and Biomedical Sciences</td>
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<tr>
<td>Committee Chairs</td>
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<td>Dr. Robert Alaniz</td>
<td>Microbial Pathogenesis and Immunology</td>
<td>TAMU Health Science Center</td>
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<tr>
<td>Dr. Leonard Bierman</td>
<td>Management</td>
<td>Mays Business School</td>
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<tr>
<td>Dr. Wesley Bissett</td>
<td>Veterinary Emergency Team</td>
<td>Veterinary Medicine and Biomedical Sciences</td>
</tr>
<tr>
<td>Mr. Brett Cornwell</td>
<td>Office of Technology Commercialization</td>
<td>Texas A&amp;M University</td>
</tr>
<tr>
<td>Dr. Dana Gaddy</td>
<td>Veterinary Integrative Biosciences</td>
<td>Veterinary Medicine and Biomedical Sciences</td>
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<tr>
<td>Dr. Ivan Ivanov</td>
<td>Veterinary Physiology &amp; Pharmacology</td>
<td>Veterinary Medicine and Biomedical Sciences</td>
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<tr>
<td>Dr. Spencer Johnston</td>
<td>Entomology</td>
<td>Agriculture and Life Sciences</td>
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<tr>
<td>Dr. Christopher Kerth</td>
<td>Animal Science</td>
<td>Agriculture and Life Sciences</td>
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<td>Dr. Maria King</td>
<td>Mechanical Engineering</td>
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<tr>
<td>Dr. Richard Lester</td>
<td>Center for New Ventures and Entrepreneur</td>
<td>Mays Business School</td>
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<td>Dr. Mariappan Muthuchamy</td>
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<td>TAMU Health Science Center</td>
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<td>Dr. Waithaka Mwangi</td>
<td>Veterinary Physiology &amp; Pharmacology</td>
<td>Veterinary Medicine and Biomedical Sciences</td>
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<tr>
<td>Dr. Bhimanagouda Patil</td>
<td>Vegetable and Fruit Improvement Center</td>
<td>Agriculture and Life Sciences</td>
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<td>Dr. Deborah Siegel</td>
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<td>Science</td>
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<td>Dr. Loren Skow</td>
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<td>Dr. Colin Young</td>
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</tbody>
</table>

**Table 8.** Recent Faculty Committee Members (Fall 14, Fall 15 and Fall 16 Cohorts).
4.10. Reflection on Need and Importance of PPiB Technical Core Coursework

A key challenge identified in the 2010 academic program review involved re-affirmation of the importance of the technically-focused BIOT courses (BIOT 601 and 635), and the need for these to be taught through the program as opposed to directing students to existing courses in other departments. A fundamental motivation for incorporating these courses into the PPiB curriculum is to equip students with the hands-on knowledge of key processes performed in nearly every biotechnology laboratory so that they can engage in meaningful interactions with researchers in a corporate setting. The PPiB is aimed at delivering graduates trained to hit the ground running as they enter management positions in the biotechnology industry. But to be successful in a technologically driven field like this, it is critical for students to go beyond simply “knowing the lingo” but also fully appreciate the underlying science and its hands-on application.

Feedback from the program faculty about this issue centered on the unique experience provided by BIOT 601 and 635, especially at the graduate level. The faculty expressed that this course goes beyond simply presenting standard lab procedures by challenging students to actually design experiments and controls. This advanced skill-set benefits the students even before they leave the program by preparing them to succeed in subsequent courses and giving them a distinct advantage in competing for on-campus positions involving biotechnology related research. Naturally, these benefits continue after graduation, where our students are increasingly sought after because they possess this kind of expertise. These sentiments are further echoed in the responses to our student satisfaction survey, where BIOT 601 was consistently identified as one of the program’s most impactful courses. Finally, the Industry Advisory Council also strongly affirmed support for this course, stating that it provides a unique breadth and depth to the hands-on experience. An illustrative example of someone working in the area of technical sales was posed, where the position involves marketing products directly to research scientists. The ability of the PPiB to train all BIOT students with a common set of laboratory skills provides the program the opportunity to benchmark the training and skills of our graduates. Without BIOT 601 and 635, it would be virtually impossible for graduates to communicate at a productive level, making them far less attractive to employers. Taken together, these strong expressions of support from three different channels (faculty, students, and industry) make a strong case for why this kind of course is needed in our curriculum.

A professional program such as ours inherently centers on preparing students to become leaders in industry. Given this focus, how does a core laboratory course fit within this vision? A key issue expressed by both the program faculty and our Industry Advisory Council is the need to produce a consistent product. In other words, our past successes have led employers to expect a certain level of core competency in the scientific aspects of the biotechnology field. This unique skill set is central to our Program identity—the “brand name” we have worked hard to build for our students. BIOT 601 and 635 therefore serve as a signature foundational building block of our program because it gives employers confidence to know exactly what skill set they are getting when they hire PPiB graduates.

Another question posed is whether there are other courses offered at Texas A&M that can provide a comparable educational experience to BIOT 601 and 635. We understand and appreciate the spirit of this question, and it led us as a faculty to think more deeply about this
aspect of our curriculum. First, an overwhelming sentiment was expressed that these courses are unique, particularly at the graduate level. This impression is supported by the fact that we routinely receive requests from students in other departments seeking to enroll in them. This would not be the case if other such courses were readily available. Secondly, laboratory courses like BIOT 601 are somewhat unique in that they demand resources above and beyond those found in a typical classroom. Thus, they are subject to limits on section size and the frequency at which they are taught—limits that are beyond the control of our program. Given that the foundational skill set provided by this course is intended to be a signature of our program, it makes sense to guarantee that the course will be regularly offered and taught in a consistent way. The ability to teach a core course within our program also enables flexibility to continually refine the content so that we can ensure it is responsive to the needs of students and industry.

A further sentiment expressed by our Industry Advisory Board focused on the teamwork aspect of BIOT-centered courses, whereby the students are able to progress as a unified cohort. This helps provide a nurturing environment to the incoming students that would not be possible if they were forced to take different courses scattered across multiple sections and/or different departments. This team building is especially important to establish as the students prepare to take on positions in industry.

Finally, the question was raised regarding why students can’t be pre-screened, so that only students possessing these lab skills are admitted to the program. While we agree in spirit that more rigorous pre-screening can be useful, our faculty expressed concern that this model may be challenging to implement for assessment of hands-on competencies and research design. How would one pre-test students for these kinds of skills and define acceptable levels of mastery? More broadly, we strongly feel that a strength of our program is accessibility to students coming from a broad range of backgrounds, unified by a common interest in biotechnology. Building a foundation with a well-defined skill set ensures that everyone is on the same level, regardless of their past background. In other words, we prefer to embrace the idea of being as inclusive as possible in order to make this kind of training accessible to the broadest possible population of potential students, consistent with our broader institutional mission.

4.11. Reflection on the BIOT 685 Directed Studies Curriculum Component

A final point regarding the curriculum raised during the 2010 program review involved taking steps to ensure that PPiB students engaged in the Directed Studies component of their practical training (BIOT 685) receiving an experience appropriate to a Professional Master’s student, as opposed to one closer to that of a research-focused MS student. In other words, the program should ensure that the student training is not focused on goals more closely aligned with academic research, as opposed to those of a professional degree. The matter was discussed at length by the program faculty, where it was suggested that the overall goals of a professional master’s program and their differences with MS oriented research be more clearly communicated to mentors in order to increase awareness and facilitate opportunities to include relevant elements into the experience. To accomplish this, we developed a project establishment form that is completed and signed by both the students and mentors before students are allowed to enroll in BIOT 685 (see course syllabus in Appendix A). This form ensures that expectations and the basis for grade assignments are clearly laid out from the outset. We also note the broad nature of BIOT
685 experiences available, ranging from bench work in faculty research labs to technology evaluation and market analysis studies in the institutional commercialization office. We also updated the BIOT 685 course description to more closely communicate with the broader focus of a professional program.

4.12. Reflection on BIOT 602 Biotechnology Principles and Techniques II
As part of the effort to introduce more flexibility for student-selected elective courses into the curriculum, in response to the 2010 program review, the laboratory-based Biotechnology Principles and Techniques course sequence was reduced to a single course (BIOT 601). In parallel with this transition, incoming PPiB students were admitted as a common cohort in the fall semester, during which students take all of the BIOT core courses. During the spring semesters of 2012 and 2013, an effort was made by the PPiB faculty to offer BIOT 602 as an elective course. A modular format was adopted involving 5 – 6 faculty members, each teaching a 2 – 3 week block. Topics included microfabrication and microfluidics, animal use in research, plant genomics, plant experimentation, and antibody techniques. The course was effective in enabling students to obtain deeper hands-on experience in each of the topic areas. However, challenges in offering the course included low enrollment (4 – 5 students) due to the difficulty in scheduling the substantial block of laboratory time required (1 – 5 PM, 2 days per week), and in availability of instructors to teach the modules on top of their existing departmental commitments.
5. **Professional Development and Enrichment**

A professional skills component involving an industry advisory board is a key cornerstone of the Professional Science Master’s degree. The PPiB has continued to leverage its advisory board to provide numerous opportunities for direct interactions beyond the classroom that further contribute to their professional training. These enrichment opportunities primarily include the following.

- Annual student development conferences
- Field trips to local biotechnology companies
- Directed studies poster session and research conference
- PPiB lecture series

### 5.1. Student Development Conferences

Student development conferences are day-long on-campus events that bring first- and second-year students together with members of the PPiB Industry Advisory Board. The format and timing of these events has evolved based upon feedback from students and participants (Figure 2). Two primary formats have been employed. The first format follows a career exploration rotation schedule inspired by “speed dating” style events. Students are divided into groups of approximately 8 – 10 students who meet with panels composed of 3 – 4 industry representatives. The industry panels are divided into general areas aligned with the areas of expertise of the participating panelists (e.g., product development and R&D, regulatory affairs, technology transfer). The small group format enable students to have a closer interaction with the panel, as compared with the panel interacting with the entire group of students at once. Students in each group are asked to serve as moderators and collect questions to guide the discussions during the panel meetings. Approximately 45 minutes is allocated for each student group to meet with an industry panel, after which the groups rotate to the next panel. The cycle continues until all student groups have met with all panelists. These rotations typically occur in the morning, followed by a networking lunch. In the afternoon, senior students give short presentations about their internship experiences to the attendees, providing an opportunity for the students to showcase their work to the industry panel and receive feedback. These presentations also give incoming students an overview of the range of internship experiences that are possible as they begin their own search for positions the following summer. In recent years, we have added an award component whereby the presentations are scored by the industry participants and awards for outstanding presentations are given.

Although we have tried several variations in the format of the student development conference (see agendas in Appendix B), the basic format described above has proven to be the most successful. One variation involves having the industry representatives give longer and more detailed presentations about their work, career path, and opportunities at their companies. This format was adopted in one of the conferences in response to student feedback, however the downside is that there is less opportunity for direct interactions between the students and the industry participants. Another format adopted was hosting the conference in Houston in an effort
Figure 2. (a) Student development conference formats held since 2011. (b) 2015 Student Development Conference and Advisory Council Meeting, Coca-Cola North America, Houston, TX. (c) 2016 Student Development Conference and Advisory Council Meeting, Memorial Student Center, Texas A&M University. (d) 2017 Student Development and Advisory Council Meeting, Memorial Student Center, Texas A&M University.
to make the event more accessible to participants from that area and to include a field trip into the agenda. However, it was not clear that the students received significant added professional benefits, and the logistics and planning required significantly more effort. We are always open to trying new ways to engage students with the industry participants (e.g., including an “Etiquette Dinner” in this year’s agenda), but we generally find that allocating as much time as possible for students to interact directly with the industry participants is most effective.

5.2. Field Trips

Several field trips are scheduled each year for students to tour local companies (generally in the Bryan/College Station or Houston areas) engaged in biotechnology related research. These visits give students an opportunity to gain a firsthand view of practices associated with the biotechnology profession, and connect fundamental concepts learned in the classroom with real-world applications. Some examples of field trips include visits to Celltex Therapeutics, Houston, TX; Lonza Inc., Houston, TX; iBio CMO, LLC, Bryan, TX; and FUJIFILM Diosynth Biotechnologies Texas, LLC, College Station, TX.

Figure 3. Selected field trips to biotechnology companies. (a) Fall 2014 iBio CMO, LLC Bryan, TX. (b) Fall 2015 Celltex Therapeutics, Houston, TX. (c) Fall 2016 iBio CMO, LLC, Bryan, TX.
5.3. Directed Studies Poster Session/PPiB Annual Research Conference

A relatively new initiative we have adopted is a poster session held at the end of the Spring semester that gives first-year students an opportunity to showcase their accomplishments during the BIOT 685 Directed Studies component of the curriculum. This event also contributes to the communication skills competency, as each student is asked to give a brief oral summary of their poster to the entire group. Industry representatives are also engaged to judge the student posters and recommend awards for the most outstanding presentations. This event is now in its third year, and we are exploring a similar event in the Fall semester for students to present their internship activities.

• 1st Annual BIOT Research Conference, May 6, 2015, Jack E Brown Engineering Building, TAMU, College Station, Texas

List of titles/research topics/poster presentations

1. Chapman, M. Market Research: Phage based Pesticides and Stroke Therapy Perlecan Domain V. Supervisor Dr. C. Johnson
2. Cobb, C. Using Gas Chromatography/Mass Spectrometry/Olfactometry to Determine Aroma and Flavor Profiles of Food Products. Supervisor Dr. C. Kerth
3. Conrad, J. Technology Commercialization: SolarAgs Mobile Aps, supervisor Mr. Brett Cornwall
4. Reddy, P. Aberrant expression disrupts coordinated gene activation and repression in autistic brains. Supervisor Dr. James Cai
5. Rapp, J. Determining the structure and function of previously uncharacterized proteins in Mycobacterium tuberculosis (Mtb). Supervisor Dr. J. Sacchettini
6. Wood, E. Effects of gestational exposure to chromium VI on the fetal ovary development and reproductive function in the adult F1 rats, Supervisor Dr. Banu
8. Rios, D. Risk Assessment of a BSL3 Laboratory Containment Breach. Supervisor Dr. Bissett
9. F. Pasaya. PCR Master Mix Economization. Supervisor Dr. Stelly
10. Ugamraj, H. Characterization of Metabolically Active yet Non-Culturable (MAyNC) Cells. Supervisor Dr. Pillai
11. Kumar, B. Surface Engineering of Lentiviral Vectors Using Split Inteins. Supervisor Dr. Z. Chen
12. Karki, K. NR4A1 as a Potential Drug Target for Acute Myeloid Leukemia. Supervisor Dr. S. Safe
13. Mueller, M. Nanoparticles and Bacterial Contamination in Nuclear Reactor Cooling Systems. Supervisors Dr. King and Dr. Hassan
2nd Annual BIOT Research Conference, May 04, 2016, Jack E Brown Engineering Building, TAMU, College Station, Texas

List of titles/research topics/poster presentations

1. Patil, K. Purification of African Swine Fever Virus antigen for Vaccine Development. Supervisor Dr. W. Mwangi
2. Sidhu, K. Control of Pierce’s Disease by Phage; Market Analysis for the Grape and Wine Industry. Supervisor Mr. Brett Cornwell
3. Bufford, J. AgConnect: Monetizing Free-to-Use Software. Supervisors Mr. B. Cornwell and Dr. T. Miranda
5. Wellman, K. Evolution of Thermo-Tolerance in Saccharomyces cerevisiae and Resulting Cross-Tolerances. Supervisor Dr. K. Kao
6. Putta, M. & Patel, R. Production and downstream processing of r-collagen from E. Coli. Supervisor Dr. Nikolov
7. Bansal, I. Comparison of virulent and avirulent substrains of Theiler’s DA virus in the development of epilepsy in C57BL/6 mice. Supervisor Dr. Welsh
10. Rohra, R. In Silico verification of miRNAs in the chicken genome. Supervisor Dr. G. Athrey.

11. Khasnavis, N. IGF-1 Promotes Mammary Stem Cell Self-renewal and Proliferation. Supervisor Dr. R. Fuchs-Young

- 3rd Annual BIOT Research Conference, scheduled for May 5, 2017, Jack E Brown Engineering Building, TAMU College Station, Texas

5.4. PPiB Lecture Series

In addition to the industry interaction opportunities available in the student development conference, field trips, and speakers in BIOT 681 Biotechnology Seminar, seminars involving external speakers from the biotechnology industry are scheduled. These events are typically scheduled during a lunch or late afternoon time frame so that there can be sufficient time for extended informal discussions and interactions between the students and the speaker.

- In October 2016, PPiB first guest speaker was Mr. Justin Liao from Thermo Fisher Scientific, Carlsbad, California. Mr. Justin Liao, is an application scientist working with Applied Biosystems; a part of Thermo Fisher Scientific. His major responsibility is to support and train end-users for Real-Time PCR detection and magnetic bead-based DNA and RNA extraction which can widely apply to molecular diagnostics for clinical, medical, pharmaceutical, environmental, foods safety and veterinary testing, etc. Mr. Justin Liao talked about theory of these technologies and its applications, especially in Animal Health diagnostic areas.
For March 2017, PPiB has scheduled a meeting with Mr. Tony Faucette, Senior Director, Global Sterilization Services at Becton Dickinson, Franklin Lakes, New Jersey.

5.5. Student Job Placement

A key strength of the program is student placement in permanent academic, industry or government positions. PPiB strives to promote and expand opportunities for its graduate students to engage in professional development activities that will prepare them for their future careers. These activities help graduate students develop professional skills to complement the discipline-specific knowledge they gain during the program, and begin to self-identify as professionals in the biotechnology industry. All PPiB professional development activities, internships, and research opportunities prepare PPiB graduates for a broad range of employment opportunities and help bridge the gap between graduate education and the workforce. An overview of the most recent job placement data (2014 – 2016 graduates) is provided in Table 9.

Table 9. PPiB Student Employment (Positions and Companies)

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<th>Title/Position</th>
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<td>Validation Engineer</td>
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<td>Lab Technician</td>
<td>InGeneron, Houston, TX</td>
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<td>Associate Manager-Scientific Affairs</td>
<td>Luminex Corporation, Austin, TX</td>
</tr>
<tr>
<td>Position</td>
<td>Company/Institution</td>
</tr>
<tr>
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</tr>
<tr>
<td>Associate Sales Consultant</td>
<td>Kapa Biosystems, Houston, TX</td>
</tr>
<tr>
<td>Product Specialist</td>
<td>LI COR Biosciences, Lincoln, NE</td>
</tr>
<tr>
<td>Project Manager</td>
<td>Ajinomoto Althea, Inc., San Diego, CA</td>
</tr>
<tr>
<td>Associate - Life Sciences Projects</td>
<td>Cognizant, New York, NY</td>
</tr>
<tr>
<td>Business Analyst</td>
<td>Xellia Pharmaceuticals, Cleveland, OH</td>
</tr>
<tr>
<td>Microbiologist</td>
<td>Ecolyte, College Station, TX</td>
</tr>
<tr>
<td>Quality Control Analyst II</td>
<td>FUJIFILM Diosynth Biotechnologies, LLC, College Station, TX</td>
</tr>
<tr>
<td>Analyst</td>
<td>Sedulo Group, Louisville, KY</td>
</tr>
<tr>
<td>Commercialization Associate</td>
<td>New Orleans BioInnovation Center, New Orleans, LA</td>
</tr>
<tr>
<td>Program Analyst</td>
<td>TAMU Health Science Center/Public Health Preparedness and Response Department, College Station, TX</td>
</tr>
<tr>
<td>Research Technician</td>
<td>Department of Veterinary Pathobiology, TAMU, College Station, TX</td>
</tr>
<tr>
<td>Research Associate II</td>
<td>Singulex, San Francisco, CA</td>
</tr>
<tr>
<td>Downstream Manufacturing Tech II</td>
<td>FUJIFILM Diosynth Biotechnologies, LLC, College Station, TX</td>
</tr>
<tr>
<td>Lab Researcher III</td>
<td>National Jewish Health, Denver, CO</td>
</tr>
<tr>
<td>Research Assistant</td>
<td>TAMU Health Science Center, College Station, TX</td>
</tr>
<tr>
<td>Associate Scientist I, Vaccine Development</td>
<td>Paragon Bioservices, Inc., Baltimore, MD</td>
</tr>
<tr>
<td>Program Coordinator</td>
<td>National Center for Therapeutics Manufacturing, College Station, TX</td>
</tr>
<tr>
<td>Lab Manager, Cardiovascular Medicine Laboratory Researcher II</td>
<td>Vanderbilt University Medical Center, Nashville, TN</td>
</tr>
<tr>
<td>PhD Student</td>
<td>College of Veterinary Medicine and Biomedical Sciences, TAMU, College Station, TX</td>
</tr>
<tr>
<td>Associate Scientist (QC)</td>
<td>DPT Laboratories, San Antonio, TX</td>
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<tr>
<td>Clinical Research Associate</td>
<td>DAVA Oncology, Dallas, TX</td>
</tr>
<tr>
<td>Research Assistant</td>
<td>Department of Medicine, Baylor College of Medicine, Houston, TX</td>
</tr>
<tr>
<td>Associate Scientist</td>
<td>MD Anderson Cancer Center, Houston, TX</td>
</tr>
<tr>
<td>Research Assistant</td>
<td>Microbial and Pathogenesis and Immunology Lab, TAMU, College Station, TX</td>
</tr>
<tr>
<td>Doctor of Pharmacy Student</td>
<td>University of Houston, Houston, TX</td>
</tr>
<tr>
<td>Validation Analyst</td>
<td>Validation Associates, LLC, Herndon, VA</td>
</tr>
<tr>
<td>PhD Student</td>
<td>Agricultural Economics, College of Agriculture and Life Sciences, TAMU, College Station, TX</td>
</tr>
<tr>
<td>Clinical Monitoring Associate I</td>
<td>PAREXEL, Raleigh-Durham, NC</td>
</tr>
<tr>
<td>Research Associate</td>
<td>Microbial Pathogenesis &amp; Immunology, TAMU Health Science Center, TAMU, College Station, TX</td>
</tr>
<tr>
<td>Biological Sciences Aide</td>
<td>United States Department of Agriculture, USDA,</td>
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<tr>
<td>Position</td>
<td>Company/Institution</td>
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<tr>
<td>----------------------------------------</td>
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<tr>
<td>PhD Student</td>
<td>TAMU A&amp;M Health Science Center, Institute for Neuroscience</td>
</tr>
<tr>
<td>Research Assistant</td>
<td>Academy Biomedical, Houston, TX</td>
</tr>
<tr>
<td>Project Coordinator</td>
<td>Office of Technology Translation, Health Science Center, TAMU, College Station, TX</td>
</tr>
<tr>
<td>Project Manager</td>
<td>PATH, Washington DC</td>
</tr>
<tr>
<td>Agricultural Research Technician I</td>
<td>TAMU Agrilife Research and Extension Center, Amarillo, TX</td>
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<tr>
<td>Toxicology Technician</td>
<td>ESA Labs, The Woodlands, Texas</td>
</tr>
<tr>
<td>Proposal Administrator II</td>
<td>Texas A&amp;M University System, College Station, TX</td>
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<tr>
<td>Research and Development Associate</td>
<td>K-Global Fibers, Bryan, TX</td>
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<tr>
<td>Institute Associate Scientist</td>
<td>MD Anderson Cancer Center, Houston, TX</td>
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<tr>
<td>Analyst, Life Sciences</td>
<td>PharmaBioSource, Inc., Philadelphia, PA</td>
</tr>
<tr>
<td>Programmer/Analyst</td>
<td>Baylor College of Medicine, Houston, TX</td>
</tr>
<tr>
<td>Senior Market Analyst</td>
<td>QuintilesIMS (Boston Biomedical Consultants), Boston, MA</td>
</tr>
<tr>
<td>PhD Student</td>
<td>College of Vet Med and Biomedical Sciences, TAMU, College Station, TX</td>
</tr>
<tr>
<td>Cell Manufacturing Associate II</td>
<td>Celltex Therapeutics Corporation, Houston, TX</td>
</tr>
<tr>
<td>Licensing Specialist</td>
<td>Rush University Medical Center, Chicago, IL</td>
</tr>
<tr>
<td>Research Assistant I</td>
<td>TeneoBio, Menlo Park, CA</td>
</tr>
<tr>
<td>Analyst</td>
<td>Zitter Health Insights, Livingston, NJ</td>
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<tr>
<td>Software Development Intern</td>
<td>Citrix, Miami, FL</td>
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<tr>
<td>Science Teacher</td>
<td>BISD, Bryan, TX</td>
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<td>Research Associate</td>
<td>Celltex Therapeutics Corporation, Houston, TX</td>
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<td>Manufacturing Manager</td>
<td>Celltex Therapeutics Corporation, Houston, TX</td>
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<tr>
<td>Senior Research Associate</td>
<td>Greenlight Biosciences Inc., Boston, MA</td>
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<tr>
<td>Research Assistant/Lab Manager</td>
<td>Baylor College of Medicine, Houston, TX</td>
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<tr>
<td>Research Assistant II</td>
<td>Vanderbilt University Medical Center, Nashville, TN</td>
</tr>
<tr>
<td>Research Associate</td>
<td>Integrated Metabolomics Analysis Core, College Station, TX</td>
</tr>
<tr>
<td>Project Manager</td>
<td>USA SHADE &amp; Fabric Structures, Dallas, TX</td>
</tr>
<tr>
<td>Technology Commercialization Assistant</td>
<td>TAMU, College Station, TX</td>
</tr>
<tr>
<td>Project Manager</td>
<td>RevaTis, College Station, TX</td>
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<tr>
<td>Research Analyst</td>
<td>DAVA Oncology, Dallas, TX</td>
</tr>
<tr>
<td>Service Engineer</td>
<td>SeqGen, Torrance, CA</td>
</tr>
</tbody>
</table>
6. Management and Sustained Support

The 2010 program review team pointed out challenges associated with maintaining consistent day to day operations of the program. These issues span domains involving staffing/personnel, and more broadly securing consistent and sustained financial resources. Numerous actions have been taken to address this feedback, collectively strengthening the program and positioning it for long-term sustainability and growth.

Approximately one year prior to the 2010 program review, the PPiB had employed its first dedicated Program Coordinator. This position consisted of a part-time (80%, 4 days per week) appointment. The review team viewed this as a very positive change to the program, but cautioned that long-term year-to-year funding was needed to solidify the gains made by this position. Other recommendations included providing dedicated office space so that the Program Coordinator can communicate privately with recruits, students, and potential employers; and allowing time for the Coordinator to pursue big picture projects such as creating recruitment pipelines for domestic students and developing contacts for internships.

6.1. Financial Support

At the time of the 2010 program review, the PPiB received a FY 2010 budget allocation of $45,778 ($40,778 from the College of Agriculture and Life Sciences and $5,000 from the College of Science), plus $9,500 in student support funds (Regents Fellowships) and $11,297 in instructional enhancement fees. This funding primarily supported a part-time program coordinator and instructor support for BIOT 601, 635, and 645. At the start of FY 2011, the program was informed that the College of Agriculture and Life Sciences would no longer be able to provide direct financial support to the PPiB. However, two actions during the same time mitigated any negative impacts from this change, and established a consistent model for sustained funding.

6.1.1. Program Fee

The PPiB put forth a request for a program fee in the amount of $530 per student per semester (fall and spring, summer not included), which became effective during FY 2012. Revenue from this fee provides a new channel of sustained support for the Program Coordinator position. The Coordinator’s role is especially vital in the PPiB, where activities extend far beyond administrative and business functions associated with student advising. The Coordinator is responsible for a broad range of student support activities ranging from facilitation of corporate internships, recruitment of new industrial partners, recruitment of students from in-state institutions, and ensuring visibility of the program through involvement at relevant conferences—all of which greatly benefit students enrolled in the program. The program fee greatly enhances the PPiB’s ability to attract and retain top personnel in this critical position, particularly in the face of unexpected budgetary uncertainties.

The proposed program fee was presented for student and public input in accordance with University and System regulations. In addition to the required referenda, a town hall meeting was called to gather feedback from all PPiB students who were currently enrolled in the program. As part of the vetting and approval process, an analysis of tuition rates associated with
professionally-oriented biotechnology programs at peer institutions was performed (Table 10). This analysis indicates that the PPiB presents an outstanding value to students in terms of both in-state and out-of-state tuition.

Table 10. Fall 2016 semester tuition at TAMU and peer institutions with biotechnology-oriented professional science master’s programs.

<table>
<thead>
<tr>
<th>University</th>
<th>PSM program</th>
<th>Resident tuition</th>
<th>Non-resident tuition</th>
</tr>
</thead>
<tbody>
<tr>
<td>Texas A&amp;M</td>
<td>Biotechnology</td>
<td>$5,018</td>
<td>$10,102</td>
</tr>
<tr>
<td>University of Georgia</td>
<td>Biomanufacturing &amp; Bioprocessing</td>
<td>$7,306</td>
<td>$17,045</td>
</tr>
<tr>
<td>Illinois-Champaign-Urbana</td>
<td>Bioenergy</td>
<td>$7,850</td>
<td>$13,247</td>
</tr>
<tr>
<td>Georgia Tech</td>
<td>Bioinformatics</td>
<td>$7,953</td>
<td>$17,711</td>
</tr>
<tr>
<td>Penn State</td>
<td>Biotechnology</td>
<td>$9,982</td>
<td>$17,133</td>
</tr>
</tbody>
</table>

Tuition data are for 12 credit hours, rounded to closest dollar, Fall 2016. TAMU data includes the $530 PPiB program fee.

6.1.2. Institutional Allocation Formula for Interdisciplinary Programs

Beginning in FY 2011, a new institutional funding model was adopted whereby interdisciplinary programs received funding directly from the Office of Graduate and Professional Studies, as opposed to the previous system whereby funds were dispersed to participating colleges. This funding model adopted a formula based on enrollment, graduation rate, and faculty engagement. Allocations are determined via the formula below.

**Total IDP allocation** = $15,000 base allocation [“chair support”]

+ $300*(# students) + $250*(# unique faculty advisory committee chairs/co-chairs) [“staff support”]

+ $12*(# weighted student credit hours) [“graduate enhancement”]

+ $240*(# master’s students enrolled) + $400*(# master’s students graduated) [“strategic support”]

The chair support category is intended to represent the base level of effort required to manage an interdisciplinary degree program. The staff support category represents the level of administrative effort scaled by enrollment and number of unique faculty members actively engaged in student advising. The graduate enhancement category reflects overall enrollment quantified by weighted credit hours. Finally, the strategic support category reflects the progress toward producing graduates from the program. Additional strategic supplements may also be allocated to IDPs depending on available funds, which are typically used for targeted recruitment and student support.
6.2. Program Coordinator
The sustained funding provided through the above-mentioned initiatives enabled the PPiB to hire a full-time program coordinator, Dr. Larissa Pchenitchnaia, an addition that has positively impacted students and stakeholders. Since joining the program in November 2013, Dr. Pchenitchnaia has built on the foundation laid by her predecessor, Ms. Marian Cothran, to engage in a diverse array of tasks normally delegated separately to accounting, advising, and program management staff.

Many departments employ multiple full-time personnel to perform comparable ranges of tasks that the program coordinator is tasked accomplish as an individual. The coordinator must also interface with a wide range of program stakeholders including students, faculty, administration, alumni, and industrial advisory council partners. Examples of recent accomplishments include the following.

- Ensuring placement of all students in internship positions. These efforts have helped to shape the successful biotech careers of over 100 students since the previous program review.

- Organizing student professional development conferences in a variety of settings and formats. Notably, the November 2014 meeting took place at an industry site in Houston with representation from global executives of several leading companies in the field, the first time our program has had an offsite conference of this caliber.

- Ensuring that all first-year students have degree plans filed upon completion of their first semester of coursework.

- Interfacing with the admissions office and faculty Admissions Committee to facilitate review of new student applications and communicating with prospective student applicants from admission to arrival at our new student orientation workshop.

- Taking initiative to completely redesign the program website, an effort that has proven instrumental in bolstering recruitment of new students to the program.

- Assisting the Biotechnology Society in planning field trips and extracurricular professional development events.

- Facilitating student placement in internship positions and locating new opportunities for student employment.

- Overseeing accounting and purchasing functions for the program, placing us in a secure financial position.

These roles and responsibilities have evolved and become greatly expanded since the 2010 program review. Consequently, the PPiB has initiated an effort to update the Coordinator position description so that it more accurately aligns with and reflects the broadened scope of activities. This analysis has led to the following updated list of roles and responsibilities.
• Area 1: Programmatic Duties

1. Provide and coordinate advanced professional level administrative support to BIOT faculty and research staff of Biotechnology program (graduate committee assignments; plan and coordinate BIOT faculty meetings; etc.). Serve as an information resource on administrative operational methods and processes; Interact with the BIOT program Executive Committee; Interact with faculty and serve as a resource person to provide an exchange of information and to enhance the advisement of students.

2. Attend meetings or committees on behalf of the Biotechnology program.

3. Plan, develop, design, evaluate, and manage BIOT program to facilitate program mission, educational objectives and outcomes; assist BIOT Chair in establishing program standards and objectives; plans work and assists BIOT Chair in determining program priorities; identify program improvements and recommend/implement solutions; analyze program statistics.

4. Coordinate event planning of BIOT research conferences, seminars, lectures, meetings and/or workshops for BIOT faculty and students; coordinate guest speakers and agendas for BIOT seminars etc.).

5. Prepares and monitors BIOT budgets for programs and events; fiscal reports; student scholarships; and business functions; develops project timelines.

Area 2: Interfacing with Stakeholders

1. Identify, recruit, and establish an internship program for the BIOT students with local, regional, state, national, and international biotechnology companies.

2. Identify and recruit biotechnology companies to be involved with the biotechnology program in student recruitment and placement; communicate with prospective employers of BIOT students regarding internships and full time job opportunities; Identify and recruit biotechnology companies to be involved in the Biotechnology program development such as curriculum enhancement, field trips, research conferences, student scholarships, etc.; organize plant field trips and supervise students during these field trips.

3. Work with the Chair of the Biotechnology Program in developing and strengthening the Biotechnology Program Advisory Council. Plan and coordinate Advisory Council meetings.

• Area 3: Interfacing with and Advising Students

1. Assist the Chair of the Biotechnology Program in developing an aggressive recruitment and retention plan. Recruit and advise graduate students concerning their educational or career goals, academic requirements, and related personal concerns.

2. Respond to inquiries regarding Biotechnology program offerings; serve as a primary information resource on Biotechnology program support methods and processes.

3. Handle admissions process for BIOT students: applicant pool; acceptance letters; coordinate admission process with TAMU Office of Admissions, International Student Services, OGAPS, etc. coordinate the maintenance of program records in TAMUDocs;
coordinate work flow and promote communication between functional areas and outside units; provide information on and refers students to University resources that can assist them in meeting their needs or solving their problems.

4. Review and sign student forms; Approve degree plans, course substitutions, add/drops, Q drops, withdrawals, and change of curriculums. Verify completion of degree requirements.

5. Organize, coordinate and update new Biotechnology student orientation materials and training sessions.

6. Advise the BIOT students in the program and oversee students’ progress towards graduation.

7. Serve as the Advisor of the student-run Biotechnology Society.

8. Interact with the participating academic units in making sure BIOT students are able to enroll in the required courses.

9. Provide academic advice to graduate students concerns, housing, financial aid, student services, academic schedules, course schedules, course planning and selections, major options, and career and educational goals.

- Area 4: Marketing and Communications
  1. Maintain materials for availability on the World Wide Web and coordinate such activities.
  2. Coordinate the maintenance of office reference and resource materials.
  3. Develop and supervise systems for maintaining records of student contacts.
  4. Coordinate and design program communications and marketing materials.
  5. Assist with other communication related items as assigned.

6.3. PPiB Faculty

The Biotechnology Faculty has interdisciplinary expertise with its 72 members holding primary appointments in College of Agriculture & Life Sciences, College of Science, Dwight Look College of Engineering, Mays School of Business, the College of Veterinary Medicine & Biomedical Sciences, and the TAMU Health Science Center. The Biotechnology faculty has a good mix of senior experienced researchers, and full-time faculty members who represent different academic departments. A list of faculty is provided in Table 11.

The faculty generally engage in the program by virtue of one or more of the following roles:

- Serving as Chair of PPiB graduate student advisory committees
- Serving on PPiB graduate student advisory committees and PPiB program committees
- Teaching core PPiB courses (BIOT 601/BIOT 635/BIOT 645/BIOT 681)
- Supervising PPiB students in BIOT 685 Directed Studies
- Supervising PPiB students in BIOT 684 Directed Professional Internship
- Involvement in the Biotechnology Seminar series, recommending seminar speakers, or recommending Advisory Council members
- Providing PPiB programmatic input
- Assisting with PPiB student recruitment and job/internship placement

All incoming students are encouraged by the Program Chair and Program Coordinator to review the list of BIOT faculty as soon as they are admitted to the program. When students arrive on campus, they meet and introduce themselves to program faculty members that they are interested to engage with. Additionally, PPiB faculty are invited to BIOT 681 Seminar class to meet and talk to students.

Table 11. List of PPiB Faculty with Primarily College/Unit and Departmental Affiliations

<table>
<thead>
<tr>
<th>Name</th>
<th>Department</th>
</tr>
</thead>
<tbody>
<tr>
<td>Athrey, Giridhar</td>
<td>Poultry Science</td>
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<tr>
<td>Berghman, Luc</td>
<td>Poultry Science</td>
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<tr>
<td>Chapkin, Robert S.</td>
<td>Nutrition &amp; Food Science</td>
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<tr>
<td>Coates, Craig</td>
<td>Entomology</td>
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<tr>
<td>Defigueiredo, Paul</td>
<td>Plant Pathology &amp; Microbiology</td>
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<tr>
<td>Duong, Tri</td>
<td>Poultry Science</td>
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<tr>
<td>Gentry, Terry</td>
<td>Soil &amp; Crop Sciences</td>
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<tr>
<td>Gill, Clare</td>
<td>Animal Science</td>
</tr>
<tr>
<td>Ing, Nancy</td>
<td>Animal Science</td>
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<tr>
<td>Islam-Faridi, Nurul</td>
<td>Ecosystem Science &amp; Management</td>
</tr>
<tr>
<td>Name</td>
<td>Department</td>
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<tr>
<td>Johnson, Charles</td>
<td>Genomics and Bioinformatics Service</td>
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<tr>
<td>Johnston, Spencer</td>
<td>Entomology</td>
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<td>Loopstra, Carol</td>
<td>Ecosystem Science &amp; Management</td>
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<td>Magill, Clint</td>
<td>Plant Pathology &amp; Microbiology</td>
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<tr>
<td>Miller, J. Creighton</td>
<td>Horticulture</td>
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<tr>
<td>Mullet, John</td>
<td>Biochemistry &amp; Biophysics</td>
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<tr>
<td>Ng, Desmond</td>
<td>Agricultural Economics</td>
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<tr>
<td>Park, Bill</td>
<td>Biochemistry &amp; Biophysics</td>
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<tr>
<td>Pillai, Suresh</td>
<td>Poultry Science</td>
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<tr>
<td>Rathore, Keerti</td>
<td>Soil &amp; Crop Sciences</td>
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<tr>
<td>Sacchettini, James</td>
<td>Biochemistry &amp; Biophysics</td>
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<tr>
<td>Stelly, David</td>
<td>Soil &amp; Crop Sciences</td>
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<tr>
<td>Wild, Jim</td>
<td>Biochemistry &amp; Biophysics</td>
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<tr>
<td>Young, Ryland</td>
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<tr>
<td>Yuan, Joshua</td>
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<tr>
<td>Zhang, Hongbin</td>
<td>Soil &amp; Crop Sciences</td>
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</table>

**Dwight Look College of Engineering**

<table>
<thead>
<tr>
<th>Name</th>
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</tr>
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<tbody>
<tr>
<td>Cheng, Zhengdong</td>
<td>Chemical Engineering</td>
</tr>
<tr>
<td>Grunlan, Melissa A.</td>
<td>Biomedical Engineering</td>
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<tr>
<td>Han, Arum</td>
<td>Electrical &amp; Computer Engineering</td>
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<tr>
<td>Holtzapple, Mark</td>
<td>Chemical Engineering</td>
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<tr>
<td>Jayaraman, Arul</td>
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<tr>
<td>Kao, Katy</td>
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<tr>
<td>King, Maria</td>
<td>Mechanical Engineering</td>
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<tr>
<td>Name</td>
<td>Department</td>
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<td>-----------------------</td>
<td>-------------------------------------------</td>
</tr>
<tr>
<td>Nikolov, Zivko</td>
<td>Biological &amp; Agricultural Engineering</td>
</tr>
<tr>
<td>Lele, Pushkar</td>
<td>Chemical Engineering</td>
</tr>
<tr>
<td>Ugaz, Victor M.</td>
<td>Chemical Engineering</td>
</tr>
<tr>
<td><strong>Mays Business School</strong></td>
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<tr>
<td>Buenger, Victoria</td>
<td>Management</td>
</tr>
<tr>
<td>Lester, Richard</td>
<td>Management</td>
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<tr>
<td><strong>College of Science</strong></td>
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<tr>
<td>Aramayo, Rodolfo</td>
<td>Biology</td>
</tr>
<tr>
<td>Hilty, Christian</td>
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</tr>
<tr>
<td>Liu, Wenshe</td>
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<tr>
<td>Patterson, C. O.</td>
<td>Biology</td>
</tr>
<tr>
<td>Russell, David</td>
<td>Chemistry</td>
</tr>
<tr>
<td>Siegele, Deborah</td>
<td>Biology</td>
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<tr>
<td>Thomas, Terry</td>
<td>Biology</td>
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<tr>
<td>Wooley, Karen</td>
<td>Chemistry</td>
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<tr>
<td><strong>TAMU Health Science Center</strong></td>
<td></td>
</tr>
<tr>
<td>Alaniz, Robert</td>
<td>Microbial &amp; Molecular Pathogenesis</td>
</tr>
<tr>
<td>Fuchs-Young, Robin</td>
<td>Molecular and Cellular Medicine</td>
</tr>
<tr>
<td>Miranda, Rajesh</td>
<td>Neuroscience &amp; Experimental Therapeutics</td>
</tr>
<tr>
<td>Muthuchamy, Mariappan</td>
<td>Systems Biology &amp; Translational Medicine</td>
</tr>
<tr>
<td>Samuel, James</td>
<td>Microbial &amp; Molecular Pathogenesis</td>
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<tr>
<td>Cornwell, Brett</td>
<td>Office of Technology Commercialization</td>
</tr>
<tr>
<td><strong>College of Veterinary Medicine and Biomedical Sciences</strong></td>
<td></td>
</tr>
<tr>
<td>Banu, Sakhila</td>
<td>Veterinary Integrative Biosciences</td>
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</table>
Faculty Advising University rules and those of the PPiB govern the formation of student advisory committees and degree plans. Students in a master’s degree program must select a graduate chair, form an advisory committee, and file their degree plan by the end of the first semester. Prior to forming their committee, the PPiB Chair and Program Coordinator provide advising. A master’s degree advisory committee consists of no fewer than three members, the chair of which must be a full member of the PPiB faculty and two members who could both be PPiB faculty (or one external to the PPiB).
7. Recruitment and Admissions

7.1. Application and Admission Procedures

Since the 2010 program review, students have been admitted to the PPiB as a single cohort during the fall semester. Applicants to the Professional Program in Biotechnology (PPiB) apply online to Texas A&M University via the www.applytexas.org website. In addition to official and test scores (GRE (general test) and TOEFL (if applicable)), the application includes an essay detailing the applicant’s professional goals and motivation to pursue a biotechnology career, and three letters of recommendation. All materials are submitted directly to the Application Information System website. Once all materials are complete and received by Texas A&M University, students have access to the site to monitor the status of the application.

Once the documents are entered into the electronic TAMUDocs system, the application materials are available to the PPiB for reviews. The Program Coordinator analyze the applicant credentials, organize the materials, and verify completeness before presenting the information to the faculty Admissions Committee. The Admissions Committee then reviews the applications and makes the admission recommendation to the Program Chair. The Chair and Coordinator then communicate with the applicants via email regarding the status of their application.

From 2011 through 2014, the application deadline for fall admissions has been set at March 1 for all international and US students wish to be considered for scholarships. Beginning in 2015, delays at the Office of Admissions in calculating equivalent GPA information for international students made it necessary to delay the decision timeline until April 1 in order to allow time for this information to be made available. Once the admission recommendations are made, the Admissions Committee selects a subset of the applicants for merit-based scholarships consisting of a one-time $1,000 payment. The number of scholarships available has varied from 3 to 11, depending on the availability of program funds. These scholarships provide additional value by rendering the recipient eligible for the in-state tuition rate. Since the PPiB does not offer teaching or research assistantships, or fellowships, these merit-based scholarship awards constitute the primary mechanism to provide financial aid.

PPiB Admissions Committee Membership

- Luc Bergman, College of Agriculture and Life Sciences
- Michael Criscitello, College of Veterinary Medicine and Biomedical Sciences
- Clint Magill, College of Agriculture and Life Sciences
- Rajesh Miranda, Texas A&M Health Science Center
- Victor Ugaz, College of Engineering
7.2. Student Demographics

Figure 4 shows application and enrollment trends since the 2010 program review. While the number of applications has fluctuated between 90 and 52, the number of students enrolled has remained relatively constant at approximately 20 per year. When combined with the students in their second year of study, there are approximately 30 – 35 total students enrolled in the PPiB during any given year.

Figure 4. Historical data for number of applications received, number of offers extended, number of acceptances, and number of students who matriculate to enroll in the Fall semester.

Figures 5 and 6 shows data for the average GPA and test scores of the incoming class of students who enroll each fall. The GPA data fluctuate between approximately 3.4 and 3.6, with a recent upward trend observed in the 2016 class. A similar observation can be made with regard to the test scores, with relatively constant total GRE scores in the vicinity of 310 and TOEFL scores between 100 – 105. It should be noted that the TOEFL scores fall across a relatively broad range, with international students from India generally scoring higher than those from China and Taiwan. The average score is therefore influenced to some extent by the mix of country of origin.

Figures 7 and 8 show the demographic profiles of the incoming class of students enrolling each fall. In terms of international vs. domestic classification, the majority of the enrollment has been international, with the exception of 2014. The recent trend has been toward an increasing fraction of international enrollment. In terms of gender, enrollment has fluctuated between majority female and majority male, with approximately a 60/40 split on average.
**Figure 5.** Historical GPA data for students matriculating in the fall semester of the indicated years.

**Figure 6.** Historical GRE (total, verbal, and quantitative) and TOEFL score data for students matriculating in the fall semester of the indicated years.
Figure 7. Historical profile of domestic vs. international students matriculating in the fall semester of the indicated years.

Figure 8. Historical gender profile of students matriculating in the fall semester of the indicated years.
8. Program Assessment

Since the 2010 program review, the PPiB has developed a sustainable, systematic, regular, and organized assessment, and continuous improvement process for its graduate program and curriculum to achieve its mission, objectives, and educational outcomes. The review of program outcomes occurs informally on a yearly basis as part of the yearly program assessment. The purpose of continuous quality assessment and improvement system is to ensure that the program is achieving expectations as described by the objectives and outcomes and to evaluate how effectively our program has moved toward these goals.

Assessment processes show faculty and administrators where improvements seem to be appropriate and guide the implementation of change within the program. Changes are monitored and re-evaluated to determine what improvement has been realized. Thus, the system is an ongoing evaluation of the effectiveness of the program. Tables 12 and 13 present summaries of assessment methods and assessment metrics used to assess program outcomes and objectives.

Table 12. Summary of PPiB Program Outcomes and Assessment Methods/Metrics.

<table>
<thead>
<tr>
<th>Program Outcomes</th>
<th>Assessment Methods and Assessment Metrics</th>
</tr>
</thead>
</table>
| 1. An ability to apply knowledge of advanced biological sciences and to use the scientific techniques and tools necessary for biotechnology practice | Final Exam Evaluation Rubric (100% of students will be evaluated at “2” meets expectations and above on ability related to the question)  
Co-op/Internship data/evaluations (100% of students will be evaluated at “2” meets expectations and above on ability related to the question) |
| 2. An ability to apply knowledge and skills of leadership, business and management in the biotechnology profession | Final Exam Evaluation Rubric (100% of students will be evaluated at “2” meets expectations and above on ability related to the question)  
Co-op/Internship data/evaluations (100% of students will be evaluated at “2” meets expectations and above on ability related to the question) |
| 3. An ability to analyze and interpret data                                       | Final Exam Evaluation Rubric (100% of students will be evaluated at “2” meets expectations and above on ability related to the question)  
Co-op/Internship data/evaluations (100% of students will be evaluated at “2” meets expectations and above on ability related to the question) |
| 4. An ability to function on multidisciplinary teams                             | Final Exam Evaluation Rubric (100% of students will be evaluated at “2” meets expectations and above on ability related to the question)  
Co-op/Internship data/evaluations (100% of students will be evaluated at “2” meets expectations and above on ability related to the question) |
Table 13. Summary of PPiB Program Objectives and Assessment Methods/Metrics.

<table>
<thead>
<tr>
<th>Program Objectives</th>
<th>Assessment Methods and Assessment Metrics</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Career Preparation.</td>
<td>Post-Graduation Plans Survey/Data (job placement/graduate school placement majority students 70%)</td>
</tr>
<tr>
<td></td>
<td>Alumni Survey (Alumni indicate success in their careers, 3.5/5)</td>
</tr>
<tr>
<td>2. Communication, Leadership, and Teamwork.</td>
<td>Post-Graduation Plans Survey/Data (job placement or graduate school placement majority students 70%)</td>
</tr>
<tr>
<td></td>
<td>Alumni Survey (Alumni report they are effective communicators, leaders and engage in teamwork, 3.5/5)</td>
</tr>
<tr>
<td>3. Integrity and Professional Impact.</td>
<td>Post-Graduation Plans Survey/Data (job placement or graduate school placement majority students 70%)</td>
</tr>
<tr>
<td></td>
<td>Alumni Survey (Alumni report they engage in professional activities that impact society, 3.5/5)</td>
</tr>
</tbody>
</table>
The final exam is one of the most important criterion for program outcome assessment because it assesses most of the skills covered by the program outcomes at the time of graduation. At the end of each fall and spring semester, PPiB students present their portfolios to their graduate committee. The portfolios integrate material from required BIOT courses, as well as business and elective classes. Students make an oral presentation on their achievements throughout the program and internships and answer questions from the committee members.

The examiners complete an evaluation form encompassing outcomes covering areas including presentation skills, technical skills, knowledge of advanced biological sciences, and teamwork (Table 14). These outcomes are mapped to the Program Outcomes. The results of these evaluations are compiled together to provide an overall assessment of student performance with respect to the program outcomes.

Employers of co-op and internship students also complete Employer Evaluations of Co-op and Internship Student forms and submit these to Program Coordinator (Table 15). The questions on these evaluation forms are based on the PPiB program outcomes.

Table 14. PPiB Final Exam Evaluation Form

<table>
<thead>
<tr>
<th>Professional Program in Biotechnology</th>
<th>Final Exam Evaluation Form</th>
</tr>
</thead>
<tbody>
<tr>
<td>Student Name________________________</td>
<td></td>
</tr>
<tr>
<td>Final Exam Committee Members________</td>
<td></td>
</tr>
</tbody>
</table>

Please use the following scale: “4” Outstanding, “3” Exceeds Expectations, “2” Meets Expectations, “1” Below Expectations
Please check one box for each question for new graduates according to their ability to:

<table>
<thead>
<tr>
<th>Student Skills</th>
<th>Scale</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. apply knowledge of advanced biological sciences and to use the scientific</td>
<td></td>
</tr>
<tr>
<td>techniques and tools necessary for biotechnology practice</td>
<td></td>
</tr>
<tr>
<td>2. apply knowledge and skills of leadership, business and management in the</td>
<td></td>
</tr>
<tr>
<td>biotechnology profession</td>
<td></td>
</tr>
<tr>
<td>3. analyze and interpret data</td>
<td></td>
</tr>
<tr>
<td>4. function on multidisciplinary teams</td>
<td></td>
</tr>
<tr>
<td>5. identify, formulate, and solve problems important in biotechnology practice</td>
<td></td>
</tr>
<tr>
<td>6. have an understanding of professional and ethical responsibility</td>
<td></td>
</tr>
<tr>
<td>7. communicate effectively</td>
<td></td>
</tr>
<tr>
<td>8. have an understanding of the impact of biotechnology practice in a</td>
<td></td>
</tr>
<tr>
<td>scientific, economic and societal context</td>
<td></td>
</tr>
</tbody>
</table>
Table 15. PPiB Coop/Internship Supervisor Evaluation of Student Form

Professional Program in Biotechnology
Texas A&M University
Final Site Supervisor Evaluation of Student Form

Student Name___________________________ ______________________________________________________

This is a formative evaluation because it is intended to provide information that a student can use to improve his/her work. The supervisor should evaluate and discuss the results with the student at the conclusion of the internship.

Please use the following scale: “4” Outstanding, “3” Exceeds Expectations, “2” Meets Expectations, “1” Below Expectations

PART I: Please check one box for each question for a BIOT student according to his/her ability/performance to:

<table>
<thead>
<tr>
<th>Student Skills</th>
<th>Scale</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. apply knowledge of advanced biological sciences and use the scientific techniques and tools necessary for biotechnology practice</td>
<td>4</td>
</tr>
<tr>
<td>2. apply knowledge and skills of leadership, business and management in the biotechnology profession</td>
<td>3</td>
</tr>
<tr>
<td>3. analyze and interpret data</td>
<td>2</td>
</tr>
<tr>
<td>4. function on multidisciplinary teams</td>
<td>1</td>
</tr>
<tr>
<td>5. identify, formulate, and solve problems important in biotechnology practice</td>
<td></td>
</tr>
<tr>
<td>6. have an understanding of professional and ethical responsibility</td>
<td></td>
</tr>
<tr>
<td>7. communicate effectively</td>
<td></td>
</tr>
<tr>
<td>8. have an understanding of the impact of biotechnology practice in a scientific, economic and societal context</td>
<td></td>
</tr>
</tbody>
</table>

PART II: Please comment on the following:

1. Student’s greatest strengths
2. Areas that need improvement
3. Describe any additional technical or business preparation prior to the internship that would have improved student’s work performance
4. Give any other recommendations that would improve the internship program administration or student experience
5. Please provide your contact information if you are interested in employing another Texas A&M University Biotechnology student (e.g., email address)

Signatures:
Site Supervisor: ____________________________ Date ____________
Student Intern: ____________________________ Date ____________
The primary goal of the PPiB is to produce graduates who have a strong foundation of skills and competencies developed through achievement of these program outcomes, which can then be built upon to achieve the broader program objectives. The curriculum is designed to accomplish this goal as a result of the collective experiences and knowledge obtained by completing all of the courses required for MBiOT degree. The program prepares an annual report that includes descriptions of the methods, assessment data, a report of the findings, and an action plan for sustained improvement. These data are maintained on an online database (WEAVE Online) that enables them to map to institutional assessment and reporting requirements. Annual assessment report tables for the 2015-2016 academic year are provided in Tables 16-18, with information on each outcome’s performance criteria, assessment metrics, and a summary of assessment results. A complete copy of the WEAVE Online program assessment report from the 2015 – 2016 cycle is provided in Appendix C.

**Table 16. PPiB Program Outcomes Assessment for the 2015 – 2016 Academic Year.**

<table>
<thead>
<tr>
<th>Program Outcomes</th>
<th>Academic year 2015-16 Final Exams Survey Results/Average Scores</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. an ability to apply knowledge of advanced biological sciences and to use the scientific techniques and tools necessary for biotechnology practice</td>
<td><strong>Final Exam Evaluation Rubric</strong> (100% of students will be evaluated at “2” meets expectations and above on ability related to the question)</td>
</tr>
<tr>
<td></td>
<td><strong>Average Score</strong> 3.4 <strong>EXCEEDS Expectations</strong></td>
</tr>
<tr>
<td>2. an ability to apply knowledge and skills of leadership, business and management in the biotechnology profession</td>
<td><strong>Final Exam Evaluation Rubric</strong> (100% of students will be evaluated at “2” meets expectations and above on ability related to the question)</td>
</tr>
<tr>
<td></td>
<td><strong>Average Score</strong> 3.3 <strong>EXCEEDS Expectations</strong></td>
</tr>
<tr>
<td>3. an ability to analyze and interpret data</td>
<td><strong>Final Exam Evaluation Rubric</strong> (100% of students will be evaluated at “2” meets expectations and above on ability related to the question)</td>
</tr>
<tr>
<td></td>
<td><strong>Average Score</strong> 3.3 <strong>EXCEEDS Expectations</strong></td>
</tr>
<tr>
<td>4. an ability to function on multidisciplinary teams</td>
<td><strong>Final Exam Evaluation Rubric</strong> (100% of students will be evaluated at “2” meets expectations and above on ability related to the question)</td>
</tr>
<tr>
<td></td>
<td><strong>Average Score</strong> 3.6 <strong>EXCEEDS Expectations</strong></td>
</tr>
<tr>
<td>5. an ability to identify, formulate, and solve problems important in biotechnology practice</td>
<td><strong>Final Exam Evaluation Rubric</strong> (100% of students will be evaluated at “2” meets expectations and above on ability related to the question)</td>
</tr>
<tr>
<td></td>
<td><strong>Average Score</strong> 3.5 <strong>EXCEEDS Expectations</strong></td>
</tr>
<tr>
<td>6. an understanding of professional and ethical responsibility</td>
<td><strong>Final Exam Evaluation Rubric</strong> (100% of students will be evaluated at “2” meets expectations and above on ability related to the question)</td>
</tr>
<tr>
<td></td>
<td><strong>Average Score</strong> 3.36 <strong>EXCEEDS Expectations</strong></td>
</tr>
<tr>
<td>7. an ability to communicate effectively</td>
<td><strong>Final Exam Evaluation Rubric</strong> (100% of students will be evaluated at “2” meets expectations and above on ability related to the question)</td>
</tr>
<tr>
<td></td>
<td><strong>Average Score</strong> 3.36 <strong>EXCEEDS Expectations</strong></td>
</tr>
<tr>
<td>8. an understanding of the impact of biotechnology practice in a scientific, economic and societal context</td>
<td><strong>Final Exam Evaluation Rubric</strong> (100% of students will be evaluated at “2” meets expectations and above on ability related to the question)</td>
</tr>
<tr>
<td></td>
<td><strong>Average Score</strong> 3.39 <strong>EXCEEDS Expectations</strong></td>
</tr>
</tbody>
</table>
BIOT 684 Directed Professional Internship is a required class for all PPiB students. All nineteen students completed internships/co-ops during Summer 2015, Fall 2016 and Spring 2016. Site supervisors/employers completed Final Site Supervisor Evaluations. Table 17 provides summary of the results.

**Table 17.** PPiB Internship Final Site Supervisor Evaluation Results for Summer 2015, Fall 2015 and Spring 2016.

<table>
<thead>
<tr>
<th>Program Outcomes</th>
<th>Final Site Supervisor Evaluations Survey Results/Average Scores</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. an ability to apply knowledge of advanced biological sciences and to use the scientific techniques and tools necessary for biotechnology practice</td>
<td><strong>Final Site Supervisor Evaluation Rubric</strong> (100% of students will be evaluated at “2” meets expectations and above on ability related to the question) Average Score 3.8 <strong>EXCEEDS Expectations</strong></td>
</tr>
<tr>
<td>2. an ability to apply knowledge and skills of leadership, business and management in the biotechnology profession</td>
<td><strong>Final Site Supervisor Evaluation Rubric</strong> (100% of students will be evaluated at “2” meets expectations and above on ability related to the question) Average Score 3.4 <strong>EXCEEDS Expectations</strong></td>
</tr>
<tr>
<td>3. an ability to analyze and interpret data</td>
<td><strong>Final Site Supervisor Evaluation Rubric</strong> (100% of students will be evaluated at “2” meets expectations and above on ability related to the question) Average Score 3.6 <strong>EXCEEDS Expectations</strong></td>
</tr>
<tr>
<td>4. an ability to function on multidisciplinary teams</td>
<td><strong>Final Site Supervisor Evaluation Rubric</strong> (100% of students will be evaluated at “2” meets expectations and above on ability related to the question) Average Score 3.5 <strong>EXCEEDS Expectations</strong></td>
</tr>
<tr>
<td>5. an ability to identify, formulate, and solve problems important in biotechnology practice</td>
<td><strong>Final Site Supervisor Evaluation Rubric</strong> (100% of students will be evaluated at “2” meets expectations and above on ability related to the question) Average Score 3.6 <strong>EXCEEDS Expectations</strong></td>
</tr>
<tr>
<td>6. an understanding of professional and ethical responsibility</td>
<td><strong>Final Site Supervisor Evaluation Rubric</strong> (100% of students will be evaluated at “2” meets expectations and above on ability related to the question) Average Score 3.8 <strong>EXCEEDS Expectations</strong></td>
</tr>
<tr>
<td>7. an ability to communicate effectively</td>
<td><strong>Final Site Supervisor Evaluation Rubric</strong> (100% of students will be evaluated at “2” meets expectations and above on ability related to the question) Average Score 3.6 <strong>EXCEEDS Expectations</strong></td>
</tr>
<tr>
<td>8. an understanding of the impact of biotechnology practice in a scientific, economic and societal context</td>
<td><strong>Final Site Supervisor Evaluation Rubric</strong> (100% of students will be evaluated at “2” meets expectations and above on ability related to the question) Average Score 3.7 <strong>EXCEEDS Expectations</strong></td>
</tr>
<tr>
<td>Program Objectives</td>
<td>Assessment Methods and Assessment Metrics</td>
</tr>
<tr>
<td>------------------------------------</td>
<td>-----------------------------------------------------------------------------------------------------------------------------</td>
</tr>
<tr>
<td>1. Career Preparation.</td>
<td><strong>Post-Graduation Plans Survey/Data</strong> (job placement/graduate school placement majority students 70%)</td>
</tr>
<tr>
<td></td>
<td>Both for Fall 2015 and Spring 2016 job placement was 100% (including 2 students admitted to graduate school)</td>
</tr>
<tr>
<td>2. Communication, Leadership, and</td>
<td><strong>Post-Graduation Plans Survey/Data</strong> (job placement or graduate school placement majority students 70%)</td>
</tr>
<tr>
<td>Teamwork.</td>
<td>Both for Fall 2015 and Spring 2016 job placement was 100% (including 2 students admitted to graduate school)</td>
</tr>
<tr>
<td>3. Integrity and Professional Impact.</td>
<td><strong>Post-Graduation Plans Survey/Data</strong> (job placement or graduate school placement majority students 70%)</td>
</tr>
<tr>
<td></td>
<td>Both for Fall 2015 and Spring 2016 job placement was 100% (including 2 students admitted to graduate school)</td>
</tr>
</tbody>
</table>
9. Strengths and Challenges

Since the 2010 program review, the PPiB has reaffirmed its focus on a curriculum that prepares students for a broad range of professional opportunities at the interface of science and business. Flexibility in the curriculum and diversity in the interdisciplinary faculty enables students to tailor their experience in the program to match their individual professional goals. As with any interdisciplinary program, the active and engaged faculty are also a key strength. The program has been further enhanced by achieving a stable sustained funding model that has, for example, allowed a full-time program chair to be hired and provided support for instructional faculty to teach the BIOT core courses (BIOT 601, 635, and 645). Student professional development has been further enhanced by a growing local biotech industry, providing new opportunities for field trips, internships, and permanent employment. In parallel, the technology commercialization ecosystem at Texas A&M has also continued to grow, providing numerous opportunities for students to become involved in technology commercialization. Finally, there has been a renewed commitment to support of interdisciplinary education and research at an institutional level, creating a fertile environment for programs like the PPiB to flourish.

A key ongoing challenge remains recruitment of strong domestic students. This challenge dovetails with challenges in marketing the program and value of the Professional Science Master’s degree. We have engaged in various initiatives in an attempt to address this, including participation in graduate and professional school days locally and at other institutions (e.g., Sam Houston State University, University of Texas at Austin). But it is not clear that these events led to any increase in domestic applications. We have also updated the program website and social media presence, at one time even producing a blog (The PPiB Promoter), but the effort to produce new content was beyond the scope of the Program Coordinator’s already heavy workload. We are considering engaging students or interns in the communications area to assist in these efforts. It is also becoming clear that the scope of the program coordinator’s activities has broadened beyond the original position description, and should be revised to reflect the current scope of duties.

Another challenge involves streamlining the process to match students and faculty chairs, given the broad and extended nature of Texas A&M. New events like the annual research symposium have succeeded in bringing faculty and students together, and a second annual symposium focused on internship experiences is planned. In terms of the curriculum, there is interest in establishing new “deep dive” courses to enhance student technical competencies. We attempted to address this by offering BIOT 602 in Spring 2012 and 2013, but found that it is challenging to identify extended blocks of class time when a majority of students can attend (their course choices diverge after the first semester based upon individual student interests) and to incentivize faculty to take on this additional teaching role above their commitments in their home departments. Finally, the program lacks funding to provide student financial support. Although the overall operating budget is sound, there are few funds specifically earmarked for student support. Our primary mechanism to provide financial aid has consisted of offering 3 – 11 merit-based scholarships (depending on available funds) consisting of a one-time $1,000 payment. Although these scholarships provide additional value by rendering the recipient eligible for the in-state tuition rate, we are generally not able to match offers from competing institutions.
## List of Appendices

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<th>Appendix A</th>
<th>Syllabi of PPiB Core Courses</th>
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<tbody>
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<td>Appendix B</td>
<td>Student Development Conference Agendas</td>
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<td>Appendix C</td>
<td>WEAVE Online Report for the 2015 – 2016 Academic Assessment Cycle</td>
</tr>
<tr>
<td>Appendix D</td>
<td>Faculty Meeting Minutes</td>
</tr>
<tr>
<td>Appendix E</td>
<td>PPiB Bylaws</td>
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<tr>
<td>Appendix F</td>
<td>Institutional Profile</td>
</tr>
<tr>
<td>Appendix G</td>
<td>Faculty Curriculum Vitae</td>
</tr>
</tbody>
</table>
PROFESSIONAL PROGRAM IN BIOTECHNOLOGY

BIOT 601 BIOTECHNOLOGY PRINCIPLES AND TECHNIQUES I

Credits and contact hours: Credit 4.0; Lab 8.0

Instructor: Maria D. King

Text book:

1. Specific course information
   a. Description: Basic theories and techniques essential to laboratory research in agricultural, environmental or medical biotechnology such as laboratory safety and records keeping, genome informatics, DNA analysis, RNA analysis, protein analysis and analysis of biological systems.
   b. Prerequisites: Graduate classification and approval of the instructor.
   c. BIOT 601 is a required course in the PPiB program

2. Specific goals for the course
   Upon completing this course, the students will be able to
   1. Gain hands-on experience in basic molecular biology and microbiology laboratory principles and techniques that will be built on in BIOT 602 and applied by the students in their independent or directed research projects as part of BIOT 603 and BIOT 685.
   2. Develop fundamental knowledge of laboratory principles and their application in biotechnology.
   3. Become aware of safe laboratory practices and use basic lab equipment and tools.
   4. Explain and practice methods used to clone and express genes from DNA to protein.
   5. Gain confidence in their knowledge of theory and application of these basic laboratory skills so that they can effectively apply them in future industry endeavors.
   6. Demonstrate use of materials necessary for scientific experiments and demonstrate correct scientific calculations.
   7. Describe and document their experiments, results and conclusions following the standard operating procedures for keeping a laboratory notebook.
   8. Recognize when additional assistance is warranted, troubleshoot experiments that do not work.
   9. Create thought-provoking questions related to the laboratory material; and synthesize a strategy for cloning a gene of interest and expressing and purifying the protein.
### 3. List of topics to be covered

<table>
<thead>
<tr>
<th>Topics</th>
</tr>
</thead>
<tbody>
<tr>
<td>Introduction, Expectations, Basic laboratory skills and assays</td>
</tr>
<tr>
<td>Bacterial growth curve; DNA extraction</td>
</tr>
<tr>
<td>Anaerobic culturing techniques; Polymerase Chain Reaction (PCR)</td>
</tr>
<tr>
<td>Agarose gel of PCR products, introduction to PubMed database</td>
</tr>
<tr>
<td>Purification of PCR product, Restriction digest</td>
</tr>
<tr>
<td>Separation of PCR product in agarose gel; gel purification</td>
</tr>
<tr>
<td>TOPO TA vector cloning, Transformation of <em>E. coli</em> competent cells</td>
</tr>
<tr>
<td>Transformation efficiency, DNA Miniprep, PCR to verify cloning</td>
</tr>
<tr>
<td>Restriction digest, Agarose gel and gel purification</td>
</tr>
<tr>
<td>BigDye PCR for sequencing</td>
</tr>
<tr>
<td>Sephadex-50 column cleanup, sequencing</td>
</tr>
<tr>
<td>Restriction digest of vector, dephosphorylation, gel purification</td>
</tr>
<tr>
<td>Ligation of insert into vector, transformation of competent cells</td>
</tr>
<tr>
<td>Evaluate sequences (Chromas, NCBI website), Colony PCR to verify insert</td>
</tr>
<tr>
<td>Visit Borlaug (30 min talk), Select colonies with insert/vector to culture o/n</td>
</tr>
<tr>
<td>Streak colonies with insert, Plasmid extraction, Transform expression host</td>
</tr>
<tr>
<td>Start cultures (7am), induction (10am) to express cloned protein, Extract protein (Bugbuster), BioRad Bradford assay for protein content, SDS-PAGE</td>
</tr>
<tr>
<td>Immunoaffinity purification of expressed protein (His-Tag Ni-NTA columns)</td>
</tr>
<tr>
<td>Separate crude protein lysate and purified protein fractions by SDS-PAGE, Blot &amp; stain gel</td>
</tr>
<tr>
<td>Evaluate SDS PAGE, Proceed with Western Blot using MAb</td>
</tr>
<tr>
<td>Kirby Bauer diffusion susceptibility test with nanoparticles and antibiotics</td>
</tr>
<tr>
<td>Soil phage isolation, Bacteriophage T7 plating and quantification</td>
</tr>
<tr>
<td>RNA extraction, Reverse Transcription PCR</td>
</tr>
<tr>
<td>Verification of the reverse transcription products</td>
</tr>
<tr>
<td>Helium plasma treatment for surface and aerosol decontamination</td>
</tr>
<tr>
<td>Evaluation of plasma treatment plates; Lecture (Convective PCR)</td>
</tr>
<tr>
<td>Lecture (Bioinformatics: Illumina sequencing)</td>
</tr>
<tr>
<td>BIOT 601 Student Learning Outcomes</td>
</tr>
<tr>
<td>-----------------------------------</td>
</tr>
<tr>
<td>1. Gain hands-on experience in basic molecular biology and microbiology laboratory principles and techniques that will be built on in BIOT 602 and applied by the students in their independent or directed research projects as part of BIOT 603 and BIOT 685.</td>
</tr>
<tr>
<td>2. Develop fundamental knowledge of laboratory principles and their application in biotechnology.</td>
</tr>
<tr>
<td>3. Become aware of safe laboratory practices and use basic lab equipment and tools.</td>
</tr>
<tr>
<td>4. Explain and practice methods used to clone and express genes from DNA to protein.</td>
</tr>
<tr>
<td>5. Gain confidence in their knowledge of theory and application of these basic laboratory skills so that they can effectively apply them in future industry endeavors.</td>
</tr>
<tr>
<td>6. Demonstrate use of materials necessary for scientific experiments and demonstrate correct scientific calculations.</td>
</tr>
<tr>
<td>7. Describe and document their experiments, results and conclusions following the standard operating procedures for keeping a laboratory notebook.</td>
</tr>
<tr>
<td>8. Recognize when additional assistance is warranted, troubleshoot experiments that do not work.</td>
</tr>
<tr>
<td>9. Create thought-provoking questions related to the laboratory material; and synthesize a strategy for cloning a gene of interest and expressing and purifying the protein.</td>
</tr>
</tbody>
</table>
PROFESSIONAL PROGRAM IN BIOTECHNOLOGY

BIOT 635 MOLECULAR BIOTECHNOLOGY

Credits and contact hours:  Credit 3.0; Theory 3.0; Lab 0.0

Instructor: Maria D. King

Additional course notes and original journal articles will be provided.

1. Specific course information
   a. Description: Theory and application of molecular biotechnology; consideration of the structure and function of cellular components and methods to characterize these components with reference to examples in industry.
   b. Prerequisites: Graduate classification and approval of the instructor.
   c. BIOT 635 is a required course in the PPiB program

2. Specific goals for the course
   Upon completing this course, the students will be able to
   1. Develop fundamental knowledge to explain the major components, processes and mechanisms of cellular and molecular biology and genetics.
   2. Examine, discuss and judge the impact of gene modification on agricultural, environmental, and medical sciences.
   3. Develop the theoretical background necessary to choose and apply appropriate methods and techniques used in contemporary biotechnology at the cellular and molecular levels.
   4. Interrelate principles from cellular and molecular areas to biotechnology.
   5. Propose and use appropriate chemical-physical principles and their correct applications.
   6. Apply appropriate computer software for statistical analyses, database mining, and data presentation.
   7. Research, design and present a scientific case study; select and apply reference sources.
   8. Cite appropriate regulations associated with biotechnology industry and laboratories.
   9. Learn the concepts associated with molecular biotechnology as a foundation for other classes in the Professional Program in Biotechnology, directed studies or independent research.
## 2. List of topics to be covered

<table>
<thead>
<tr>
<th>Topics</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Fundamentals of Molecular Biotechnology</strong></td>
</tr>
<tr>
<td>Cell as the basic unit of life</td>
</tr>
<tr>
<td>Structure and Function of Cellular Macromolecules – Sugars</td>
</tr>
<tr>
<td>Structure and Function of Cellular Macromolecules - Lipids</td>
</tr>
<tr>
<td>Structure and Function of Cellular Macromolecules - Proteins</td>
</tr>
<tr>
<td>Structure and Function of Cellular Macromolecules – Nucleic acids</td>
</tr>
<tr>
<td>Structure and Function of a Cell</td>
</tr>
<tr>
<td>Membranes</td>
</tr>
<tr>
<td>Membrane Transport</td>
</tr>
<tr>
<td>Biosynthesis and Function of Macromolecules (DNA, RNA and Proteins)</td>
</tr>
<tr>
<td>Replication</td>
</tr>
<tr>
<td>Biosynthesis and Function of Macromolecules</td>
</tr>
<tr>
<td>Transcription</td>
</tr>
<tr>
<td>Biosynthesis and Function of Macromolecules</td>
</tr>
<tr>
<td>Translation</td>
</tr>
<tr>
<td>Distributing Proteins in the Cell (Protein Sorting)</td>
</tr>
<tr>
<td>Molecular Basis of Evolution</td>
</tr>
<tr>
<td><strong>Standard methods in Molecular Biotechnology</strong></td>
</tr>
<tr>
<td>Isolation and Purification of Proteins</td>
</tr>
<tr>
<td>Isolation of DNA and RNA</td>
</tr>
<tr>
<td>Chromatography and Electrophoresis of Nucleic Acids</td>
</tr>
<tr>
<td>Hybridization of Nucleic Acids</td>
</tr>
<tr>
<td>The Use of Enzymes in the Modification of Nucleic Acids</td>
</tr>
<tr>
<td>Polymerase Chain Reaction (PCR)</td>
</tr>
<tr>
<td>DNA Sequencing</td>
</tr>
<tr>
<td>Cloning Procedures</td>
</tr>
<tr>
<td>Promoters</td>
</tr>
<tr>
<td>Expression of Recombinant Proteins</td>
</tr>
<tr>
<td>Genomics</td>
</tr>
<tr>
<td>Functional Genomics</td>
</tr>
<tr>
<td>Protein-Protein Interactions (PPI)</td>
</tr>
<tr>
<td>Protein-DNA Interactions (PDI)</td>
</tr>
<tr>
<td><strong>Applications of Molecular Biotechnology</strong></td>
</tr>
<tr>
<td>Molecular Diagnostics in Medicine</td>
</tr>
<tr>
<td>Recombinant Antibodies and Phage Display</td>
</tr>
<tr>
<td>Genetically Modified Mice</td>
</tr>
<tr>
<td>Gene Therapy</td>
</tr>
<tr>
<td>Plant Biotechnology</td>
</tr>
<tr>
<td>Phage Therapy and Antibiotic Resistance</td>
</tr>
<tr>
<td>BIOT 635 Student Learning Outcomes</td>
</tr>
<tr>
<td>-----------------------------------</td>
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<td>7. Research, design and present a scientific case study; select and apply reference sources.</td>
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<td>8. Cite appropriate regulations associated with biotechnology industry and laboratories.</td>
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<td>9. Learn the concepts associated with molecular biotechnology as a foundation for other classes in the Professional Program in Biotechnology, directed studies or independent research.</td>
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PROFESSIONAL PROGRAM IN BIOTECHNOLOGY

BIOT 645 BIOTECHNOLOGY WRITING

Credits and contact hours: Credit 3.0

Instructor: Colin R. Young


1. Specific course information

a. Description: Development of biotechnology writing and editorial skills; communication of specialized information to the public and peers.

b. Prerequisites: Graduate classification and approval of the instructor.

c. BIOT 645 is a required course in the PPiB program

2. Specific goals for the course

Upon completing this course, the students will be able to

1. Write more effectively about biotechnology and biotechnology related topics.

2. Strengthen basic writing skills.

3. Learn to present information effectively to the public, peers, and industry.

4. Increase skills in presenting biotechnology information via reports, summaries and abstracts.

5. Enhance abilities to evaluate scientific and technical writing.

List of Topics to be covered

<table>
<thead>
<tr>
<th>Topics</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Unit I: Writing Readably</strong></td>
</tr>
<tr>
<td>1. Approaching a Writing Project</td>
</tr>
<tr>
<td>2. Essential Elements of Editing</td>
</tr>
<tr>
<td>3. Editing for Readability</td>
</tr>
<tr>
<td>Exercises: Analysis of two pieces of writing in your field that differ in readability</td>
</tr>
<tr>
<td><strong>Unit I: Writing Readably</strong></td>
</tr>
<tr>
<td>1. Basics of Readable Writing</td>
</tr>
<tr>
<td>2. Examples of Readable Writing</td>
</tr>
<tr>
<td>Exercises: Analysis and Presentation of two pieces of writing that differ in readability</td>
</tr>
</tbody>
</table>
Unit II: Communicating Specialized Information to the Public

1. Basics of Presenting Specialized Information to the Public.
2. Newspaper Coverage of Specialized Fields: Structuring a News Story

Exercise: Describe either how something in your field works or a set of instructions.

Unit II: Communicating Specialized Information to the Public

1. Presenting Specialized Information via Consumer and Trade Magazines and Newsletters
2. Writing a Feature Story; Some Feature Stories on Specialized Topics

Exercise: Analyzing a Magazine; Newspaper stories about new developments in your field; Analysis of such an article with regards to organization, audience and quality of the technical content.

Unit II: Communicating Specialized Information to the Public

1. Discussion on writing a feature article on a topic in your field.
2. Current and recent writing assignments
3. Some examples of news releases and related items.

Exercise: an analysis of a consumer magazine or trade magazine in your field.

Unit II: Communicating Specialized Information to the Public

1. Presenting Specialized Information-Electronically
2. Being Interviewed by Reporters

Exercise: On television, radio or at the World Wide Web be alert for material in your field-note how the material is presented

UNIT III: COMMUNICATING SPECIALIZED INFORMATION TO PEERS

1. Scientific Presentations and Posters
2. Some Norms of Scholarly and Professional Communication
3. How Scholarly/Professional Journals Function

Exercise: Prepare a feature article on a topic in your field.

UNIT III: COMMUNICATING SPECIALIZED INFORMATION TO PEERS

1. Preparation of Scientific Posters
2. Writing Papers for Journals

Exercise: Prepare a constructive critique of the feature article of a classmate.

UNIT III: COMMUNICATING SPECIALIZED INFORMATION TO PEERS

1. Presentation by students of their feature article on the topic in their field
2. Selected Topics in Scientific Communication

UNIT III: COMMUNICATING SPECIALIZED INFORMATION TO PEERS

1. Journal Submissions Other Than Scientific
2. Plans for writing a journal article, grant proposal, book chapter, or other appropriate piece of scholarly/professional writing or an analysis of such a piece

Exercise: Interview report on writing done by a scholar or professional in your field

UNIT III: COMMUNICATING SPECIALIZED INFORMATION TO PEERS

1. Writing Grant Proposals and Progress Reports
2. Progress on writing a journal article in students specific field
3. Recent and Current writing assignments

Exercise: Write a review of a book of a professional interest to you. Indicate the publication for which the review is intended.
UNIT III: COMMUNICATING SPECIALIZED INFORMATION TO PEERS
1. Progress on writing a journal article in students specific field
2. Writing books and book chapters; essential concepts
3. Writing in a Professional Context

UNIT III: COMMUNICATING SPECIALIZED INFORMATION TO PEERS
1. Oral and Written Presentation of Journal Article
2. Writing and Publishing-The Lighter Side
3. Wrap up of all writing exercises for a class

UNIT III: COMMUNICATING SPECIALIZED INFORMATION TO PEERS
1. Additional discussion on the importance of clear, concise, unambiguous writing- pertinent examples of how to accomplish and not accomplish this feat
2. Discussion of suitable and appropriate titles of manuscript papers, book chapters, posters and magazine articles
3. Final conclusions on effective scientific communication

BIOT 645 Student Learning Outcomes and PPIB Student Outcomes

<table>
<thead>
<tr>
<th>BIOT 645 Student Learning Outcomes</th>
<th>PPIB Student Outcomes</th>
</tr>
</thead>
<tbody>
<tr>
<td>1. Write more effectively about biotechnology and biotechnology related topics.</td>
<td>1, 2, 3, 4, 5, 7, 8</td>
</tr>
<tr>
<td>2. Strengthen basic writing skills.</td>
<td>1, 2, 3, 5, 7, 8</td>
</tr>
<tr>
<td>3. Learn to present information effectively to the public, peers, and industry.</td>
<td>1, 2, 3, 4, 5, 6, 7, 8</td>
</tr>
<tr>
<td>4. Increase skills in presenting biotechnology information via reports, summaries and abstracts.</td>
<td>1, 2, 5, 7, 8</td>
</tr>
<tr>
<td>5. Enhance abilities to evaluate scientific and technical writing.</td>
<td>1, 2, 3, 5, 6, 7, 8</td>
</tr>
</tbody>
</table>
PROFESSIONAL PROGRAM IN BIOTECHNOLOGY

BIOT 681 BIOTECHNOLOGY SEMINAR

Credits and contact hours:  Credit 1.0

Instructor:  Victor M. Ugaz

Specific course information
a. Description:  Review and discussion of current topics in biotechnology industries, with focus on skills essential to success in the corporate environment such as communication, interviewing and interpersonal skills.

b. Prerequisites:  Graduate classification and approval of the instructor.

c. BIOT 681 is a required course in the PPiB program

Specific goals for the course

By the end of this course, the students will be able to

- Describe future challenges to biotechnology in a societal and global context.
- Describe the impact of contemporary issues on the biotechnology profession and the practice of biotechnology
- Find, evaluate, and use resources to promote independent learning, including library resources, computer tools and databases.
- Create and give oral presentations using PowerPoint
- Practice oral communication skills and lower the anxiety associated with oral presentations

Topics

- Presentations by representatives from biotechnology industry and academic faculty working in biotechnology area

- Presentation needs to deal with a global or societal issue related to biotechnology
  - From a list developed in class
  - Other- approved by Instructor

Assignments

Seminar Reports:
Each student will submit a 1 – 2 page, single-spaced report formatted as follows:

- ~ 1 paragraph about the speaker (who they are, where they work, etc),
- short summary of the seminar (at least 1/2 page)
- brief discussion of what you thought about the seminar (what aspects of their work do you find most interesting, do you think the results are important, what questions did you have (at least 1/2 page)
Biotechnology Presentation:

Each student will prepare and deliver a 10 – 12 minute oral presentation to the class. Topics will be selected from a list provided in class (others may be suggested by students, subject to instructor approval).

**Grading**

<p>| | |</p>
<table>
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<tr>
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<tbody>
<tr>
<td>Seminar Reports</td>
<td>50%</td>
</tr>
<tr>
<td>Oral Presentation</td>
<td>30%</td>
</tr>
<tr>
<td>Attendance/Participation</td>
<td>20%</td>
</tr>
</tbody>
</table>

Final grades are expected to be distributed according to the following percentage scale: A = 90–100%, B = 80–89%, C = 70–79%, D = 60–69%, F < 59%.

**BIOT 681 Biotechnology Seminar: Class Schedule**

<table>
<thead>
<tr>
<th>Classes</th>
<th>Topics</th>
</tr>
</thead>
<tbody>
<tr>
<td>Introduction</td>
<td></td>
</tr>
<tr>
<td>Presentations/BIOT Industry Rep</td>
<td></td>
</tr>
<tr>
<td>Presentations/BIOT Industry Rep</td>
<td></td>
</tr>
<tr>
<td>Presentations/BIOT Faculty</td>
<td></td>
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<tr>
<td>Presentations/BIOT Faculty</td>
<td></td>
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<tr>
<td>Presentations/BIOT Industry Rep</td>
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<tr>
<td>Presentations/BIOT Industry Rep</td>
<td></td>
</tr>
<tr>
<td>Presentations/BIOT Industry Rep</td>
<td></td>
</tr>
<tr>
<td>Presentations/BIOT Faculty</td>
<td></td>
</tr>
<tr>
<td>Presentations/Field Trip</td>
<td></td>
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<tr>
<td>Presentations/Field Trip</td>
<td></td>
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<tr>
<td>Presentations/Students</td>
<td></td>
</tr>
<tr>
<td>No class</td>
<td></td>
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<tr>
<td>Presentations/Students</td>
<td></td>
</tr>
<tr>
<td>Presentations/Students</td>
<td></td>
</tr>
<tr>
<td>Course Objectives</td>
<td>PPiB Program Outcomes</td>
</tr>
<tr>
<td>---------------------------------------------------------------------------------</td>
<td>-----------------------</td>
</tr>
<tr>
<td>• Describe future challenges to biotechnology in a societal and global context.</td>
<td>4, 5, 6, 7, 8</td>
</tr>
<tr>
<td>• Describe the impact of contemporary issues on the biotechnology profession and the practice of biotechnology</td>
<td>8</td>
</tr>
<tr>
<td>• Find, evaluate, and use resources to promote independent learning, including library resources, computer tools and databases.</td>
<td>3, 7</td>
</tr>
<tr>
<td>• Create and give oral presentations using PowerPoint</td>
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</tr>
<tr>
<td>• Practice oral communication skills and lower the anxiety associated with oral presentations</td>
<td>7</td>
</tr>
</tbody>
</table>
PROFESSIONAL PROGRAM IN BIOTECHNOLOGY

BIOT 684 BIOTECHNOLOGY PROFESSIONAL INTERNSHIP

Credits and contact hours: Credit 4.0

Instructor/Faculty Supervisor: BIOT FACULTY

Specific course information
a. Description: A directed internship in an organization that provides on-the-job training with professionals in organizational settings appropriate to the student's professional objectives. May be taken two times for credit.

b. Prerequisites: Approval of the Chair of the Faculty of Biotechnology
c. BIOT 684 is a required course in the PPiB program

Specific goals for the course

By the end of this course, the students will be able to

• Participate in customized training/directed internship in a biotechnology company
• Describe future challenges to biotechnology in a societal and global context
• Describe the impact of contemporary issues on the biotechnology profession and the practice of biotechnology
• Find, evaluate, and use resources to promote independent learning, including library resources, computer tools and data bases.
• Practice oral communication skills and lower the anxiety associated with oral presentations

All BIOT students are required to complete BIOT 684 Learning Agreement, BIOT 684 Internship Description Form and submit offer letter prior to registration.
Texas A&M University
Professional Program in Biotechnology Learning Agreement

This agreement between ________________________________
(insert student and company names) and the Texas A&M Professional Program in
Biotechnology provides a listing of responsibilities of the various parties involved and
the specific learning objectives or goals of the student during the internship experience.

RESPONSIBILITIES UNDER THIS AGREEMENT:
Faculty Advisor (Committee Chair):
  • Help formulate the student’s learning objectives.
  • Meet with the student to provide guidance and support prior to the internship.
  • Assess the student’s learning based on predetermined objectives and evaluation
criteria outlined in the BIOT 684 Internship and Portfolio Handbook.
  • Provide telephone and e-mail follow-up as needed throughout the internship to
    provide guidance and support.

Site Supervisor:
  • Help formulate the student’s learning objectives.
  • Provide direction to help the student achieve the learning objectives.
  • Complete a midterm and final evaluation of the student and return forms to the
    PPiB Coordinator.
  • Assume responsibility for the student’s supervision during the internship.
  • Review student presentation for confidential material and send memo to PPiB
    Coordinator.

Student:
  • Register for BIOT 684 after providing the Internship Description Form, offer
    letter and signed Learning Agreement to the PPiB Coordinator.
  • Perform the tasks and responsibilities assigned by your site supervisor.
  • Follow the rules and regulations of the business or agency.
  • Consult with your faculty advisor regarding any changes or problems that arise
    during your internship experience.
  • Complete the Student Evaluation of Site form and return to the PPiB
    Coordinator.

Professional Program in Biotechnology Coordinator:
  • Help formulate the student’s learning objectives.
  • Add section of BIOT 684 for student once paperwork is received.
  • Act as a liaison for the university, work site, faculty advisor, and student.
  • Assist faculty advisor, site supervisor, and student with any difficulties.
LEARNING OBJECTIVES: (Insert a list of the broad learning objectives you will achieve during your internship, including specific activities, due dates, and evaluation methods that will be used. Set realistic goals that can be documented.)

Your signature means you have read and agreed to the responsibilities listed for your role in this Learning Agreement.

Student Intern ________________________________ Date: __________

Site Supervisor ________________________________ Date: __________

Faculty Advisor ________________________________ Date: __________

Program Coordinator ____________________________ Date: __________
Texas A&M University
Professional Program in Biotechnology
Internship Description Form

Student

Name:  
UIN:  
Internship semester:  
Mobile phone:  
e-mail address:  

Company

Name: Address 1:  
Address 2:  
City, state, zip code: Web address: Telephone:  
Fax:  

Supervisor

Name:  
Title: Telephone: e-mail:  

Internship

Dates:  
Position title:  
Position description:  
Salary:  

Save your document and send as an e-mail attachment to larissap@tamu.edu
Also attach a copy of your internship offer letter.
## Relationship of BIOT 684 course objectives to PPiB program outcomes

<table>
<thead>
<tr>
<th>Course Objectives</th>
<th>PPiB Program Outcomes</th>
</tr>
</thead>
<tbody>
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PROFESSIONAL PROGRAM IN BIOTECHNOLOGY

BIOT 685 BIOTECHNOLOGY DIRECTED STUDIES

Credits and contact hours:  Credit 1.0-4.0 (required 3.0)

Instructor:  BIOT FACULTY

Specific course information
a. Description:  Provides customized training and experience to students in the Biotechnology Program; topics can include laboratory research, scientific literature reviews, biotechnology market surveys, and training in technology commercialization.

b. Prerequisites:  Graduate classification and approval of the instructor.

c. BIOT 685 is a required course in the PPiB program

Specific goals for the course

By the end of this course, the students will be able to

- Participate in customized training and experience in biotechnology research
- Enhance laboratory research skills, marketing skills, and teambuilding skills.
- Describe the impact of contemporary issues on the biotechnology profession and the practice of biotechnology
- Find, evaluate, and use resources to promote independent learning, including library resources, computer tools and data bases.
- Create and give oral presentations using PowerPoint and prepare research posters
- Practice oral communication skills and lower the anxiety associated with oral presentations through participation in BIOT Annual Research Conference

BIOT students are required to complete BIOT 685 Directed Studies form prior to registration.
Date: _________________

Project Information

Student’s name: ______________________________________

Instructor: ________________________________________________

Semester when project will be performed: _______________________

Weekly time commitment expected (hrs/week): __________________

Project title: __________________________________________________________________________________

Description of Project

Please attach a brief description of the research project, the problem to be studied, the student’s role in performing the study, and what outcomes are expected upon completion of the project. This description should be prepared by the student with guidance from the instructor, and should be crafted to provide practical training relevant to the professional nature of the BIOT degree.

Course Description

BIOT 685. Directed Studies. Credit 1-4. Provides customized training and experience to students in the Biotechnology Program; topics can include laboratory research, scientific literature reviews, biotechnology market surveys, and training in technology commercialization. Prerequisites: approval of instructor.

Project Deliverables

The basis for the assigned grade will be: _____________________________________________________________

_______________________________________________________________________________________________

Signatures/Approval

__________________________________  ____________________________________  __________________________
Student Researcher   Instructor BIOT 685   BIOT Committee Chair
## Relationship of BIOT 685 course objectives to PPiB program outcomes

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</table>
Appendix B

Student Development Conference Agendas
Professional Program in Biotechnology

2011 Advisory Council Student Development Conference

Friday, November 18, 2011
Texas A&M University
4th Floor, Rudder Tower

Brief Agenda

10:00-10:30 AM Welcome and Announcements, Room 401

10:30 AM-12:00 PM Career Exploration: Concurrent Sessions with Advisory Council Members in R&D, Room 402; Regulatory Affairs, Room 404; and Technology Transfer, Sales & Marketing, Room 407A

12:00-12:30 PM Lunch, Room 401

12:30-12:45 PM Reconvene and Announcements, Room 401

12:45-2:30 PM Student Internship Presentations by December Graduates, Room 401

2:30-3:00 PM Outstanding Graduate Award, Photos, & Closing, Room 401

3:30-4:00 PM Tour of the National Center for Therapeutics Manufacturing for Advisory Council Members (tentative)
Detailed Agenda

Morning Session: Career Exploration with Advisory Council Members

Room 402. R & D and Product Development with members:
Nathan Harris, Life Technologies, Austin
Michaela Hoffmeyer, Luminex, Austin
Steven Navran, Synthecon, Houston

- 10:30-11:00 AM—Student group A
- 11:00-11:30 AM—Student group B
- 11:30 AM-12:00 PM—Student group C

Room 404. Regulatory Affairs and General Questions with members:
Pam Mabry, Human Resources Consultant, Houston
Dalal Murgai, Regulatory Outsource Consulting, The Woodlands
Janet Varela, Kelly Scientific Resources, Houston

- 10:30-11:00 AM—Student group B
- 11:00-11:30 AM—Student group C
- 11:30 AM-12:00 PM—Student group A

Room 407A. Technology Transfer, Sales and Marketing with members:
Tim Novak, Sigma-Aldrich, Houston
Michael Dilling, Baylor Licensing Group, Houston
Peter Schuerman, TAMUS Licensing & IP Management, College Station

- 10:30-11:00 AM—Student group C
- 11:00-11:30 AM—Student group A
- 11:30 AM-12:00 PM—Student group B

Afternoon Session: Student Presentations

12:45-1:00 PM Maryam Ansari, Agennix, Houston
1:00-1:15 PM Jayashree Chandrasekharan, TAMU Health Science Center, College Station
1:15-1:30 PM Allan Kotzot, Opexa Therapeutics, The Woodlands
1:30-1:45 PM Hamza Mohammed, TAMUS Office of Technology Commercialization
1:45-2:00 PM Reuben Sequeira, New England Biolabs, Ipswich, MA
2:00-2:15 PM Michael Sutton, CS Bio, Menlo Park, CA
2:15-2:30 PM Estela Von Chong, PlxPharma, Houston
Professional Program in Biotechnology

2012 Advisory Council Student Development Conference

Friday, April 27, 2012
Texas A&M University
Room 401, Rudder Tower

Agenda

9:15-9:30 AM  Arrival

9:30-10:00 AM  Welcome and Program Update—Victor Ugaz

10:00-10:30 AM  BIOT Curriculum: Science Foundation
                  BIOT 601—Eleanore Conant
                  BIOT 635—Clare Gill
                  BIOT 645—Colin Young
                  BIOT 681—Gus Cothran
                  BIOT 685—Victor Ugaz

10:30-10:45 AM  Q & A—Science Faculty

10:45-11:00 AM  Break

11:00-11:30 AM  BIOT Curriculum: Business Plus Courses
                  ACCT 640—Adam Myers
                  FINC 635—Wendy Galpin
                  MGMT 655/658—Vickie Buenger
                  MKTG 621—Larry Gresham
                  Certificate of Entrepreneurship—Dick Lester

11:00-11:45 AM  Q & A—Business Faculty

11:45 AM-1:00 PM  Lunch
### Afternoon Session: Student Presentations

1:00-1:15 PM  
Fisher Chih-Sheng Chang, Dept. of Soil & Crop Science, TAMU

1:15-1:30 PM  
Dilsher Dhillon, Texas AgriLife Genomics & Bioinformatics Service

1:30-1:45 PM  
John Lowderman, TAMUS Office of Technology Commercialization

1:45-2:00 PM  
Shehnaz Lokhandwala, Dept. of Veterinary Pathobiology, TAMU

2:00-2:15 PM  
Break

2:15-2:30 PM  
Meghna Muralidhar, Dept. of Chemistry, TAMU

2:30-2:45 PM  
Payal Shah, Luminex Corporation, Austin

2:45-3:00 PM  
Junjie Song, Terrabon, College Station

3:00-3:15 PM  
Spandana Valluru, Institute of Biosciences & Technology, TAMU

3:15-3:30 PM  
Presentation of Student Awards, Group Photos
Professional Program in Biotechnology

2012 Advisory Council Student Development Conference

Friday, November 16, 2012
Texas A&M University
Memorial Student Center

Brief Agenda

9:15-9:30 AM   Arrival; Pick Up Conference Materials, Room 2500
9:30-10:00 AM   Welcome and Program Update, Dr. Victor Ugaz, Room 2500
10:00-10:15 AM   Online Certificate in Regulatory Science, Dr. Tim Herrman, Room 2500
10:15-10:30 AM   Break
10:30 AM-12:00 PM   Career Exploration Rotations: Concurrent Sessions with Advisory Council Members in R&D, Room 2501; Regulatory Affairs & Quality, Room 2502; and Technology Transfer, Sales & Manufacturing, Room 2503
12:00-1:00 PM   Networking Lunch, Rooms 2500-2503
1:00-1:15 PM   Conference Photos, 2500 Wing Common Area
1:20-2:00 PM   Student Internship Presentations by December Graduates, Room 2500
2:00-2:15 PM   Break
2:15-2:45 PM   Student Internship Presentations by December Graduates, Room 2500
2:45-3:15 PM   Outstanding Graduate Award, Evaluations, and Closing, Room 2500
Detailed Agenda

Morning Session: Career Exploration with Advisory Council Members

Room 2501. R & D and Product Development with members:
Chris Burnett, Life Technologies, Austin
Michaela Hoffmeyer, Luminex, Austin
Susan Magdaleno, Life Technologies, Austin

• 10:30-11:00 AM—Student group A
• 11:00-11:30 AM—Student group B
• 11:30 AM-12:00 PM—Student group C

Room 2502. Regulatory Affairs and Quality with members:
John Ferreira, Kalon Biotherapeutics, College Station
Deepthi Mikkili, Allergan, Irvine, CA
Barbara Smith, Lexicon Pharmaceuticals, The Woodlands

• 10:30-11:00 AM—Student group B
• 11:00-11:30 AM—Student group C
• 11:30 AM-12:00 PM—Student group A

Room 2503. Technology Transfer, Sales and Manufacturing with members:
Tim Novak, Sigma-Aldrich, Houston
Bill Reed, Kalon Biotherapeutics, College Station
Peter Schuerman, TAMUS Licensing & IP Management, College Station

• 10:30-11:00 AM—Student group C
• 11:00-11:30 AM—Student group A
• 11:30 AM-12:00 PM—Student group B

Afternoon Session: Student Presentations

1:20-1:30 PM  Josh Fritz, Kalon Biotherapeutics, College Station
1:30-1:40 PM  Aparna Krishnan, Life Technologies, Austin
1:40-1:50 PM  Elsie Ponce, Kalon Biotherapeutics, College Station
1:50-2:00 PM  Manish Rathi, TAMUS Office of Strategic Initiatives, College Station
2:15-2:25 PM  Pallav Shah, Kalon Biotherapeutics, College Station
2:25-2:35 PM  Manish Thakran, Opexa Therapeutics, The Woodlands
2:35-2:45 PM  Abhiram Thatipelli, Luminex, Austin
<table>
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<tr>
<th>Time</th>
<th>Session</th>
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<tr>
<td>10:00-10:20 AM</td>
<td>Coffee and registration, NCTM foyer</td>
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<tr>
<td>10:20-10:30 AM</td>
<td>Welcome and introductions</td>
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<td>10:30-10:50 AM</td>
<td>Agriculture Biotechnology</td>
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<td></td>
<td>Ty Witten, Global Cotton, Specialty &amp; Vegetable Regulatory Affairs Lead,</td>
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<td>Monsanto Co., St. Louis, MO</td>
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<td>10:50-11:10 AM</td>
<td>Perspective of an Independent Regulatory Consultant</td>
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<td>Dalal Murgai, President, Regulatory Outsource Consulting, Inc.,</td>
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<td>The Woodlands, TX</td>
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<td>11:10-11:30 AM</td>
<td>Entrepreneurial Biotechnology</td>
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<td>Mimi Healy, CEO, LaserGen, Inc., Houston, TX</td>
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<td>11:30 AM-12:00 PM</td>
<td>Q &amp; A session with morning speakers</td>
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<td>12:00-1:00 PM</td>
<td>Networking lunch, NCTM foyer</td>
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<td>1:00-1:20 PM</td>
<td>Challenging Careers in the Pharmaceutical/Biotech Industry</td>
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<td>Gary Krishnan, Chief Scientific Officer, Musculoskeletal &amp; Urology</td>
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<td>Division, Lilly Research Laboratories, Indianapolis, IN</td>
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<td>1:20-1:40 PM</td>
<td>Institute for Applied Cancer Science (IACS): Opportunities for Drug</td>
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<td>Discovery Internships and Beyond</td>
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<td>Jannik Andersen, Senior Associate Director—Drug Discovery Biology,</td>
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<td>IACS, MD Anderson, Houston, TX</td>
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<td>1:40-2:00 PM</td>
<td>Understanding Consumer Behavior: The Power of Market Research and</td>
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<td>Applications to Your Personal Brand</td>
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<td>Pauline Krinov, Black Belt, Business Process Improvement,</td>
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<td>Nielsen, Cincinnati, OH</td>
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<td>2:00-2:30 PM</td>
<td>Q &amp; A session with afternoon speakers</td>
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<td>2:30-2:40 PM</td>
<td>Conference closing and evaluations</td>
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Professional Program in Biotechnology
Texas A&M University
2014 Student Development Conference and Advisory Council Meeting
Friday, February 28, 2014

Memorial Student Center (MSC) Room 2500

Agenda

8:30am-9:00am  Arrival; pick up conference materials; in front of Room 2500

9:00am-9:15am  Welcome Room 2500

9:15am-10:15am  Advisory Council members presentations Room 2500

10:30am-noon  Rotation Sessions Rooms 2501, 2502, 2503

12:00-12:45pm  Lunch

12:45pm-1:15pm  Announcements and Photos

1:15pm-2:00pm  Advisory Council members presentations Room 2500

2:00pm-2:15pm  Announcements & Closing Room 2500
<table>
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<tr>
<th>Time</th>
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<tr>
<td>8:30am-9:00am</td>
<td>Arrival; pick up conference materials; in front of Room 2500</td>
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<td>9:00am-9:15am</td>
<td>Welcome Victor Ugaz Room 2500</td>
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<td>9:15am-9:30am</td>
<td>Tyson Fetzer, Baxter BioScience, California</td>
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<td>9:30am-9:45am</td>
<td>Christie Sayes, RTI International, North Carolina</td>
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<td>9:45am-10:00am</td>
<td>John Ferreira, Blinn College, Texas</td>
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<td>10:00am-10:15am</td>
<td>Susan Magdaleno, Life Technologies, Texas</td>
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<td>10:30am-noon</td>
<td>Rotation Sessions</td>
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<td>R&amp;D &amp; Product Development, Room 2501</td>
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<td></td>
<td>Christie Sayes &amp; Susan Magdaleno</td>
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<td>10:30am-11:00am Student Group A</td>
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<td>11:30am-12:00 Student Group C</td>
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<td>Regulatory Affairs and General Questions, Room 2502</td>
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<td></td>
<td>Barbara Smith, Ty Witten &amp; John Ferreira</td>
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<td>10:30am-11:00am Student Group B</td>
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<td>11:00am-11:30am Student Group C</td>
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<td>11:30am-12:00 Student Group A</td>
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<td>Technology Transfer, Sales and Marketing, Room 2503</td>
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<td></td>
<td>Tyson Fetzer &amp; Madison Mauze</td>
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<td>10:30am-11:00am Student Group C</td>
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<td></td>
<td>111:00am-11:30am Student Group A</td>
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<td>11:30am-12:00 Student Group B</td>
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<td>12:45pm-1:15pm</td>
<td>Announcements and Photos</td>
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<td>1:15pm-1:30pm</td>
<td>Barbara Smith, B. Thomas Smith, LLC, Texas</td>
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<td>1:30pm-1:45pm</td>
<td>Madison Mauze, Celltex Therapeutics Corporation, Texas</td>
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<td>1:45pm-2:00pm</td>
<td>Ty Witten, Monsanto Company, Missouri</td>
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<td>2:00pm-2:15pm</td>
<td>Announcements and Closing</td>
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Professional Program in Biotechnology

Texas A&M University

Fall 2014 Student Development Conference and Advisory Council Meeting

Monday, November 24, 2014

Coca-Cola North America

2150 Town Square Place Suite 400

Sugar Land, Texas 77479

Agenda

10:00am-10:30am Arrival Room 400

10:30am-10:45am Welcome Room 4105 B/C

10:45am-11:45am Advisory Council members presentations Room 4105 B/C

11:45am-12:30pm Lunch

12:30pm-1:30pm Advisory Council members presentations Room 4105 B/C

1:30pm-1:45pm Panel Discussion Q&A Room 4105 B/C

1:45pm-2:00pm Pictures Announcements Closing Room 4105 B/C

2:30pm-3:30pm Field trip to Celltex Therapeutics Corporation (2401 Fountain View Drive, Houston, TX, 77057)
Detailed Agenda

10:00am-10:30am  Arrival Room 400
10:30am-10:45am  Welcome Victor Ugaz Room 4105 B/C
10:45am-11:15am  Cody Wilson, Senior Director, Food Safety Center of Excellence, The Coca-Cola Company, Atlanta, GA
11:15am-11:45am  Mike Saint John, General Manager, Minute Maid Business Unit, The Coca-Cola Company, Houston, TX
11:45am-12:30pm  Lunch
12:30pm-12:45pm  Barbara Thomas Smith, President, B. Thomas Smith LLC, Houston, TX
12:45pm-1:00pm   William Reed, Senior Vice President, Operation, Kalon Biotherapeutics, College Station, TX
1:00pm-1:15pm    Madison Mauze, Vice President Business Development, Celltex Therapeutics Corporation, Houston, TX
1:15pm-1:30pm    Dalal Murgai, Regulatory Outsource Consulting, Inc., Houston, TX
1:30pm-1:45pm    Panel Discussion, Q&A
1:45pm-2:00pm    Pictures Announcements Closing
Spring 2016 Student Development Conference and Advisory Council meeting

Thursday, February 25, 2016

Memorial Student Center (MSC)

Brief Agenda

9:00am-9:30am  Arrival; Pick-up conference materials ROOM 2501
9:30am-10:00am  Welcome and Program Update Dr. Victor Ugaz, ROOM 2501
10:00am-10:15am  Break
10:15am-12:00noon  Career Exploration Rotations: Concurrent Sessions with Advisory Council Members ROOM 2503 and ROOM 2504
12:00noon-1:00pm  Networking Lunch ROOM 2503 and ROOM 2504
1:00pm-1:15pm  Conference photos Common Area ROOM 2501
1:15pm-2:25pm  May Graduates Student Presentations ROOM 2501
2:30pm-2:45pm  Break
2:45pm-3:00pm  Outstanding Graduate Award; Closing ROOM 2501

Detailed Agenda

10:15am-12:00noon Career Exploration Rotations

ROOM 2503
Sylvain Marcel, Senior Scientist, IBIO, Inc., Bryan, TX
Ty Witten, Cotton, Soybean, Specialty Crop, and Seed Treatment Systems Lead, Monsanto, St. Louis, MO
Christie Sayes, Associate Professor of Environmental Science, Baylor University, Waco, TX
Venkatesh Krishnan, Chief Scientific Officer, Eli Lilly and Company, Indianapolis, IN
10:15am-11:00am  Student Group A
11:00am-11:45am  Student Group B

ROOM 2504
John Ferreira, Quality Systems Consultant, Therapeutics Mfg, Banziger Systems, LLC, Bryan, TX
Tyson Fetzer, Senior Manager of Manufacturing, Genzyme, Boston, MA
Cody Wilson, Senior Director, Food Safety Center of Excellence, Coca-Cola, Atlanta, GA
Susan Magdaleno, R&D Senior Manager, Scientist, Thermo Fisher Scientific, Austin, TX
10:15am-11:00am  Student Group B
11:00am-11:45am  Student Group A
1:15pm-2:25pm May Graduates Student Presentations ROOM 2501

1:15pm-1:25pm Gipshu Dave, Zoetis, Inc., Durham, North Carolina
1:25pm-1:35pm Saanika More, Texas A&M System Office of Technology Commercialization, College Station, Texas
1:35pm-1:45pm Prahelika Reddy, Institute of Biosciences and Technology, TAMU, Houston, Texas & Affymetrix, Cleveland, Ohio
1:45pm-1:55pm Jared Conrad, Nanohmics, Inc., Austin, Texas and Texas A&M System Office of Technology Commercialization, College Station, Texas
1:55pm-2:05pm Keshav Karki, Department of Veterinary Physiology and Pharmacology, TAMU, College Station, Texas
2:05pm-2:15pm Janae Rapp, MD Anderson Cancer Center, Houston, Texas
2:15pm-2:25pm Qianwen Ouyang, Veterinary Integrative Biosciences Department, TAMU, College Station, Texas
Spring 2017 Student Development Conference and Advisory Council meeting

Friday, February 10, 2017

Memorial Student Center (MSC)

Brief Agenda

9:00am-9:30am Arrival; Pick-up conference materials ROOM 2501
9:30am-10:00am Welcome and Program Update Dr. Victor Ugaz, ROOM 2501
10:00am-10:15am Break
10:15am-12:00noon Career Exploration Rotations: Concurrent Sessions with Advisory Council Members ROOM 2502 and ROOM 2503
12:00noon-1:00pm Networking Lunch ROOM 2502 and ROOM 2503
1:00pm-1:15pm Conference photos Common Area ROOM 2501
1:15pm-2:30pm May Graduates Student Presentations ROOM 2501
2:30pm-3:00pm Break
3:00pm-3:15pm Outstanding Graduate Award; ROOM 2501
3:15pm-3:30pm Debriefing/AC members

Detailed Agenda

10:15am-12:00noon Career Exploration Rotations

ROOM 2502
Nathan Dewsbury, Owner/GM, Novis Animal Solutions, LLC, College Station, TX
John Ferreira, VP Quality Operations, Business Development, MDx BioAnalytical Laboratory, Inc., College Station, TX
Venkatesh Krishnan, Chief Scientific Officer, Eli Lilly and Company, Indianapolis, IN
Deepthi Mikkili, Manager, Clinical Data Management, Amgen, Thousand Oaks, CA
Christie Sayes, Associate Professor of Environmental Science, Baylor University, Waco, TX
10:15am-11:00am Student Group A
11:00am-11:45am Student Group B

ROOM 2503
John Madsen, Head of Process Development Operations, FUJIFILM Diosynth Biotechnologies Texas, LLC College Station, TX
Rana Gunjot, Global Product Manager, Global Marketing, Luminex Corp., Austin, TX
Susan Magdaleno, R&D Senior Manager, Scientist, Thermo Fisher Scientific, Austin, TX
Sylvain Marcel, Senior Scientist, iBio CMO, LLC, Bryan, TX
Benjamin Yaden, Senior Research Scientist, Eli Lilly and Company, Indianapolis, IN
10:15am-11:00am Student Group B
11:00am-11:45am Student Group A
1:15pm-2:45pm May Graduates Student Presentations ROOM 2501

1:15pm-1:25pm  Catherine Wellman, Gilead Sciences, Foster City, CA
1:25pm-1:35pm  Ketki Patil, Luminex Corp., Austin, TX
1:35pm-1:45pm  Anu Balakavi, Xybion Corporation, Bensalem, PA
1:45pm-1:55pm  Xiyuan Wang, MD Anderson Cancer Center, Houston, TX
1:55pm-2:05pm  Karat Sidhu, Center for Translational Research in Aging and Longevity, Texas A&M University, College Station, TX
2:05pm-2:15pm  Nithisha Khasnavis, MD Anderson Cancer Center, Houston, TX
2:15pm-2:25pm  Rohit Rohra, Kleberg Animal and Food Science Center, Texas A&M University, College Station, TX
2:25pm-2:35pm  Ishita Bansal, ST Genetics, Navasota, TX
Appendix C

WEAVE Online Report for the 2015 – 2016
Academic Assessment Cycle
Texas A&M University

Detailed Assessment Report
2015-2016 Biotechnology, MBIOT
As of: 2/24/2017 02:00 AM CST
(Includes those Action Plans with Budget Amounts marked One-Time, Recurring, No Request.)

Mission / Purpose

The mission of Professional Program in Biotechnology at Texas A&M is to educate and prepare students for national and international leadership roles in industry, business, academia and government; to attract top graduate students to professional science master’s degree in biotechnology; to develop new directions in biotechnology engineering education and curriculum; to be a valuable resource and service base to the State and the biotechnology profession; and to prepare students to solve problems of social and economic importance.

Goals

G 1: Career Preparation
PPiB graduates will have foundation for breadth and depth across the range of advanced science, business and engineering topics for successful biotechnology careers in industry, business, academia and government.

G 2: Communication, Leadership, and Teamwork
PPiB graduates will be effective communicators and have appropriate leadership, project management and teamwork skills.

G 3: Integrity and Professional Impact
PPiB graduates will have a sense of responsibility and ethical conduct to their profession and an appreciation for the impact of their profession on society both nationally and internationally.

Student Learning Outcomes/Objectives, with Any Associations and Related Measures, Targets, Findings, and Action Plans

SLO 1: Applied Biological Science Techniques in Practice
Graduates will have an ability to apply knowledge of advanced biological sciences and to use the scientific techniques and tools necessary for biotechnology practice.

Relevant Associations:

Graduate Outcome Associations
1.2 Apply subject matter knowledge in a range of contexts to solve problems and make decisions.

Strategic Plan Associations
Texas A&M University
2 Strengthen our graduate programs.

Related Measures

M 1: Final Exam Evaluation Rubric
Content in the final exam will be evaluated using the attached rubric.
Source of Evidence: Writing exam to assure certain proficiency level

Connected Document
Final Evaluation Form

**Target:**
Average rating will exceed 2.0 on a 4.0 scale on ability related to the question.

*Finding (2015-2016) - Target: Met*
Average Score 3.6 EXCEEDS Expectations

**Related Action Plans (by Established cycle, then alpha):**
For full information, see the *Details of Action Plans* section of this report.

**Provide additional opportunities to enhance communication skills**
*Established in Cycle: 2013-2014*
Based upon student feedback from a pilot effort last year, graduating students present a final oral reflection modeled on the un...

**Implement new assessment rubrics**
*Established in Cycle: 2014-2015*
In summary, PPIB has strengthened its evaluation and assessment efforts. Program educational objectives and outcomes are revi...

**Establish new PPIB Lecture Series: New Technologies and Innovations**
*Established in Cycle: 2015-2016*
We are working to establish a new lecture series aimed at exposing students to cutting-edge technologies and innovations in the ...

**M 2: Co-op/Internship data/Evaluations**
Students are evaluated for co-ops/internships at the completion of a compulsory BIOT 684. They are evaluated by their professional internship supervisors.

Source of Evidence: Field work, internship, or teaching evaluation

Connected Document
Final Evaluation Form

**Target:**
100% of students will be evaluated at “2” meets expectations and above on ability related to the question.

*Finding (2015-2016) - Target: Met*
Average Score 3.8 EXCEEDS Expectations

**Related Action Plans (by Established cycle, then alpha):**
For full information, see the *Details of Action Plans* section of this report.

**Implement new assessment rubrics**
*Established in Cycle: 2014-2015*
In summary, PPIB has strengthened its evaluation and assessment efforts. Program educational objectives and outcomes are revi...

**M 4: Alumni Survey**
Every three years, Professional Program in Biotechnology will conduct regular alumni surveys. We poll alumni for their views on the utility of the program and its weaknesses and strengths. The surveys of program alumni will be undertaken during Spring 2017. The survey questions will be mapped to three Program Educational Objectives. In the alumni survey, the alumni indicate how successful they are in their careers and in the various areas covered by the survey questions. We expect that
alumni participating in the survey will indicate that they are satisfied with the program. For the alumni survey, the criterion for success is 3.5 on the scale 1—Strongly Disagree to 5—Strongly Agree.

Source of Evidence: Alumni survey or tracking of alumni achievements

**Target:**
The average alumni response will be that they engage in team work at 3.5 on a 5 point likert scale.

**Finding (2015-2016) - Target: Met**
Every three years, Professional Program in Biotechnology will conduct regular alumni surveys. We poll alumni for their views on the utility of the program and its weaknesses and strengths. The surveys of program alumni will be undertaken during Spring 2017. The survey questions will be mapped to three Program Educational Objectives. In the alumni survey, the alumni indicate how successful they are in their careers and in the various areas covered by the survey questions. We expect that alumni participating in the survey will indicate that they are satisfied with the program. For the alumni survey, the criterion for success is 3.5 on the scale 1—Strongly Disagree to 5—Strongly Agree. Currently based on the data from job placement we will consider this assessment measure completed.

**Related Action Plans (by Established cycle, then alpha):**
For full information, see the Details of Action Plans section of this report.

**Enhance professional development opportunities**
*Established in Cycle: 2013-2014*
Based upon feedback from our student satisfaction surveys, we are working to provide a wider variety of professional development...

**SLO 2: Applied Biological Science Techniques in Profession**
Students will have an ability to apply knowledge and skills of leadership, business and management in the biotechnology profession.

**Relevant Associations:**

Graduate Outcome Associations
1.2 Apply subject matter knowledge in a range of contexts to solve problems and make decisions.

Strategic Plan Associations
Texas A&M University
2 Strengthen our graduate programs.

**Related Measures**

**M 1: Final Exam Evaluation Rubric**
Content in the final exam will be evaluated using the attached rubric.

Source of Evidence: Writing exam to assure certain proficiency level

**Connected Document**
*Final Evaluation Form*

**Target:**
Average rating will exceed 2.0 on a 4.0 scale on ability related to the question.

**Finding (2015-2016) - Target: Met**
Average Score 3.6 EXCEEDS Expectations

**Related Action Plans (by Established cycle, then alpha):**
Implement new assessment rubrics  
*Established in Cycle: 2014-2015*
In summary, PPIB has strengthened its evaluation and assessment efforts. Program educational objectives and outcomes are revie...

**M 2: Co-op/Internship data/Evaluations**
Students are evaluated for co-ops/internships at the completion of a compulsory BIOT 684. They are evaluated by their professional internship supervisors.

Source of Evidence: Field work, internship, or teaching evaluation

**Connected Document**  
[Final Evaluation Form](#)

**Target:**
100% of students will be evaluated at “2” meets expectations and above on ability related to the question.

**Finding (2015-2016) - Target: Met**
Average Score 3.4 EXCEEDS Expectations

**Related Action Plans (by Established cycle, then alpha):**
For full information, see the *Details of Action Plans* section of this report.

Implement new assessment rubrics  
*Established in Cycle: 2014-2015*
In summary, PPIB has strengthened its evaluation and assessment efforts. Program educational objectives and outcomes are revie...

**M 4: Alumni Survey**
Every three years, Professional Program in Biotechnology will conduct regular alumni surveys. We poll alumni for their views on the utility of the program and its weaknesses and strengths. The surveys of program alumni will be undertaken during Spring 2017. The survey questions will be mapped to three Program Educational Objectives. In the alumni survey, the alumni indicate how successful they are in their careers and in the various areas covered by the survey questions. We expect that alumni participating in the survey will indicate that they are satisfied with the program. For the alumni survey, the criterion for success is 3.5 on the scale 1—Strongly Disagree to 5—Strongly Agree.

Source of Evidence: Alumni survey or tracking of alumni achievements

**Target:**
The average alumni response will be that they engage in team work at 3.5 on a 5 point likert scale.

**Finding (2015-2016) - Target: Met**
Every three years, Professional Program in Biotechnology will conduct regular alumni surveys. We poll alumni for their views on the utility of the program and its weaknesses and strengths. The surveys of program alumni will be undertaken during Spring 2017. The survey questions will be mapped to three Program Educational Objectives. In the alumni survey, the alumni indicate how successful they are in their careers and in the various areas covered by the survey questions. We expect that alumni participating in the survey will indicate that they are satisfied with the program. For the alumni survey, the criterion for success is 3.5 on the scale 1—Strongly Disagree to 5—Strongly Agree. Currently based on the data from job placement we will consider this assessment measure completed.
SLO 3: Analyze and Interpret Data
PPiB students will have an ability to analyze and interpret data.

**Relevant Associations:**

**Graduate Outcome Associations**

1.3 Use a variety of sources and evaluate multiple points of view to analyze and integrate information and to conduct critical, reasoned arguments.

**Strategic Plan Associations**

Texas A&M University
2 Strengthen our graduate programs.

**Related Measures**

**M 1: Final Exam Evaluation Rubric**
Content in the final exam will be evaluated using the attached rubric.

Source of Evidence: Writing exam to assure certain proficiency level

**Connected Document**
Final Evaluation Form

**Target:**
Average rating will exceed 2.0 on a 4.0 scale on ability related to the question.

**Finding (2015-2016) - Target: Met**
Average Score 3.6 EXCEEDS Expectations

**Related Action Plans (by Established cycle, then alpha):**
For full information, see the Details of Action Plans section of this report.

**Implement new assessment rubrics**
In summary, PPIB has strengthened its evaluation and assessment efforts. Program educational objectives and outcomes are revie...

**M 2: Co-op/Internship data/Evaluations**
Students are evaluated for co-ops/internships at the completion of a compulsory BIOT 684. They are evaluated by their professional internship supervisors.

Source of Evidence: Field work, internship, or teaching evaluation

**Connected Document**
Final Evaluation Form

**Target:**
100% of students will be evaluated at “2” meets expectations and above on ability related to the question.

**Finding (2015-2016) - Target: Met**
Average Score 3.6 EXCEEDS Expectations

**Related Action Plans (by Established cycle, then alpha):**
Implement new assessment rubrics  
*Established in Cycle: 2014-2015*

In summary, PPIB has strengthened its evaluation and assessment efforts. Program educational objectives and outcomes are reviewed.

### M 4: Alumni Survey

Every three years, Professional Program in Biotechnology will conduct regular alumni surveys. We poll alumni for their views on the utility of the program and its weaknesses and strengths. The surveys of program alumni will be undertaken during Spring 2017. The survey questions will be mapped to three Program Educational Objectives. In the alumni survey, the alumni indicate how successful they are in their careers and in the various areas covered by the survey questions. We expect that alumni participating in the survey will indicate that they are satisfied with the program. For the alumni survey, the criterion for success is 3.5 on the scale 1—Strongly Disagree to 5—Strongly Agree.

Source of Evidence: Alumni survey or tracking of alumni achievements

**Target:**

The average alumni response will be that they engage in team work at 3.5 on a 5 point likert scale.

**Finding (2015-2016) - Target: Met**

Every three years, Professional Program in Biotechnology will conduct regular alumni surveys. We poll alumni for their views on the utility of the program and its weaknesses and strengths. The surveys of program alumni will be undertaken during Spring 2017. The survey questions will be mapped to three Program Educational Objectives. In the alumni survey, the alumni indicate how successful they are in their careers and in the various areas covered by the survey questions. We expect that alumni participating in the survey will indicate that they are satisfied with the program. For the alumni survey, the criterion for success is 3.5 on the scale 1—Strongly Disagree to 5—Strongly Agree. Currently based on the data from job placement we will consider this assessment measure completed.

### SLO 4: Function on Multidisciplinary Teams

PPIB students will have an ability to function on multidisciplinary teams.

**Strategic Plan Associations**

Texas A&M University  
2 Strengthen our graduate programs.

**Related Measures**

**M 1: Final Exam Evaluation Rubric**

Content in the final exam will be evaluated using the attached rubric.

Source of Evidence: Writing exam to assure certain proficiency level

**Connected Document**

[Final Evaluation Form](#)

**Target:**

Average rating will exceed 2.0 on a 4.0 scale on ability related to the question.

**Finding (2015-2016) - Target: Met**

Average Score 3.8 EXCEEDS Expectations

**Related Action Plans (by Established cycle, then alpha):**
For full information, see the *Details of Action Plans* section of this report.

**Implement new assessment rubrics**
*Established in Cycle: 2014-2015*
In summary, PPIB has strengthened its evaluation and assessment efforts. Program educational objectives and outcomes are revie...

**M 2: Co-op/Internship data/Evaluations**
Students are evaluated for co-ops/internships at the completion of a compulsory BIOT 684. They are evaluated by their professional internship supervisors.

Source of Evidence: Field work, internship, or teaching evaluation

Connected Document
*Final Evaluation Form*

**Target:**
100% of students will be evaluated at “2” meets expectations and above on ability related to the question.

**Finding (2015-2016) - Target: Met**
Average Score 3.5 EXCEEDS Expectations

**Related Action Plans (by Established cycle, then alpha):**
For full information, see the *Details of Action Plans* section of this report.

**Implement new assessment rubrics**
*Established in Cycle: 2014-2015*
In summary, PPIB has strengthened its evaluation and assessment efforts. Program educational objectives and outcomes are revie...

**M 4: Alumni Survey**
Every three years, Professional Program in Biotechnology will conduct regular alumni surveys. We poll alumni for their views on the utility of the program and its weaknesses and strengths. The surveys of program alumni will be undertaken during Spring 2017. The survey questions will be mapped to three Program Educational Objectives. In the alumni survey, the alumni indicate how successful they are in their careers and in the various areas covered by the survey questions. We expect that alumni participating in the survey will indicate that they are satisfied with the program. For the alumni survey, the criterion for success is 3.5 on the scale 1—Strongly Disagree to 5—Strongly Agree.

Source of Evidence: Alumni survey or tracking of alumni achievements

**Target:**
The average alumni response will be that they engage in team work at 3.5 on a 5 point likert scale.

**Finding (2015-2016) - Target: Met**
Every three years, Professional Program in Biotechnology will conduct regular alumni surveys. We poll alumni for their views on the utility of the program and its weaknesses and strengths. The surveys of program alumni will be undertaken during Spring 2017. The survey questions will be mapped to three Program Educational Objectives. In the alumni survey, the alumni indicate how successful they are in their careers and in the various areas covered by the survey questions. We expect that alumni participating in the survey will indicate that they are satisfied with the program. For the alumni survey, the criterion for success is 3.5 on the scale 1—Strongly Disagree to 5—Strongly Agree. Currently based on the data from job placement we will consider this assessment measure completed.
Related Action Plans (by Established cycle, then alpha):
For full information, see the Details of Action Plans section of this report.

Implement new assessment rubrics
In summary, PPIB has strengthened its evaluation and assessment efforts. Program educational objectives and outcomes are revie...

SLO 5: Solve Problems Important in Biotechnology Practice
PPIB students will have an ability to identify, formulate, and solve problems important in biotechnology practice.

Relevant Associations:
Graduate Outcome Associations
  1.2 Apply subject matter knowledge in a range of contexts to solve problems and make decisions.

Strategic Plan Associations
  Texas A&M University
    2 Strengthen our graduate programs.

Related Measures

M 1: Final Exam Evaluation Rubric
Content in the final exam will be evaluated using the attached rubric.
Source of Evidence: Writing exam to assure certain proficiency level

Connected Document
  Final Evaluation Form

Target:
Average rating will exceed 2.0 on a 4.0 scale on ability related to the question.

Finding (2015-2016) - Target: Met
Average Score 3.8 EXCEEDS Expectations

Related Action Plans (by Established cycle, then alpha):
For full information, see the Details of Action Plans section of this report.

Implement new assessment rubrics
In summary, PPIB has strengthened its evaluation and assessment efforts. Program educational objectives and outcomes are revie...

M 2: Co-op/Internship data/Evaluations
Students are evaluated for co-ops/internships at the completion of a compulsory BIOT 684. They are evaluated by their professional internship supervisors.
Source of Evidence: Field work, internship, or teaching evaluation

Connected Document
  Final Evaluation Form

Target:
100% of students will be evaluated at “2” meets expectations and above on ability related to the question.

Finding (2015-2016) - Target: Met
Average Score 3.6 EXCEEDS Expectations
Implement new assessment rubrics  
*Established in Cycle: 2014-2015*

In summary, PPIB has strengthened its evaluation and assessment efforts. Program educational objectives and outcomes are reviewed.

M 4: Alumni Survey

Every three years, Professional Program in Biotechnology will conduct regular alumni surveys. We poll alumni for their views on the utility of the program and its weaknesses and strengths. The surveys of program alumni will be undertaken during Spring 2017. The survey questions will be mapped to three Program Educational Objectives. In the alumni survey, the alumni indicate how successful they are in their careers and in the various areas covered by the survey questions. We expect that alumni participating in the survey will indicate that they are satisfied with the program. For the alumni survey, the criterion for success is 3.5 on the scale 1—Strongly Disagree to 5—Strongly Agree.

Source of Evidence: Alumni survey or tracking of alumni achievements

**Target:**
The average alumni response will be that they are successful in their careers at 3.5 on a 5 point likert scale.

**Finding (2015-2016) - Target: Met**

Every three years, Professional Program in Biotechnology will conduct regular alumni surveys. We poll alumni for their views on the utility of the program and its weaknesses and strengths. The surveys of program alumni will be undertaken during Spring 2017. The survey questions will be mapped to three Program Educational Objectives. In the alumni survey, the alumni indicate how successful they are in their careers and in the various areas covered by the survey questions. We expect that alumni participating in the survey will indicate that they are satisfied with the program. For the alumni survey, the criterion for success is 3.5 on the scale 1—Strongly Disagree to 5—Strongly Agree. Currently based on the data from job placement we will consider this assessment measure completed.

**Related Action Plans (by Established cycle, then alpha):**
For full information, see the *Details of Action Plans* section of this report.

**Implement new assessment rubrics**  
*Established in Cycle: 2014-2015*

In summary, PPIB has strengthened its evaluation and assessment efforts. Program educational objectives and outcomes are reviewed.

SLO 6: Professional and Ethical Responsibility

PPiB students will have an understanding of professional and ethical responsibility.

**Relevant Associations:**

**Graduate Outcome Associations**

1.7 Choose ethical courses of action in research and practice.

**Strategic Plan Associations**

Texas A&M University

2 Strengthen our graduate programs.

**Related Measures**
**M 1: Final Exam Evaluation Rubric**
Content in the final exam will be evaluated using the attached rubric.

Source of Evidence: Writing exam to assure certain proficiency level

**Connected Document**  
Final Evaluation Form

**Target:**  
Average rating will exceed 2.0 on a 4.0 scale on ability related to the question.

**Finding (2015-2016) - Target: Met**  
Average Score 3.7 EXCEEDS Expectations

**Related Action Plans (by Established cycle, then alpha):**  
For full information, see the Details of Action Plans section of this report.

**Implement new assessment rubrics**  
In summary, PPIB has strengthened its evaluation and assessment efforts. Program educational objectives and outcomes are revie...

**M 2: Co-op/Internship data/Evaluations**
Students are evaluated for co-ops/internships at the completion of a compulsory BIOT 684. They are evaluated by their professional internship supervisors.

Source of Evidence: Field work, internship, or teaching evaluation

**Connected Document**  
Final Evaluation Form

**Target:**  
100% of students will be evaluated at “2” meets expectations and above on ability related to the question.

**Finding (2015-2016) - Target: Met**  
Average Score 3.8 EXCEEDS Expectations

**Related Action Plans (by Established cycle, then alpha):**  
For full information, see the Details of Action Plans section of this report.

**Implement new assessment rubrics**  
In summary, PPIB has strengthened its evaluation and assessment efforts. Program educational objectives and outcomes are revie...

**M 4: Alumni Survey**
Every three years, Professional Program in Biotechnology will conduct regular alumni surveys. We poll alumni for their views on the utility of the program and its weaknesses and strengths. The surveys of program alumni will be undertaken during Spring 2017. The survey questions will be mapped to three Program Educational Objectives. In the alumni survey, the alumni indicate how successful they are in their careers and in the various areas covered by the survey questions. We expect that alumni participating in the survey will indicate that they are satisfied with the program. For the alumni survey, the criterion for success is 3.5 on the scale 1—Strongly Disagree to 5—Strongly Agree.

Source of Evidence: Alumni survey or tracking of alumni achievements

**Target:**  
The average alumni response will be that they are leaders in their field at 3.5 on a 5 point likert scale.
Finding (2015-2016) - Target: Met
Every three years, Professional Program in Biotechnology will conduct regular alumni surveys. We poll alumni for their views on the utility of the program and its weaknesses and strengths. The surveys of program alumni will be undertaken during Spring 2017. The survey questions will be mapped to three Program Educational Objectives. In the alumni survey, the alumni indicate how successful they are in their careers and in the various areas covered by the survey questions. We expect that alumni participating in the survey will indicate that they are satisfied with the program. For the alumni survey, the criterion for success is 3.5 on the scale 1—Strongly Disagree to 5—Strongly Agree. Currently based on the data from job placement we will consider this assessment measure completed.

Related Action Plans (by Established cycle, then alpha):
For full information, see the Details of Action Plans section of this report.

Implement new assessment rubrics
In summary, PPIB has strengthened its evaluation and assessment efforts. Program educational objectives and outcomes are revie...

SLO 7: Communicate Effectively
PPiB students will have an ability to communicate effectively.

Relevant Associations:

Graduate Outcome Associations
1.4 Communicate effectively.

Strategic Plan Associations
Texas A&M University
2 Strengthen our graduate programs.

Related Measures

M 1: Final Exam Evaluation Rubric
Content in the final exam will be evaluated using the attached rubric.
Source of Evidence: Writing exam to assure certain proficiency level

Connected Document
Final Evaluation Form

Target:
Average rating will exceed 2.0 on a 4.0 scale on ability related to the question.

Finding (2015-2016) - Target: Met
Average Score 3.6 EXCEEDS Expectations

Related Action Plans (by Established cycle, then alpha):
For full information, see the Details of Action Plans section of this report.

Implement new assessment rubrics
In summary, PPIB has strengthened its evaluation and assessment efforts. Program educational objectives and outcomes are revie...

M 2: Co-op/Internship data/Evaluations
Students are evaluated for co-ops/internships at the completion of a compulsory BIOT 684. They are evaluated by their professional internship supervisors.
Target:
100% of students will be evaluated at “2” meets expectations and above on ability related to the question.

Finding (2015-2016) - Target: Met
Average Score 3.6 EXCEEDS Expectations

Related Action Plans (by Established cycle, then alpha):
For full information, see the Details of Action Plans section of this report.

Implement new assessment rubrics

In summary, PPIB has strengthened its evaluation and assessment efforts. Program educational objectives and outcomes are reviewed...

M 4: Alumni Survey
Every three years, Professional Program in Biotechnology will conduct regular alumni surveys. We poll alumni for their views on the utility of the program and its weaknesses and strengths. The surveys of program alumni will be undertaken during Spring 2017. The survey questions will be mapped to three Program Educational Objectives. In the alumni survey, the alumni indicate how successful they are in their careers and in the various areas covered by the survey questions. We expect that alumni participating in the survey will indicate that they are satisfied with the program. For the alumni survey, the criterion for success is 3.5 on the scale 1—Strongly Disagree to 5—Strongly Agree.

Source of Evidence: Alumni survey or tracking of alumni achievements

Target:
Alumni report that they are effective communicators at 3.5 on a 5 point likert scale.

Finding (2015-2016) - Target: Met
Every three years, Professional Program in Biotechnology will conduct regular alumni surveys. We poll alumni for their views on the utility of the program and its weaknesses and strengths. The surveys of program alumni will be undertaken during Spring 2017. The survey questions will be mapped to three Program Educational Objectives. In the alumni survey, the alumni indicate how successful they are in their careers and in the various areas covered by the survey questions. We expect that alumni participating in the survey will indicate that they are satisfied with the program. For the alumni survey, the criterion for success is 3.5 on the scale 1—Strongly Disagree to 5—Strongly Agree. Currently based on the data from job placement we will consider this assessment measure completed.

Related Action Plans (by Established cycle, then alpha):
For full information, see the Details of Action Plans section of this report.

Implement new assessment rubrics

In summary, PPIB has strengthened its evaluation and assessment efforts. Program educational objectives and outcomes are reviewed...

SLO 8: Understand Contextual Impact of Biotechnology
PPiB students will have an understanding of the impact of biotechnology practice in a scientific, economic and societal context.
Relevant Associations:

Graduate Outcome Associations

1.2 Apply subject matter knowledge in a range of contexts to solve problems and make decisions.

Strategic Plan Associations

Texas A&M University

2 Strengthen our graduate programs.

Related Measures

M 1: Final Exam Evaluation Rubric

Content in the final exam will be evaluated using the attached rubric.

Source of Evidence: Writing exam to assure certain proficiency level

Connected Document

Final Evaluation Form

Target:
Average rating will exceed 2.0 on a 4.0 scale on ability related to the question.

Finding (2015-2016) - Target: Met
Average Score 3.7 EXCEEDS Expectations

Related Action Plans (by Established cycle, then alpha):
For full information, see the Details of Action Plans section of this report.

Implement new assessment rubrics
In summary, PPIB has strengthened its evaluation and assessment efforts. Program educational objectives and outcomes are revie...

Establish new PPIB Lecture Series: New Technologies and Innovations
Established in Cycle: 2015-2016
We are working to establish a new lecture series aimed at exposing students to cutting-edge technologies and innovations in the ...

M 2: Co-op/Internship data/Evaluations

Students are evaluated for co-ops/internships at the completion of a compulsory BIOT 684. They are evaluated by their professional internship supervisors.

Source of Evidence: Field work, internship, or teaching evaluation

Connected Document

Final Evaluation Form

Target:
100% of students will be evaluated at “2” meets expectations and above on ability related to the question.

Finding (2015-2016) - Target: Met
Average Score 3.7 EXCEEDS Expectations

Related Action Plans (by Established cycle, then alpha):
For full information, see the Details of Action Plans section of this report.

Implement new assessment rubrics
In summary, PPIB has strengthened its evaluation and assessment efforts. Program educational objectives and outcomes are revie...
**M 4: Alumni Survey**

Every three years, Professional Program in Biotechnology will conduct regular alumni surveys. We poll alumni for their views on the utility of the program and its weaknesses and strengths. The surveys of program alumni will be undertaken during Spring 2017. The survey questions will be mapped to three Program Educational Objectives. In the alumni survey, the alumni indicate how successful they are in their careers and in the various areas covered by the survey questions. We expect that alumni participating in the survey will indicate that they are satisfied with the program. For the alumni survey, the criterion for success is 3.5 on the scale 1—Strongly Disagree to 5—Strongly Agree.

Source of Evidence: Alumni survey or tracking of alumni achievements

**Target:**

Alumni report that they engage in professional activities that impact society at 3.5 on a 5 point likert scale.

**Finding (2015-2016) - Target: Met**

Every three years, Professional Program in Biotechnology will conduct regular alumni surveys. We poll alumni for their views on the utility of the program and its weaknesses and strengths. The surveys of program alumni will be undertaken during Spring 2017. The survey questions will be mapped to three Program Educational Objectives. In the alumni survey, the alumni indicate how successful they are in their careers and in the various areas covered by the survey questions. We expect that alumni participating in the survey will indicate that they are satisfied with the program. For the alumni survey, the criterion for success is 3.5 on the scale 1—Strongly Disagree to 5—Strongly Agree. Currently based on the data from job placement we will consider this assessment measure completed.

**Related Action Plans (by Established cycle, then alpha):**

For full information, see the Details of Action Plans section of this report.

**Implement new assessment rubrics**

*Established in Cycle: 2014-2015*

In summary, PPIB has strengthened its evaluation and assessment efforts. Program educational objectives and outcomes are revie...

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**SLO 9: Job Placement**

PPIB students will be employed or seeking further graduate work at time of graduation.

**Related Measures**

**M 3: Post Graduation Plans Survey/Data**

Students complete a feedback survey electronically upon completion of the program.

Source of Evidence: Exit interviews with grads/program completers

**Target:**

70% of respondents will report that they have been placed in a job or graduate school.

**Finding (2015-2016) - Target: Met**

Based on a survey of data from Professional Program in Biotechnology students who graduated in December/May 2015-2016 (19 students) 94% of students have been placed in a job or graduate school (includes two students to graduate schools).

**Related Action Plans (by Established cycle, then alpha):**

For full information, see the Details of Action Plans section of this report.
Implement new assessment rubrics
In summary, PPIB has strengthened its evaluation and assessment efforts. Program educational objectives and outcomes are revie...

M 4: Alumni Survey
Every three years, Professional Program in Biotechnology will conduct regular alumni surveys. We poll alumni for their views on the utility of the program and its weaknesses and strengths. The surveys of program alumni will be undertaken during Spring 2017. The survey questions will be mapped to three Program Educational Objectives. In the alumni survey, the alumni indicate how successful they are in their careers and in the various areas covered by the survey questions. We expect that alumni participating in the survey will indicate that they are satisfied with the program. For the alumni survey, the criterion for success is 3.5 on the scale 1—Strongly Disagree to 5—Strongly Agree.

Source of Evidence: Alumni survey or tracking of alumni achievements

Target:
70% of respondents will report that they have been placed in a job or graduate school.

Finding (2015-2016) - Target: Met
Based on a survey of data from Professional Program in Biotechnology students who graduated in December/May 2015-2016 (19 students) 94% of students have been placed in a job or graduate school (includes two students to graduate schools).

Details of Action Plans for This Cycle (by Established cycle, then alpha)

Comparison of internship satisfaction surveys
We will compare responses of students to a survey evaluating internship sites completed immediately following the summer internship with the ranking of the internship experience on the graduate satisfaction survey completed several years later. The survey immediately following the internship may differ significantly from later reflection on the experience although it is hoped that results will be consistent.

Established in Cycle: 2010-2011
Implementation Status: In-Progress
Priority: High

Relationships (Measure | Outcome/Objective):
Measure: Alumni Survey | Outcome/Objective: Applied Biological Science Techniques in Profession

Additional Resources: none

Enhance professional development opportunities
Based upon feedback from our student satisfaction surveys, we are working to provide a wider variety of professional development opportunities for our students. Currently, all participate in an on-campus day-long professional development conference in the spring. We are currently in the second year of implementation of a spring BIOT Directed Studies Poster Symposium, where students have an opportunity to present the results from their directed studies projects to faculty and external judges. Awards are given for outstanding presentations. We are working to implement a new poster session in the fall aimed at students who have completed internships, to provide a forum for them to showcase accomplishments during their required internship experiences.

Established in Cycle: 2013-2014
Implementation Status: In-Progress
Increase domestic student recruitment
Based on our enrollment data trends, we continue to explore ways to recruit domestic students. This year, we made early financial support offers in an effort to encourage early acceptance of admissions offers. We are currently evaluating the effectiveness of this initiative.

Established in Cycle: 2013-2014
Implementation Status: In-Progress
Priority: High

Provide additional opportunities to enhance communication skills
Based upon student feedback from a pilot effort last year, graduating students present a final oral reflection modeled on the university-level 3 minute thesis competition. We have also implemented a spring directed studies poster session, and are working to implement a fall internship poster showcase.

Established in Cycle: 2013-2014
Implementation Status: In-Progress
Priority: High

Implement new assessment rubrics
In summary, PPIB has strengthened its evaluation and assessment efforts. Program educational objectives and outcomes are reviewed and updated. New departmental and exam assessment techniques have been developed and will be implemented (new final exam assessment rubric, suitable mid term and final evaluation rubrics for internships, new post graduation plans survey and alumni survey forms). PPIB prepares program assessment reports (PARs) every year. The results of PARs reports are entered into Texas A&M University-wide repository of assessment information system—WEAVE ONLINE.

Implementation Status: In-Progress
Priority: High

Relationships (Measure | Outcome/Objective):

Measure: Alumni Survey | Outcome/Objective: Communicate Effectively | Function on Multidisciplinary Teams | Professional and Ethical Responsibility | Solve Problems Important in Biotechnology Practice | Understand Contextual Impact of Biotechnology

Measure: Co-op/Internship data/Evaluations | Outcome/Objective: Analyze and Interpret Data | Applied Biological Science Techniques in Practice | Applied Biological Science Techniques in Profession | Communicate Effectively | Function on Multidisciplinary Teams | Professional and Ethical Responsibility | Solve Problems Important in Biotechnology Practice | Understand Contextual Impact of Biotechnology

Measure: Final Exam Evaluation Rubric | Outcome/Objective: Analyze and Interpret Data | Applied Biological Science Techniques in Practice | Applied Biological Science Techniques in Profession | Communicate Effectively | Function on Multidisciplinary Teams | Professional and Ethical Responsibility | Solve Problems Important in Biotechnology Practice | Understand Contextual Impact of Biotechnology

Measure: Final Exam Evaluation Rubric | Outcome/Objective: Applied Biological Science Techniques in Practice
**Establish new PPIB Lecture Series: New Technologies and Innovations**

We are working to establish a new lecture series aimed at exposing students to cutting-edge technologies and innovations in the biotechnology field. Our first planned guest speaker for Fall 2016 will be Mr. Justin Liao from Thermo Fisher Scientific, CA.

**Established in Cycle:** 2015-2016  
**Implementation Status:** Planned  
**Priority:** High

**Relationships (Measure | Outcome/Objective):**
- Measure: Final Exam Evaluation Rubric | Outcome/Objective: Applied Biological Science Techniques in Practice  
- | Understand Contextual Impact of Biotechnology

**Review the content of required BIOT classes in relationship to BIOT program outcomes**

The overall goal of the Professional Program in Biotechnology is to produce graduates who have a strong foundation developed through achievement of the outcomes, which can then be built upon to achieve the broader program objectives. The PPIB curriculum is designed to accomplish this goal as a result of the collective experiences and knowledge obtained by completing all of the courses required for the Master of Biotechnology degree. The program prepares an annual report that includes descriptions of the methods, assessment data, a report of the findings, and a list of recommended actions. As illustrated in Measures and Findings, most of the outcomes and objectives are achieved and meet/exceed expectations. In response to the results of each assessment cycle, we create recommendations to improve the PPIB program. Recommendations and Actions: The achievement of program objectives and outcomes meets and exceeds our expected goals. No changes or recommendation are provided. But we have defined an action item for Continuous Improvement: we started to work on creating a plan that would provide statements of where the outcomes are addressed in the program curriculum, how their level of attainment would be assessed, and how the assessment results would be used to improve the program. As a result of analysis of new program outcomes and objectives, all required BIOT classes syllabi were revised to include updated list of course outcomes and their relationship to BIOT program outcomes. We plan to continue working on this plan.

**Established in Cycle:** 2015-2016  
**Implementation Status:** Planned  
**Priority:** High

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**Analysis Questions and Analysis Answers**

**Based on the analysis of your findings, what changes are you currently making to improve your program? Identify the specific findings you analyzed and how they led to your decision.**

The overall goal of the Professional Program in Biotechnology is to produce graduates who have a strong foundation developed through achievement of the outcomes, which can then be built upon to achieve the broader program objectives. The PPIB curriculum is designed to accomplish this goal as a result of the collective experiences and knowledge obtained by completing all of the courses required for the Master of Biotechnology degree. The
program prepares an annual report that includes descriptions of the methods, assessment data, a report of the findings, and a list of recommended actions. As illustrated in Measures and Findings, most of the outcomes and objectives are achieved and meet/exceed expectations. In response to the results of each assessment cycle, we create recommendations to improve the PPiB program. Recommendations and Actions: The achievement of program objectives and outcomes meets and exceeds our expected goals. No changes or recommendation are provided. But we have defined an action item for Continuous Improvement: we started to work on creating a plan that would provide statements of where the outcomes are addressed in the program curriculum, how their level of attainment would be assessed, and how the assessment results would be used to improve the program. As a result of analysis of new program outcomes and objectives, all required BIOT classes syllabi were revised to include updated list of course outcomes and their relationship to BIOT program outcomes. We plan to continue working on this plan.

Provide an update for completed or ongoing action plans from the previous year(s). Highlight your improvements.

After a review of the findings of 2014-15 and 2015-2016 assessment cycle and recommendations for the next cycle, PPiB continued to improve the program outcomes assessment plan. Action items for continuous improvement and closing the loop: (1) We developed a new assessment plan with new mission statement, objectives and outcomes for the program. The current plan provides statements of where the outcomes are addressed in the required BIOT curriculum, (2) Program outcomes were aligned with educational practices, (4) BIOT program prepared outcome-based course outlines (a common course syllabus for each course) for all required BIOT courses and the syllabi will be updated regularly based on the assessment results, (5) BIOT faculty will review course assessment data and thus continuously improve BIOT courses to meet program outcomes.

Annual Report Section Responses

Program Contributions
The PPiB is currently preparing a comprehensive self study document for our upcoming academic program review in 2017. We are also working in parallel to complete the process of programmatic re-affiliation with the National Professional Science Master's Association (NPSMA). These documents will be archived here upon completion.
Appendix D

Faculty Meeting Minutes
Faculty members present (15): Zhengdong Cheng, Craig Coates, Clare Gill, Tim Hall, Nancy Ing, Victor Ugaz, Colin Young, Christie Sayes, Gus Cothran, Loren Skow, Clint Magill, Pat Holman, Mike Criscitiello, Robert Alaniz, Christian Hilty. Staff present: Marian Cothran

The faculty meeting was called to order by Program Chair Victor Ugaz at 1:45 PM.

1. Welcome of new BIOT faculty—Victor introduced 4 new members that have joined since April 2010: J. Creighton Miller (HORT), Mike Criscitiello (VTPB), Pat Holman (VTPB), and Doris D’Souza, Univ. of Tennessee (adjunct).

2. Status of Program Review and change in home department—Victor announced that we are still waiting on a date to conclude the program review. Victor indicated that Alan Sams still would like us to form a transition committee to keep the affected parties informed. Christie Sayes remarked that we could use the process other IDPs use when programs are transferred between departments. Craig Coates offered a motion to copy all correspondence on the transition to Dave Reed to keep affected parties informed rather than forming a transition committee. Motion was seconded by Clare Gill and approved. Clare indicated we could appoint a student to the EC in an ex officio capacity, and that body could serve the same function as a transition committee with input from any remaining affected parties.

3. Discussion of IDP budget process, new fee proposal status, and new Biotechnology Diversity Scholarships. Victor presented a PowerPoint presentation (see attached) with relevant information regarding our new operating budget and the new program fee proposal status. He indicated he would distribute the formula used in determining our FY 2012 budget ( appended to minutes). Victor indicated that the program’s Regents’ Fellowships have been replaced by a new Biotechnology Diversity Scholarship. For each of the next three academic years, we have received top-off funds of $2000, which together with $2000 in program funds, will allow us to offer recruitment scholarships to four domestic students from underrepresented ethnic groups. For Fall 2011, we have awarded such scholarships to two Hispanic/Latino and two Asian applicants.

4. Update on 2010 BIOT graduates, 2011 internships, and Fall 2011 admits. Victor presented basic demographic information from Fall 2010 showing an increase in domestic students from 17% to 44% from Fall 2009. Our average GRE and GPA scores remain high. Fall Admission is going well. We have 23 acceptances; that, with an expected summer attrition of 25%, should give us our target class size of 16-18 students. We have a continued high rate of employment in industry following graduation. An analysis of the BIOT 685 Directed Study experience shows the interdisciplinary nature of faculty participation (see attached PowerPoint).

5. Nomination for Executive Committee representatives—Marian announced that Vickie Buenger had accepted the nomination for Mays representative and that Wenshe Liu
had accepted a nomination for the Science representative; as yet, no one had expressed an interest in the COALS or at-large positions on the EC. Christie Sayes made a motion to re-adjust the cycle of representatives to keep the EC balanced between experienced and new program faculty; specifically, the COALS and at-large position will serve two rather than three years this cycle. Claire Gill seconded the motion; motion approved. Loren Skow indicated he would run for the at-large position.

6. **Other business**—Colin Young indicated that the program should begin the search for a BIOT 601 instructor for the fall semester to allow the instructor preparation time over the summer. Victor agreed that we will begin the process to identify candidates and that he would address the issue with Mike Pishko. We may be able to tap into joint NCTM funding for instructors. Colin voiced a concern that our projected class size of 16-18 was too large for effective instruction. Craig stated that the program could investigate getting help grading writing assignments from the Center for Teaching Excellence. Clare suggested that the program utilize current funds, or seek funding for, a 96-well plate PCR machine for use by BIOT 601 students.

There being no further business, a motion to adjourn was made by Nancy Ing and seconded by Victor. Meeting adjourned at 3 PM.

Respectfully submitted,

Marian Cothran,
Program Coordinator

**IDP Allocation Formula:**

Note that the allocation categories listed below are intended only to represent a general breakdown of the kinds of operational support most IDPs require. There is flexibility to move funds between categories based on specific needs. Also, I have included numbers specific for MS students where applicable since the PPIB is not a Ph.D. program.

**Base support:** $15,000 per program

**Staff support:** (total # of students) * $300 + (# unique faculty committee chairs) * $250

**Graduate enhancement:** (total WSCH) * $12

**Strategic support:** (total # of students) * $240 + (number of graduates) * $400

The metrics above are determined based on 3-year averages. For the PPIB, this corresponds to 35 total students, 16 graduates, 2096 WSCH, and 12 unique faculty chairs. Based on this formula, PPIB will receive a total allocation of $68,452 for FY 2012.
Minutes
Annual Biotechnology Faculty Meeting
April 11, 2012

Faculty members present (21): Judy Ball, Zhengdong Cheng, Eleanore Conant, Gus Cothran, Mike Criscitiello, Barbara Gastel, Clare Gill, Tim Hall, Pat Holman, Nancy Ing, Clint Magill, Zivko Nikolov, Suresh Pillai, Mike Pishko, Keerti Rathore, Loren Skow, David Stelly, Victor Ugaz, Jane Welsh, Colin Young, Hongbin Zhang. Staff present: Marian Cothran

The faculty meeting was called to order by Program Chair Victor Ugaz at 11:45 AM.

1. **Welcome & new BIOT faculty**—Victor introduced 8 new members that have joined since April 2011: Garry Adams, James Cai, and Vince Gresham (Vet Med); Maria King and Mike Pishko (Engineering); Rajesh Miranda and Mariappan Muthuchamy (TAMU HSC); and Alina Sorescu (Mays). The program office has moved to the new National Center for Therapeutics Manufacturing (NCTM). Mike Pishko announced that there will be a new bus stop at NCTM prior to the start of fall semester classes.

2. **Admissions**—Fall 2012 class, Graduate Merit Fellowship, Biotechnology Diversity Scholarships, fall recruitment efforts & spring prospective student campus visit—Victor presented basic demographics of the past two years of students, statistics on our Fall 2012 admissions efforts, and information on our enhanced recruiting efforts over the past year (see attached PowerPoint presentation). David Stelly noted that the loss we experience of accepted students over the summer is common to many programs. Clare Gill noted that students should provide diversity statements for our Biotechnology Diversity Scholarship. The program will continue to keep abreast of ongoing campus-wide initiatives to promote diversity. Suresh Pillai volunteered to send Marian a recruiting contact for St. Edward’s University, and Mike Criscitiello encouraged the program to apply for the $500 travel grants to bring in prospective students for campus visits.

3. **Program budget/fee approval/external review completed**—Victor announced that we do not yet have a final program budget for FY13. Our requested program fee was approved last May by the Board of Regents, and our program review was completed last November.

4. **Update on 2011 BIOT graduates, 2011 internships, and 2012 internships**—Program graduates are continuing to find jobs and internships. About half of the internships in 2011 were with industry (see attached presentation slides for details).

5. **New initiatives:**
   - **Curriculum**—BIOT 602, BIOT 685, BIOT 684—Victor highlighted the team-taught BIOT 602 format (now an elective course in the curriculum), the project establishment form now used for BIOT 685 and the diverse faculty participation in this course, and the program request to allow students to repeat BIOT 684 once. Faculty had several suggestions for the BIOT 602 course. Mike C. suggested it could be taken like Jane Welsh’s modular immunology course, Suresh suggested it could be offered in a mini-semester, and Judy Ball advocated
adding more blocks and giving students a choice. Zivko Nikolov suggested referring these ideas to the program curriculum committee for consideration. Clare suggested that the program consider assigning faculty members to serve as professional mentors that could help students locate faculty for the BIOT 685 directed study, improve resumes, and help find committee members. Colin Young noted the importance of using key words in resumes. The EC will consider the implementation of a mentoring program for new BIOT students.

- **Program blog/partnership with Science & Technology Journalism Program**—The program hopes to continue the blog in the fall with help from another SCTJ student and will address technical problems relating to the subscription process. We may employ Constant Contact, for instance, to manage email.

- **Outstanding Graduate and Outstanding First Year Awards**—these awards are presented at our fall and spring student development conference held in collaboration with our Industry Advisory Council.

- **Fall & Spring Advisory Council Student Development Conferences**—Faculty are encouraged to attend the afternoon sessions which feature the internship presentations of prospective graduates.

6. **New industry partnerships**—Victor announced that we have new Advisory Council members representing Baxter Bioscience, Caris Life Sciences, Allergan, and Kalon Biotherapeutics. Marian has been working with the new Institute for Applied Cancer Science at MD Anderson to hire our students as interns. Suresh suggested the program consider subscribing to LinkedIn Professional to facilitate the student internship search.

7. **Nominations for Executive Committee representatives**—Judy Ball and Joe Sturino are nominees for the At-large representative to the EC; Victor Ugaz is the nominee for the College of Engineering position. No further nominations were made from the floor for the EC representatives. On-line ballots will be sent to faculty prior to May 1st.

8. **Amendment to bylaws**—Victor presented a proposed revision to the EC election procedure crafted by the EC at their Sept., 2011 meeting. Clare suggested exploring a different election procedure following by the Genetics IDP. Victor agreed to craft a second option based on Genetics and send to the EC for consideration.

9. **Other items**—There was a discussion regarding whether the program should continue the present final exam format and committee. Marian agreed to look at other professional programs on campus, see what they were doing, and report back to the EC.

There being no further business, the meeting adjourned at 1:15 PM.

Respectfully submitted,

Marian Cothran,
Program Coordinator
Minutes
Annual Biotechnology Faculty Meeting
April 3, 2013

Faculty members present (16): Sakhila Banu, Luc Berghman, James Cai, Gus Cothran, Mike Criscitiello, Paul Defigueiredo, Barbara Gastel, Clare Gill, Ivan Ivanov, Nurul Islam-Faridi, Maria King, Zivko Nikolov, Keerti Rathore, Victor Ugaz, Colin Young, Hongbin Zhang. Staff present: Marian Cothran

The faculty meeting was called to order by Program Chair Victor Ugaz at 11:40 AM.

1. Welcome & new BIOT faculty—Victor introduced 4 new members that have joined since April 2012: Sakhila Banu, Ivan Ivanov, and Waithaka Mwangi (Vet Med); and Dick Lester (Mays).

2. Admissions—Fall 2013 class, Graduate Recruitment Scholarships, fall recruitment efforts & spring prospective student campus visit—Victor presented basic demographics of the past three years of students, statistics on our Fall 2013 admissions efforts, and information on our enhanced recruiting efforts over the past year (see attached PowerPoint presentation). An increase in female enrollment in the program was noted, and Marian added that we have made admission offers for Fall 2013 to slightly more females (22 of 39 offers or 56%). Mike questioned if we had a directive to increase the admission of domestic students and Marian stated that it is a program goal, but the administration has not advocated this for our program. Victor noted that the percent of international students in our program mirrors that of the COE and perhaps the College of Science.

3. Program budget—Victor announced that our FY14 IDP allocation has increased from $64,184 in FY13 to $67,496 and that we are benefitting from a support metric based in part on the number of unique faculty chairs and co-chairs, which increased this year in the BIOT IDP.

4. Update on 2012 BIOT graduates, 2012 internships, and 2013 internships—Program graduates are continuing to find jobs and internships. About 60% of the internships in 2012 were with industry (see attached presentation slides for details). Marian reported that 2013 internship offers are coming earlier this year.

5. New initiatives:
   • Fall & Spring Advisory Council Student Development Conferences—we offered our Spring Advisory Council Student Development Conference in February. The change in timing was to enhance net-working for internships and jobs earlier in the semester.
   • Student presentations & awards—An earlier Advisory Council Development Conference does not allow for student presentations or awards, which will be at a separate event April 19th (faculty invited to attend).
   • Biomed SA—In an effort to promote the BIOT program within the San Antonio biomedical community, Victor and Marian met with Ann Stevens the President of
Biomed SA last summer. Ms. Stevens presented a Brown Bag seminar to BIOT students in Feb. and has been supportive of our program.

- **Program Blog/partnership with Science & Technology Journalism Program**—This spring we have moved from using interns/grad assistants in the Science & Technology Journalism program to using interested BIOT students as editors. This allows our students to acquire new skills related to online media. The blog is now has a monthly production schedule.

- **BIOT 602 Experiential, high-impact curriculum**—We are continuing with the team-taught, modular approach adopted for BIOT 602 last spring (see PowerPoint attachment for details). Mike remarked that a new module in bioinformatics could be attractive to students. Clare wondered if we could expand to two sections of BIOT 602 to accommodate additional modules. Colin volunteered to teach a module in vaccine production, and Mike said he would email BIOT faculty to assess interest in teaching other modules.

- **Opportunities to “shadow” industry professionals**—Marian asked for feedback regarding this idea as an additional professional development option for our BIOT students. Clare felt a week of shadowing might be necessary for students to understand industry jobs.

- **Increasing accessibility to TAMU undergraduates**—Victor mentioned that it may be worthwhile to consider ways for undergraduate seniors at TAMU to begin taking courses that would prepare them to enter the BIOT program.

- **What is the “right” size of the program?**—Colin noted that Gov. Perry had indicated 7200 jobs will result from the recently created Center for Innovation in Advanced Development and Manufacturing in College Station. Paul pointed out that it would be important to consider the balance between “local”/external internships and/or job placement in making decisions about growth.

### 6. Nominations for Executive Committee representatives

- Luc Berghman is the nominee for the College of Agriculture and Life Sciences position, and Mike Criscitiello is the nominee for the College of Veterinary Medicine and Biomedical Sciences. We are still in need of a person to serve in the at-large position being vacated by Loren Skow. No further nominations were made from the floor for the EC representatives. On-line ballots will be sent to faculty prior to May 1st.

There being no further business, the meeting adjourned at 1:10 PM.

Respectfully submitted,

Marian Cothran,
Program Coordinator
Faculty members present: Drs. Nurul Faridi, Maria King, Carol Loopstra, Jane Welsh, Michael Criscitiello, Colin Young, Karen Wooley, Gus Cothran, Wenshe Liu, Clare Gill, Victor Ugaz, Tim Hall.

Program coordinator: Dr. Larissa Pchenitchnaia

The faculty meeting was called to order by Program Chair Dr. Victor Ugaz at 11:30am.

1. Welcome and Introductions. Twelve BIOT faculty were present at the meeting. Dr. Ugaz introduced a new program coordinator Dr. Larissa Pchenitchnaia.

2. Admissions Update. Dr. Ugaz presented basic statistics for Fall 14 admissions, including # of complete applications, admitted students’ GREs, GPAs, and demographics. Additionally, Dr. Ugaz provided basic statistics of BIOT students of past 4 years, specifically comparing the numbers of domestics and international students. An increase in domestic students was noted, 53% of new Fall 14 students are domestic (10 out of 19 students). Please see attached powerpoint. A short discussion followed: there was a suggestion to provide admitted students’ undergraduate majors; discussed why students who accepted offers did not come to classes (visa, business/money issues, accepted other offers).

3. Program highlights. BIOT department has completed a task of creating a new website. Dr. Ugaz talked about new approaches for organizing Advisory Council and Student Development Conferences. New Student development Conference in November 2014 will take place in Houston, Coca Cola North America Office and will also include a field trip to a biotechnology company. In 2013 Biotechnology society received funding through College of Engineering to support student travel and biotechnology society activities.

Program graduates are continuing to find jobs and internships. 2013-2014 graduate profiles were discussed: all BIOT graduates were employed after graduation (100%). Several faculty members asked about the relation between internships/full-time employments. Dr. Ugaz confirmed that several students were hired by the internship companies. However it was also noted that students may experience a smoother pathway to progress toward full-time employment at the internship site if the work term occurs during their final semester. It was noted that there is a strong increase in local biotech industry demand. All BIOT students completed internships during summer 13. It was suggested to include the business/research sector of companies in the listing of internship and job placement data. The issue of part-time employment for international students was also discussed in light of increasing local opportunities, and it was suggested that employers be informed about the need for the
Employment experience to be tied to CPT. A “scholarship” mechanism was suggested to enable employers to support the students and help offset the additional tuition burden. There is a strong faculty involvement in BIOT students' faculty committees. Fifteen unique committee chairs representing all TAMU Colleges serve current 20 students (2nd year students). New Fall 2014 students have already started organizing faculty committees as well.

4. New Business. Dr. Ugaz reported that he continues to receive new faculty requests to join the program. It was recommended to request some kind of a brief report from current BIOT faculty regarding their involvement in the program (every 3 years). Current students ask for more involvement of business faculty. The program currently allows business faculty who are not currently BIOT faculty to serve as committee members (not chairs).

Faculty discussed the availability of bioethics classes at TAMU. Additionally, it was mentioned that BIOT program has one “fast track” student this year/from undergrads to masters. Several faculty expressed their interest in continuing BIOT 602. An idea to have a mini-symposium after students complete BIOT 685 and/or BIOT 602 was discussed.

The meeting adjourned at 1:00pm.
Program Overview

October 16, 2015

http://ppib.tamu.edu

Fall 2015 Admissions

• 63 complete applications (includes 2 change of major)
  (90 in 2014, 89 in 2013, 87 in 2012, 74 in 2011)
• 47 offers, 29 accept, 19 arrive for class
  – 2014: 28 accept, 19 arrive for class
  – 2013: 28 accept, 19 arrive for class
  – 2012: 30 accept, 3 defer, 21 arrive for class
  – 2011: 26 accept, 17 arrive for class
  – 2010: 23 accept, 17 arrive for class
• 11 scholarships ($1,000 each)
  – Thanks to admissions committee!
    – Luc Bergman, Agriculture
    – Mike Chrisistiello, CVM
    – Clint Magill, COALS
    – Rajesh Miranda, TAMU HSC
    – Victor Ugaz, Engineering

Fall 2015 Admissions

• Actual fall 2014 incoming class (19 students)

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Fall 2015 Admissions

Fall 2015 class:

Domestic students

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Fall 2015 class:

Metrics

• Overall GPA 3.3
• USA Students GPA 3.1
• INT Students GPA 3.4
• Overall GRE V 152
• USA Students V 152
• INT Students V 151
• Overall GRE Q+V 309
• USA Students Q+V 307
• INT Students Q+V 309
• TOEFL: 101
  • 7 domestic / 12 international (37%)
  • 12 female (63%)

Fall 2014 Admissions

• 30 complete applications (includes 2 change of major)
  (76 in 2014, 89 in 2013, 89 in 2012, 74 in 2011)
• 16 offers, 15 accept, 10 arrive for class
  – 2014: 14 accept, 10 arrive for class
  – 2013: 14 accept, 10 arrive for class
  – 2012: 15 accept, 10 arrive for class
  – 2011: 14 accept, 10 arrive for class
  – 2010: 13 accept, 10 arrive for class
• 2 scholarships ($1,000 each)
  – Thanks to admissions committee!
    – Luc Bergman, Agriculture
    – Mike Chrisistiello, CVM
    – Clint Magill, COALS
    – Rajesh Miranda, TAMU HSC
    – Victor Ugaz, Engineering

Fall 2014 Admissions

Fall 2014

• 10/19 domestic (50%)
• Demographics
  – 71 male, 8 female
  – International profile: 8 India
    – 1 China
    – Domestic profile: 6 caucasian, 1 oceanic, 1 black

Fall 2014 class:

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Student Profile

Fall 2010
- 1125 domestic (44%)
  - 17% in Fall 2009

Demographics
- 13 males, 12 females
- 1 Hispanic, 6 Caucasian, 18 Asian

Fall 2011
- 1232 domestic (38%)

Demographics
- 18 males, 14 females
- 3 Hispanic, 4 Caucasian, 25 Asian

Fall 2012
- 1232 domestic (38%)

Demographics
- 16 males, 22 females
- 3 Hispanic, 9 Caucasian, 25 Asian, 1 black

Fall 2013
- 1245 domestic (38%)

Demographics
- 18 males, 14 females
- 3 Hispanic, 13 Caucasian, 22 Asian, 3 black

Metric

<table>
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<tr>
<th>Year</th>
<th>Fall 2010</th>
<th>Fall 2011</th>
<th>Fall 2012</th>
<th>Fall 2013</th>
<th>Fall 2014</th>
<th>Fall 2015</th>
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<tr>
<td>Median GRE</td>
<td>309</td>
<td>307</td>
<td>310</td>
<td>1245</td>
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<tr>
<td>Average GPA</td>
<td>3.29</td>
<td>3.38</td>
<td>3.43</td>
<td>3.48</td>
<td>3.56</td>
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<tr>
<td>Average TOEFL</td>
<td>101</td>
<td>104</td>
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<td>106</td>
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</table>

Professional Development Highlights

Advisory board meeting Coca-Cola North America (Houston office)

Field trips: Celltex Therapeutics (Houston), Caliber (B/CS)

1st Annual PPIB Research Symposium

1. Using Gas Chromatography/Mass Spectrometry/Olfactometry to Determine Aroma and Flavor Profiles of Food Products
2. Technology Commercialization: SolarAge Mobile App
3. Effects of gestational exposure to chromium VI on the fetal ovary development and reproductive function in the adult F1 rats
4. Determining the structure and function of previously uncharacterized proteins in Mycobacterium tuberculosis (Mt)
5. Risk Assessment of a BSL3 Laboratory Containment Breach
6. Nanoparticles and Bacterial Contamination in Nuclear Reactor Cooling Systems
7. Market Research
8. Phage based Pesticides and Stroke Therapy Pericon Domain V
9. NTRK4 as a Potential Drug Target for Acute Myeloid Leukemia
10. PCR Master Mix Economization
11. Geographical Information System (GIS): iSleMap Technology Assessment
12. Characterization of Metabolically Active yet Non-Culturable (MAYNC) Cells
13. Results
14. Surface Engineering of Lentiviral Vectors Using Split Inteins

1st Annual PPIB Research Symposium

Recent Graduate Profiles

December 13 and May 15 Graduates

Company/Place

- Adjei, Kwabena
  - Associate Scientist (QC)
  - DPT Laboratories, San Antonio, TX
- Agarwal, Vartika
  - Clinical Research Associate
  - DAVA Oncology, Dallas, TX
- Bolaki, Menaka
  - Research Assistant
  - Department of Medicine, Baylor College of Medicine, Houston
- Deng, Jie
  - Associate Scientist
  - MD Anderson Cancer Center, Houston, TX
- Gopish, Ashwath
  - Volunteer Research Assistant
  - Department of Pharmacy Practice
  - University of Houston, Houston, TX
- Lee, Bryan
  - Doctor of Pharmacy Student
  - University of Houston, Houston, TX
- Lee, Hsiao-Ju
  - Research Assistant
  - Academy Biomedical, Houston, TX
- Marwah, Pulkit
  - Validation Analyst
  - Validation Associates, LLC, Herndon, VA
- Nambiar, Aishwarya
  - Validation Analyst
  - Office of Technology Translation, Health Science Center, Texas A&M University, College Station, TX
- Ogun, Oluwadara
  - Research Associate
  - Microbial Pathogenesis & Immunology, Texas A&M Health Science Center, Texas A&M University, College Station, TX
- Ramirez, Roxanne
  - Research Assistant
  - United States Department of Agriculture, ARS, Agricultural Research Service, College Station, TX
- Reyes, Ismael
  - Research Assistant
  - Office of Technology Translation, Health Science Center, Texas A&M University, College Station, TX
- Sharooni, Sara
  - Volunteer Research Assistant
  - Nashville, TN
- Shaukat, Umer
  - Project Coordinator
  - Office of Technology Translation, Health Science Center, Texas A&M University, College Station, TX
- Sullivan, Young
  - Clinical Monitoring Associate
  - PAREXEL, Raleigh-Durham, North Carolina
- Vijaukumar, Deepa
  - Agricultural Research Technician
  - Texas A&M Agrilife Research and Extension Center, Amarillo, TX
- Yu, Hangjin
  - Agricultural Research Technician
  - Texas A&M Agrilife Research and Extension Center, Amarillo, TX
Recent Graduate Profiles

December 13 and May 05 Graduates

<table>
<thead>
<tr>
<th>Name</th>
<th>Current Institution and Location</th>
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<tbody>
<tr>
<td>Jill, Karen</td>
<td>Texas A&amp;M Health Science Center</td>
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<tr>
<td>Johnson, Priscilla</td>
<td>College Station, TX</td>
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<tr>
<td>Brixom, Alexandra</td>
<td>Process Development Associate</td>
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<tr>
<td>O'Donnell, John</td>
<td>InGeneron, Houston, TX</td>
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<tr>
<td>Clancy, Linda</td>
<td>Media Prep Tech II</td>
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<td>Gill Ng</td>
<td>Ecolyse, College Station, TX</td>
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<td>Zhang, Dr.</td>
<td>Zoetis, College Station, TX</td>
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<td>Group, Chemical Engineering</td>
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<tr>
<td>Dwyer, Dr.</td>
<td>Department, Texas A&amp;M University</td>
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<td>Nowacki, Lauren</td>
<td>MD Anderson Cancer Research</td>
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<tr>
<td>Mwangi, Dr.</td>
<td>Center, College Station, TX</td>
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<tr>
<td>Khan, Mahwish</td>
<td>Program Analyst, Texas A&amp;M</td>
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<tr>
<td>Johnson, Keaton</td>
<td>Health Science Center, IBT/CIID</td>
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<tr>
<td>Criscitiello, Mary</td>
<td>College Station, TX</td>
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<tr>
<td>Reddy, Prahelika</td>
<td>K Kalon Biotherapeutics, TX</td>
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<tr>
<td>Ugamraj, Harshad</td>
<td>National Center for Therapeutics</td>
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<tr>
<td>More, Saanika</td>
<td>Manufacturing, College Station,</td>
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<td>Pasaya, Fareen</td>
<td>TX</td>
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<td>Liu, Keating</td>
<td>Department of Veterinary</td>
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<tr>
<td>Yuan, Sheng</td>
<td>Pathobiology, Texas A&amp;M University,</td>
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<tr>
<td>Khan, Mary</td>
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<td>Khan, Mahwish</td>
<td>Office of Technology Commercialization,</td>
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<tr>
<td>Johnson, Keaton</td>
<td>Texas A&amp;M Health Science Center, TX</td>
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<td>White, Kaila</td>
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<tr>
<td>Johnson, Keaton</td>
<td>Office of Technology Commercialization,</td>
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BIOT Committee Chairs

Fall 2014 Cohort

<table>
<thead>
<tr>
<th>Student</th>
<th>Committee Chair</th>
</tr>
</thead>
<tbody>
<tr>
<td>Cola, Christine</td>
<td>Di Gill</td>
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<tr>
<td>Conner, Jared</td>
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<td>Adams, Keaton</td>
<td>Di Gentry</td>
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<tr>
<td>Wood, Elsner</td>
<td>Di Gardner</td>
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<td>Kopp, Jovana</td>
<td>Di Schachetti</td>
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<td>Korn, Donna</td>
<td>Di Cronenberg</td>
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<td>Knight, Bright</td>
<td>Di Rathore</td>
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<td>Mueller, Michael</td>
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<td>Chapman, Mary</td>
<td>Di Johnson</td>
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<tr>
<td>Karki, knahw</td>
<td>Di Salo</td>
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<td>Abichandani, Yogesh</td>
<td>Di Xue</td>
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<td>Passas, Pamoni</td>
<td>Di Stenly</td>
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<td>Ouyang, Qianwen</td>
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<td>More, Savitha</td>
<td>Di Icig</td>
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<tr>
<td>Ligareh, Harshad</td>
<td>Di Brilol</td>
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<tr>
<td>Reddy, Prabhakar</td>
<td>Di Ca</td>
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<td>Davis, Gipri</td>
<td>Di Miranda</td>
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<tr>
<td>Khan, Mahwish</td>
<td>Di Welsh</td>
</tr>
<tr>
<td>Gunasthbigo, Bharat</td>
<td>Di Bali</td>
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BIOT Committee Chairs

Fall 2015 Cohort

<table>
<thead>
<tr>
<th>Student</th>
<th>Committee Chair</th>
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</thead>
<tbody>
<tr>
<td>Cola, Christine</td>
<td>Di Gill</td>
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<td>Conner, Jared</td>
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<td>Adams, Keaton</td>
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<td>Chapman, Mary</td>
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<td>Khan, Mahwish</td>
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<tr>
<td>Gunasthbigo, Bharat</td>
<td>Di Bali</td>
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Advisory Council

<table>
<thead>
<tr>
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<tbody>
<tr>
<td>Chris Burnett</td>
<td>Life Technologies Austin, TX</td>
</tr>
<tr>
<td>John Ferreira</td>
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<td>Tyson Fielder</td>
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<td>Private Consultant</td>
<td>Life Technologies Austin, TX</td>
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<td>Bryan TX</td>
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<td>Basker Biosciences</td>
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<td>Thousand Oaks, CA</td>
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<tr>
<td>Jose Carlos Garcia-Garcia</td>
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<td>Piscor &amp; Gambler</td>
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<td>Cincinnati, OH</td>
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<td>Michaela Hoffmeier</td>
<td>Life Technologies Austin, TX</td>
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<td>Luminex Corp.</td>
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<td>Cory Krishnan</td>
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<td>Lilly Research</td>
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<td>Indianapolis, IN</td>
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<tr>
<td>Wendy Madduff</td>
<td>Life Technologies Austin, TX</td>
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<td>Subway Milford, CT</td>
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Summer 2015 Internships

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<tr>
<td>Udo, Miranda</td>
<td>Department of General Science, TX</td>
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Issues for discussion

- Strategic vision/goals
- Program visibility/marketing
- Advisory board
- Curriculum
- Program leadership
Appendix E

PPiB Bylaws
BYLAWS

FACULTY OF BIOTECHNOLOGY

TEXAS A&M UNIVERSITY

ARTICLE I: DESCRIPTION
ARTICLE II: PURPOSE AND INTENT
ARTICLE III: MEMBERSHIP
ARTICLE IV: EXECUTIVE COMMITTEE
ARTICLE V: ELECTION OF THE EXECUTIVE COMMITTEE
ARTICLE VI: FUNCTIONS OF THE EXECUTIVE COMMITTEE
ARTICLE VII: FUNCTIONS OF THE OFFICERS
ARTICLE VIII: MEETINGS
ARTICLE IX: STANDING COMMITTEES
ARTICLE X: AMENDMENTS
REVISION HISTORY
Article I: Description

The Faculty of Biotechnology of Texas A&M University is an interdisciplinary faculty composed of members from various departments in several colleges.

Article II: Purpose and Intent

The principal function of the Faculty of Biotechnology is administration of the graduate program leading to the Master of Biotechnology, in conformance with the rules of the Office of Graduate Studies at Texas A&M University. The organization also serves to promote and facilitate communication among students and industry and to foster the development of biotechnology at Texas A&M University and other components of the Texas A&M University System. It arranges for periodic assembly of industry representatives, students and faculty and provides a forum for them and for others with interests in biotechnology. Its overall goal is the development and maintenance of a graduate program that is responsive to the students and the needs of the biotechnology industry in the State of Texas and the Nation.

Article III: Membership

1. Admissibility to the Faculty shall be determined by the Executive Committee in consultation with the Head of the faculty member’s administrative department.

2. Only permanent appointments to the Graduate Faculty of Texas A&M University with significant academic or service activities in the biological, industrial, business or liberal arts aspects of biotechnology are eligible to be members of the Faculty of Biotechnology. Active involvement in both academic and service programs of the Faculty of Biotechnology, such as described below is required to maintain membership.

   a. Academic activities

      1) Teaching in a lecture, seminar or laboratory Biotechnology course or other courses, both required and electives offered to students in the Masters of Biotechnology program.
2) Serve as an instructor for BIOT 685 students.
3) Direction of student seminar programs, BIOT 681.
4) Direct a student internship, BIOT 684.
5) Serve as the chair or member of a graduate committee of one or more biotechnology students.

b. Service activities
1) Participation in standing or ad hoc committees.
2) Attendance at meetings with the Industry Advisory Council.
3) Attendance at the Biotechnology Faculty Annual Meeting.
4) Serve as PI for a Grant/Award that supports Biotechnology Program Activities, for example a training grant, conference grant, or REU grant.
5) Participate in independent recruiting activities such as handing out Biotechnology Program recruiting materials to potential student recruits at conferences or seminar presentations at other academic institutions.
6) Participate in development activities for the Biotechnology Program.

3. Permanent appointments to the Faculty of Biotechnology are eligible to:
   a. Teach graduate Biotechnology courses
   b. Serve on the TAMU Faculty of Biotechnology Executive Committee
   c. Vote on matters requiring a vote of the Faculty of Biotechnology
   d. Serve on the Faculty of Biotechnology Membership Committee
   e. Chair standing or ad hoc committees of the Faculty of Biotechnology

4. Membership in the Faculty of Biotechnology will be reviewed every 3 years. To maintain membership, faculty must be actively involved in both the academic and service programs of the Faculty of Biotechnology.
Article IV: Executive Committee

1. The Executive Committee shall consist of seven elected Members of the Faculty of Biotechnology

2. The Executive Committee shall include one representative from each of the five academic colleges that participate in the Biotechnology Program. These representatives shall be elected by the Members of the Faculty of Biotechnology of that academic college. The other members of the Executive Committee shall be elected at-large by all the Members of the Faculty of Biotechnology. Hiring and interviewing of program staff will be overseen by the executive committee.

3. Members of the Executive Committee shall serve for three years. Their service will begin on June 1 of the year elected, and the terms shall be staggered.

4. The Executive Committee members shall nominate from among its members a chair and a vice-chair. These positions shall be elected by majority vote of the Executive Committee members for three year terms. The three-year terms of the chair and vice-chair appointments supersede the previous terms of election to the Executive Committee. The chair and vice-chair elections, when needed upon expiration of their respective terms, shall take place following the annual election of new Executive Committee members by the faculty.

5. The Executive Committee shall fill any vacancies that may occur in its members or offices between the annual elections.

Article V: Election of the Executive Committee

1. Any member of the Biotechnology faculty seeking a place on the Executive Committee shall self-nominate or agree to nomination by another for the appropriate academic faculty or at-large position open. All nominations shall be in writing and submitted to the Biotechnology Faculty Chair.

2. The nomination period for election of Executive Committee members shall be a two-week period prior to the annual faculty meeting. Further nominations may be made from the floor at the annual meeting of the Faculty of Biotechnology.

3. Elections shall be conducted by e-mail ballot to be distributed to Members after the annual Faculty of Biotechnology meeting on or before May 1 of each calendar year. Each Member shall vote for no more candidates than the number of positions to be filled. Those persons receiving the most votes will be declared elected. Election results shall be e-mailed to the members promptly. Elected members shall assume their duties on June 1 of the calendar year.
**Article VI: Functions of the Executive Committee**

1. The principal functions of the Executive Committee shall be to:
   
a. Determine and implement policy for the good of the Faculty of Biotechnology and represent the interests of the faculty generally to various University committees and other agencies.

b. Review courses and programs in biotechnology with the faculty and make recommendations for changes and new courses as appropriate, with the aim of insuring uniform excellence in the Texas A&M University Biotechnology Program.

c. Receive and rule on the acceptability of applicants for graduate study in biotechnology.

d. Receive and rule on the admissibility of nominations for membership in the Faculty of Biotechnology.

e. Develop the budget for teaching functions in Biotechnology.

f. Coordinate efforts to expand interactions with industry partners and oversee development activities.

g. Conduct all additional business deemed necessary for the proper functioning of the Faculty.

2. Technical administrative procedures pertaining to graduate degree programs shall be handled through the program office. Other matters shall be administered by the Executive Committee.

**Article VII: Functions of the Officers**

1. Chair

   The chair is the chief officer and representative of the Executive Committee and the Faculty of Biotechnology. The chair’s primary responsibility is the execution of those administrative functions that are delegated to the Faculty of Biotechnology. The chair shall:

   a. Chair the Executive Committee of the Faculty of Biotechnology.
b. Provide leadership in short- and long-term planning for the program and represent that faculty group in College and University meetings, as appropriate.

c. Coordinate recruitment of graduate students into the graduate program in the discipline.

d. Approve admission of biotechnology graduate students for the Biotechnology Faculty.

e. Recommend the budget and approve expenditures for teaching functions in Biotechnology.

f. Appoint, with approval of the Executive Committee, the chair and other members of standing committees and special committees.

g. Direct graduate student advising.

h. Coordinate periodic program assessment consistent with institutional guidelines.

i. Ensure that teaching evaluations are conducted for all Biotechnology courses.

2. Vice-chair

The vice-chair shall serve as chief officer of the Faculty of Biotechnology in the absence of the chair or when designated by the chair.

Article VIII: Meetings

1. The annual meeting of the Faculty of Biotechnology shall be held during the first two weeks of the month of April each year.

2. Special meetings of the Faculty of Biotechnology may be held at the call of the chair or by written application to the Executive Committee by five Members of the Faculty of Biotechnology.

3. A regular meeting of the Executive Committee shall be held each fall and spring semester. Other meetings of the Executive Committee may be held as frequently and for such purposes as are deemed desirable by the Executive Committee.

4. The minutes of each Faculty and Executive Committee meeting shall be distributed to all members of the Faculty of Biotechnology via e-mail within 10 days after approval by the Executive Committee.

5. At Executive Committee and Faculty of Biotechnology meetings, Robert’s Rules of Order shall be followed in matters of parliamentary procedure.
6. A quorum for Executive Committee meetings shall consist of four members of the Committee. Twenty-five percent of the Members shall constitute a quorum for meetings of the Faculty of Biotechnology.

Article IX: Standing Committees

The members of each standing committee shall be appointed prior to July 1 or each year and shall serve from July 1 through June 30 of the following year.

1. Committee on Curriculum and Educational Policy

The Committee on Curriculum and Educational Policy shall consist of three or more members. The principal functions of the committee shall be coordination of the graduate curriculum and review of teaching quality and effectiveness. The Committee shall also review and advise on newly proposed courses and programs in biotechnology and to periodically review existing graduate course offerings and programs in biotechnology.

2. Committee on Seminars

The Committee on Seminars shall consist of three members. It shall arrange for speakers and handle the necessary arrangements for the regular presentation of seminars on topics of interest.

3. Committee on Membership

The Committee on Membership shall consist of three or more Members. It shall screen applications for membership in the Faculty of Biotechnology and make a recommendation to the Executive Committee as to the acceptability of each applicant. The Committee on Membership shall also review the active status of all members on a three-year basis.

4. Graduate Admissions Committee

The Graduate Admissions Committee shall consist of three or more members. It shall serve as an advisory committee to the Executive Committee by screening and evaluating the applications of prospective students for acceptance into the Biotechnology Program. The committee shall facilitate the processing of files acceptable candidates through departmental review and Office of Graduate Studies notification and shall monitor the progress and status of first year students.

6. Faculty and Student Awards Committee

The Faculty and Student Awards Committee shall be responsible for the nomination of faculty and students for local and national awards.
Article X: Amendments

Proposed amendments of the Bylaws shall be submitted to the Members of the Faculty of Biotechnology for approval or disapproval following either (1) approval of a motion to do so by majority vote of the Executive Committee or (2) written petition to the Executive Committee by a minimum of five Full Members of the Faculty of Biotechnology. Approval by two-thirds or more of the Full Members voting in an e-mail ballot is required to adopt amendments.

Revision History

Adopted: December 18, 2000
Amended: March 1, 2010
Amended: February 17, 2011
Amended: August 15, 2012
Appendix F

Institutional Profile
January 2, 2017

TO: External Program Reviewers and Program Accreditors

FROM: Michael T. Stephenson
Associate Provost for Academic Affairs and SACSCOC Accreditation Liaison

RE: Information required for USDOE Accrediting Bodies

Texas A&M University is accredited by the Southern Association of Colleges and Schools Commission on Colleges to award baccalaureate, master’s, and doctoral degrees. Consistent with comprehensive standard 3.13.1, the following provides the institution’s official position on its purpose, governance, programs, degrees, diplomas, certificates, personnel, finances, and constituencies and is published in official university documents as noted.

**Purpose**

Classified by the Carnegie Foundation as a Research Doctoral University (Highest Research Activity), Texas A&M embraces its mission of the advancement of knowledge and human achievement in all its dimensions. The research mission is a key to advancing economic development in both public and private sectors. Integration of research with teaching prepares students to compete in a knowledge-based society and to continue developing their own creativity, learning, and skills beyond graduation.

The institution’s official mission statement, published both on the institution’s web page as well as in its annual university catalog, is:

> Texas A&M University (Texas A&M) is dedicated to the discovery, development, communication and application of knowledge in a wide range of academic and professional fields. Its mission of providing the highest quality undergraduate and graduate programs is inseparable from its mission of developing new understandings through research and creativity. It prepares students to assume roles in leadership, responsibility and service to society. Texas A&M assumes as its historic trust the maintenance of freedom of inquiry and an intellectual environment nurturing the human mind and spirit. It welcomes and seeks to serve persons of all racial, ethnic and geographic groups, women and men alike, as it addresses the needs of an increasingly diverse population and a global economy. In the twenty-first century, Texas A&M University seeks to assume a place of preeminence among public universities while respecting its history and traditions.

**Governance**

The governance of the institution was described in the 2012 certification of compliance submitted to SACSCOC.
Texas A&M University at College Station, the flagship institution of the Texas A&M University System, has branch campuses located in Galveston, Texas and Doha, Qatar. A ten-member Board of Regents, appointed by the Governor, directs the Texas A&M System. The appointment of each Regent follows Texas Education Code (TEC, Chapter 85, Section 21).

TEC outlines the duties and responsibilities of the Board of Regents. These responsibilities are also defined in System Policy 02.01 Board of Regents and TEC 51.352. The Board elects two officers: Chair and Vice Chair. There are four standing committees: Audit, Academic & Student Affairs, Finance, and Buildings & Physical Plant. Special committees may be appointed by the Chair with Board approval.

At Texas A&M University the President is the chief executive officer; the President is not the presiding officer of the Board of Regents. The President reports to the state-appointed Board of Regents through the Chancellor of the Texas A&M University System. System Policy 2.05 Presidents of System Member Universities defines the duties of the President. The appointment of the President follows conditions set forth in System Policy 01.03 Appointing Power and Terms and Conditions of Employment, section 2.2.

**Personnel**

The institution is led by the President and members of his cabinet:

- Michael K. Young, President
- Karan L. Watson, Provost and Executive Vice President
- Jerry R. Strawser, Executive Vice President for Finance and Administration and CFO
- Michael Benedik, Vice Provost
- M. Dee Childs, Vice President for Information Technology and CIO
- Michael G. O’Quinn, Vice President for Government Relations
- Dr. Douglas Palmer, Interim Vice President and COO, TAMU-Galveston
- Barbara A. Abercrombie, Vice President for HR & Organizational Effectiveness
- Jessica Rubie, Associate Vice President for Strategic Initiatives
- Christine Stanley, Vice President and Associate Provost for Diversity
- Amy B. Smith, Senior Vice President and Chief Marking & Communications Officer
- Glen A. Laine, Vice President for Research
- Carrie L. Byington, Senior Vice President TAMU Health Science Center, Dean of the College of Medicine, and Vice Chancellor for Health Services
- Daniel J. Pugh, Sr., Vice President for Student Affairs
- Gen Joe E. Ramirez, Jr. Commandant, Corps of Cadets
- Amy B. Smith, Senior Vice President and Chief Marketing and Communications Officer
- Scott Woodward, Director of Athletics

**Programs, Degrees, Diplomas, and Certificates**

See the Institutional Summary submitted to SACSCOC

**Finances**

See the Financial Profile 2016 submitted to SACSCOC
Name of Institution  Texas A&M University

Name, Title, Phone number, and email address of Accreditation Liaison
Michael T. Stephenson
Associate Provost for Academic Affairs and SACSCOC Accreditation Liaison
979.845.4016
mstephenson@tamu.edu

Name, Title, Phone number, and email address of Technical Support person for the
Compliance Certification
Alicia M. Dorsey
Assistant Provost for Institutional Effectiveness
979.862.2918
amdorsey@tamu.edu

IMPORTANT:

Accreditation Activity (check one):

- Submitted at the time of Reaffirmation Orientation
- Submitted with Compliance Certification for Reaffirmation
- Submitted with Materials for an On-Site Reaffirmation Review
- Submitted with Compliance Certification for Fifth-Year Interim Report
- Submitted with Compliance Certification for Initial Candidacy/Accreditation Review
- Submitted with Merger/Consolidations/Acquisitions
- Submitted with Application for Level Change

Submission date of this completed document:  September 29, 2015
EDUCATIONAL PROGRAMS

1. Level of offerings (Check all that apply)

☐ Diploma or certificate program(s) requiring less than one year beyond Grade 12
☐ Diploma or certificate program(s) of at least two but fewer than four years of work beyond Grade 12
☐ Associate degree program(s) requiring a minimum of 60 semester hours or the equivalent designed for transfer to a baccalaureate institution
☐ Associate degree program(s) requiring a minimum of 60 semester hours or the equivalent not designed for transfer
☒ Four or five-year baccalaureate degree program(s) requiring a minimum of 120 semester hours or the equivalent
☒ Professional degree program(s)
☒ Master's degree program(s)
☒ Work beyond the master's level but not at the doctoral level (such as Specialist in Education)
☒ Doctoral degree program(s)
☐ Other (Specify) ______

2. Types of Undergraduate Programs (Check all that apply)

☐ Occupational certificate or diploma program(s)
☐ Occupational degree program(s)
☐ Two-year programs designed for transfer to a baccalaureate institution
☒ Liberal Arts and General
☒ Teacher Preparatory
☒ Professional
☐ Other (Specify) ______

GOVERNANCE CONTROL

Check the appropriate governance control for the institution:

☐ Private (check one)

☐ Independent, not-for-profit

Name of corporation OR
Name of religious affiliation and control: ______

☐ Independent, for-profit *

If publicly traded, name of parent company: ______
Public state * (check one)

☐ Not part of a state system, institution has own independent board
☒ Part of a state system, system board serves as governing board

☐ Part of a state system, system board is super governing board, local governing board has delegated authority

☐ Part of a state system, institution has own independent board

* If an institution is part of a state system or a corporate structure, a description of the system operation must be submitted as part of the Compliance Certification for the decennial review. See Commission policy “Reaffirmation of Accreditation and Subsequent Reports” for additional direction.

INSTITUTIONAL INFORMATION FOR REVIEWERS

Directions:
Please address the following and attach the information to this form.

1. History and Characteristics
Provide a brief history of the institution, a description of its current mission, an indication of its geographic service area, and a description of the composition of the student population. Include a description of any unusual or distinctive features of the institution and a description of the admissions policies (open, selective, etc.). If appropriate, indicate those institutions that are considered peers. Please limit this section to one-half page.

2. List of Degrees
List all degrees currently offered (A. S., B.A., B.S., M.A., Ph.D., for examples) and the majors or concentrations within those degrees, as well as all certificates and diplomas. For each credential offered, indicate the number of graduates in the academic year previous to submitting this report. Indicate term dates.

3. Off-Campus Instructional Locations and Branch Campuses
List all locations where 50% or more credit hours toward a degree, diploma, or certificate can be obtained primarily through traditional classroom instruction. Report those locations in accord with the Commission’s definitions and the directions as specified below.

Off-campus instructional sites—a site located geographically apart from the main campus at which the institution offers 50% or more of its credit hours for a diploma, certificate, or degree. This includes high schools where courses are offered as part of dual enrollment. For each site, provide the information below. The list should include only those sites reported and approved by SACSCOC. Listing unapproved sites below does not constitute reporting them to SACSCOC. In such cases when an institution has initiated an off-campus instructional site as described above without prior approval by SACSCOC, a prospectus for approval should be submitted immediately to SACSCOC.
<table>
<thead>
<tr>
<th>Name of Site</th>
<th>Physical Address (street, city, state, country) Do not include PO Boxes.</th>
<th>Date Approved by SACSCOC</th>
<th>Date Implemented by the institution</th>
<th>Educational programs offered (specific degrees, certificates, diplomas) with 50% or more credits hours offered at each site</th>
<th>Is the site currently active? (At any time during the past 5 years, have students been enrolled and courses offered? If not, indicate the date of most recent activity.)</th>
</tr>
</thead>
</table>

**Institutions with off-campus instructional sites** at which the institution offers **25-49%** credit hours for a diploma, certificate, or degree—including high schools where courses are offered as dual enrollment—are required to notify SACSCOC in advance of initiating the site. For each site, provide the information below.

<table>
<thead>
<tr>
<th>Name of Site (Indicate if site is currently active or inactive. If inactive, date of last course offerings and date of projected reopening)</th>
<th>Physical Address (street, city, state, country) Do not include PO Boxes.</th>
<th>Date Notified SACSCOC by SACSCOC</th>
<th>Date Implemented by the institution</th>
<th>Educational programs offered (specific degrees, certificates, diplomas) with 25-49% credit hours offered at each site</th>
<th>Is the site currently active? (At any time during the past 5 years, have students been enrolled and courses offered? If not, indicate the date of most recent activity.)</th>
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</thead>
</table>

**Branch campus**—an instructional site located geographically apart and independent of the main campus of the institution. A location is independent of the main campus if the location is (1) permanent in nature, (2) offers courses in educational programs leading to a degree, certificate, or other recognized educational credential, (3) has its own faculty and administrative or supervisory organization, **and** (4) has its own budgetary and hiring authority. **The list should include only those branch campuses reported and approved by SACSCOC.** Listing unapproved branch campuses below does not constitute reporting them to SACSCOC. A prospectus for an unapproved branch campuses should be submitted immediately to SACSCOC.

<table>
<thead>
<tr>
<th>Name of Branch Campus</th>
<th>Physical Address (street, city, state, country) Do not include PO Boxes.</th>
<th>Date Approved by SACSCOC</th>
<th>Date Implemented by the institution</th>
<th>Educational programs (specific degrees, certificates, diplomas) with 50% or more credits hours offered at the branch campus</th>
<th>Is the campus currently active? (At any time during the past 5 years, have students been enrolled and courses offered? If not, indicate the date of most recent activity.)</th>
</tr>
</thead>
</table>

4. **Distance and Correspondence Education**
Provide an initial date of approval for your institution to offer distance education. Provide a list of credit-bearing educational programs (degrees, certificates, and diplomas) where 50% or more of the credit hours are delivered through distance education modes. For each educational program, indicate whether the program is delivered using synchronous or asynchronous technology, or both. For each educational program that uses distance education technology to deliver the program at a specific site (e.g., a synchronous program using interactive videoconferencing), indicate the program offered at each location where students receive the transmitted program. Please limit this description to one page, if possible.

5. Accreditation

(1) List all agencies that currently accredit the institution and any of its programs and indicate the date of the last review by each.

(2) If SACS Commission on Colleges is not your primary accreditor for access to USDOE Title IV funding, identify which accrediting agency serves that purpose.

(3) List any USDOE recognized agency (national and programmatic) that has terminated the institution’s accreditation (include the date, reason, and copy of the letter of termination) or list any agency from which the institution has voluntarily withdrawn (include copy of letter to agency from institution).

(4) Describe any sanctions applied or negative actions taken by any USDOE-recognized accrediting agency (national, programmatic, SACSCOC) during the two years previous to the submission of this report. Include a copy of the letter from the USDOE to the institution.

6. Relationship to the U.S. Department of Education

Indicate any limitations, suspensions, or termination by the U.S. Department of Education in regard to student financial aid or other financial aid programs during the previous three years. Report if on reimbursement or any other exceptional status in regard to federal or state financial aid.

Document History
Adopted: September 2004
Revised: March 2011
Revised: January 2014
1. History and Characteristics

Provide a brief history of the institution, a description of its current mission, an indication of its geographic service area, and a description of the composition of the student population. Include a description of any unusual or distinctive features of the institution and a description of the admissions policies (open, selective, etc.). If appropriate, indicate those institutions that are considered peers. Please limit this section to one-half page.

History. Texas A&M University was established in 1871 as the state’s first public institution of higher education and opened for classes in 1876. We are now one of a select few institutions in the nation to hold land grant, sea grant (1971) and space grant (1989) designations. We are also one of few universities to host a presidential library; the George Bush Presidential Library and Museum opened in 1997. A mandatory military component was a part of the land grant designation until 1965 and today we are one of only three institutions with a full-time corps of cadets, leading to commissions in all branches of service. We have two branch campuses, one in Galveston, Texas, (established in 1962, officially merged with Texas A&M in 1991) and one in Doha, Qatar (established in 2003). In 2001 we were admitted to the Association of American Universities (AAU) and in 2004 to Phi Beta Kappa. We are classified by the Carnegie Foundation as a Research University (very high research activity).

Mission. Texas A&M University is dedicated to the discovery, development, communication, and application of knowledge in a wide range of academic and professional fields. Its mission of providing the highest quality undergraduate and graduate programs is inseparable from its mission of developing new understandings through research and creativity. It prepares students to assume roles in leadership, responsibility and service to society. Texas A&M assumes as its historic trust the maintenance of freedom of inquiry and an intellectual environment nurturing the human mind and spirit. It welcomes and seeks to serve persons of all racial, ethnic and geographic groups as it addresses the needs of an increasingly diverse population and a global economy. In the 21st century, Texas A&M University seeks to assume a place of preeminence among public universities while respecting its history and traditions.

Enrollment Profile.
77.42% Undergraduate, 18.41% Graduate, 4.02% Professional, and 0.14% Post-Doc Certificate

Undergraduate Students:
93.58% Texas Residents, 3.96% non-Texas Residents, 2.46% non-Texas, non-US Residents;
62.41% White, 3.11% Black, 22.33% Hispanic, 6.21% Asian

Graduate Students:
45.09% Texas Residents, 16.57% non-Texas Residents, 38.34% non-Texas, non-US Residents
Admissions Process. Selective. Automatic admission for Texas resident applicants in the top 10% of their high school graduating class; automatic admission for applicants who rank in the top 25% of their high school graduating class and achieve a combined (old) SAT math and SAT critical reading score of at least 1300 with a test score of at least 600 in each component, or combined (newly redesigned) SAT math and SAT evidence based reading and writing (EBRW) score of at least 1360 with a test score of at least 620 in Math and 660 in EBRW, or 30 composite on the ACT with a 27 in the math and English components; review of all other applicants based on academic potential, distinguishing characteristics, exceptional circumstances and personal achievements.

Peer Institutions. Georgia Institute of Technology, Ohio State University, Pennsylvania State University, Purdue University, University of California- Berkeley, Davis, Los Angeles, San Diego, University of Florida, University of Illinois – Champaign/Urbana, University of Michigan, University of Minnesota, University of North Carolina – Chapel Hill, University of Texas – Austin, and University of Wisconsin – Madison.
## 2. List of Degrees

List all degrees currently offered (A. S., B.A., B.S., M.A., Ph.D., for examples) and the majors or concentrations within those degrees, as well as all certificates and diplomas. For each credential offered, indicate the number of graduates in the academic year previous to submitting this report. Indicate term dates.

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<th>College</th>
<th>Degree Program</th>
<th>Number of Graduates</th>
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<td>VETERINARY PUBLIC HEALTH - EPIDEMIOLOGY</td>
<td>MS</td>
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</table>
3. Off-Campus Instructional Locations and Branch Campuses

List **all locations** where 50% or more credit hours toward a degree, diploma, or certificate can be obtained primarily through traditional classroom instruction. Report those locations in accord with the Commission’s definitions and the directions as specified below.

**Off-campus instructional sites**—a site located geographically apart from the main campus at which the institution offers **50 % or more** of its credit hours for a diploma, certificate, or degree. This includes high schools where courses are offered as part of dual enrollment. For each site, provide the information below. **The list should include only those sites reported and approved by SACSCOC.** Listing unapproved sites below does not constitute reporting them to SACSCOC. In such cases when an institution has initiated an off-campus instructional site as described above without prior approval by SACSCOC, a prospectus for approval should be submitted immediately to SACSCOC.

**Off-Campus Instructional Locations – 50% or more.**

<table>
<thead>
<tr>
<th>Name of Site</th>
<th>Physical Address (street, city, state, country) Do not include PO Boxes.</th>
<th>Date Approved by SACSCOC</th>
<th>Date Implemented by the institution</th>
<th>Educational programs offered (specific degrees, certificates, diplomas) with 50% or more credits hours offered at each site</th>
<th>Is the site currently active? (At any time during the past 5 years, have students been enrolled and courses offered? If not, indicate the date of most recent activity.)</th>
</tr>
</thead>
</table>
| Texas A&M Health Science Center   | 8441 State Highway 47 Clinical Building 1, Suite 3100 Bryan, TX 77807   | 2000                     | 2000                                | EDUCATION FOR HEALTHCARE PROFESSIONALS  
MEDICAL SCIENCES MD  
MEDICAL SCIENCES MS  
MEDICAL SCIENCES PHD  
MEDICINE MD  
NURSING BSN  
NURSING EDUCATION MSN  
PHARMACY PHMD  
FAMILY NURSE PRACTITIONER MSN | Yes                                                                 |
MEDICAL SCIENCES MS | Yes                                                                 |
| City Centre                      | 842 West Sam Houston Parkway North, Suite 200 Houston, Texas 77024-3920 | 2012                     | 2012                                | ANALYTICS  
BUSINESS ADMINISTRATION MBA | Yes                                                                 |
| College of Dentistry             | 3302 Gaston Ave. Dallas, TX 75246                                      | 2001                     | 2000                                | ADVANCED EDUCATION IN GENERAL DENTISTRY  
DENTAL HYGIENE BS  
DENTAL PUBLIC HEALTH Certific ate  
DENTISTRY DDS  
ENDODONTICS CTGFA  
MAXILLOFACIAL SURGERY CTGFA  
ORAL AND MAXILLOFACIAL PATHOLOGY CTGFA  
ORAL AND MAXILLOFACIAL CTGFA | Yes                                                                 |
<table>
<thead>
<tr>
<th>Name of Site</th>
<th>Physical Address</th>
<th>Date Approved by SACSCOC</th>
<th>Date Implemented by the institution</th>
<th>Educational programs offered (specific degrees, certificates, diplomas) with 50% or more credits hours offered at each site</th>
<th>Is the site currently active? (At any time during the past 5 years, have students been enrolled and courses offered? If not, indicate the date of most recent activity.)</th>
</tr>
</thead>
<tbody>
<tr>
<td>Institute of Biosciences and Technology</td>
<td>2121 W. Holcombe Blvd. Houston, TX 77030</td>
<td>2000</td>
<td>2000</td>
<td>HEALTH ADMINISTRATION MHA, MEDICINE MD</td>
<td>Yes</td>
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<tr>
<td>Rangel College of Pharmacy</td>
<td>1010 W. Avenue B. Kingsville, TX 78363</td>
<td>2011</td>
<td>2006</td>
<td>PHARMACY PHMD</td>
<td>Yes</td>
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<tr>
<td>College of Medicine - Temple</td>
<td>2401 S. 31st Street Temple, TX 76508</td>
<td>2000</td>
<td>2000</td>
<td>MEDICINE MD, MEDICAL SCIENCES PHD</td>
<td>Yes</td>
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<tr>
<td>Clinical Learning Resource Center</td>
<td>Health Professions Building 3950 North A. W. Grimes Blvd. Round Rock, TX 78665</td>
<td>2011</td>
<td>2010</td>
<td>MEDICINE MD, NURSING BSN</td>
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<tr>
<td>Rural Public Health - McAllen Teaching Site</td>
<td>2101 South McColl Road McAllen, TX 78503</td>
<td>2011</td>
<td>2010</td>
<td>HEALTH POLICY AND MANAGEMENT MPH, HEALTH PROMOTION AND COMMUNITY HEALTH SCIENCES MPH, NURSING BSN</td>
<td>Yes</td>
</tr>
<tr>
<td>Texas A&amp;M University School of Law</td>
<td>1515 Commerce St Fort Worth, TX 76102</td>
<td>2013</td>
<td>2013</td>
<td>HEALTH CARE LAW JM, INTELLECTUAL PROPERTY ML, INTELLECTUAL PROPERTY MJ, JURISPRUDENCE MJ, LAW JD, LAWS ML</td>
<td>Yes</td>
</tr>
<tr>
<td>Houston Methodist Hospital</td>
<td>6670 Bertner Avenue, R2-216 Houston, TX 77030</td>
<td>2015</td>
<td>2015</td>
<td>MEDICINE MD</td>
<td>Yes</td>
</tr>
<tr>
<td>Baylor University Medical Center</td>
<td>3500 Gaston Avenue Dallas, TX 75246</td>
<td>2012</td>
<td>2011</td>
<td>MEDICINE MD</td>
<td>Yes</td>
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</table>
### Off-Campus Instructional Locations – 25%-49%.

<table>
<thead>
<tr>
<th>Name of Site (Indicate if site is currently active or inactive. If inactive, date of last course offerings and date of projected reopening)</th>
<th>Physical Address (street, city, state, country) Do not include PO Boxes.</th>
<th>Date Notified SACSCOC</th>
<th>Date Implemented by the institution</th>
<th>Educational programs offered (specific degrees, certificates, diplomas) with 25-49% credit hours offered at each site</th>
<th>Is the site currently active? (At any time during the past 5 years, have students been enrolled and courses offered? If not, indicate the date of most recent activity.)</th>
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</thead>
<tbody>
<tr>
<td>Department of State Health Services</td>
<td>1100 West 49th Austin, TX. 78756</td>
<td>2011</td>
<td>2004</td>
<td>HEALTH POLICY &amp; MANAGEMENT - MPH</td>
<td></td>
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### Branch Campuses

<table>
<thead>
<tr>
<th>Name of Branch Campus</th>
<th>Physical Address (street, city, state, country) Do not include PO Boxes.</th>
<th>Date Approved by SACSCOC</th>
<th>Date Implemented by the institution</th>
<th>Educational programs (specific degrees, certificates, diplomas) with 50% or more credits hours offered at the branch campus</th>
<th>Is the campus currently active? (At any time during the past 5 years, have students been enrolled and courses offered? If not, indicate the date of most recent activity.)</th>
</tr>
</thead>
</table>
| Texas A&M University at Galveston | 200 Seawolf Pkwy. Galveston, TX 77553 | 1992 | 1991 | MARINE BIOLOGY BS  
OFFSHORE & COASTAL SYSTEMS ENGINEER BS  
MARINE BIOLOGY MS  
MARINE BIOLOGY PHD  
MARINE ENGINEERING TECHNOLOGY BS  
MARINE FISHERIES BS  
MARINE RESOURCES MANAGEMENT MMR  
MARINE SCIENCES BS  
MARINE TRANSPORTATION BS  
MARITIME ADMINISTRATION BS  
MARITIME ADMINISTRATION & LOGISTICS MML  
MARITIME STUDIES BA  
OCEAN AND COASTAL RESOURCES BS  
OCEAN ENGINEERING BS  
UNIVERSITY STUDIES – BS | Yes |
4. Distance and Correspondence Education

Provide an initial date of approval for your institution to offer distance education. Provide a list of credit-bearing educational programs (degrees, certificates, and diplomas) where 50% or more of the credit hours are delivered through distance education modes. For each educational program, indicate whether the program is delivered using synchronous or asynchronous technology, or both. For each educational program that uses distance education technology to deliver the program at a specific site (e.g., a synchronous program using interactive videoconferencing), indicate the program offered at each location where students receive the transmitted program. Please limit this description to one page, if possible.

**Initial Approval in February 2000**

<table>
<thead>
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<th>Credit Bearing Degree Programs</th>
<th>Site</th>
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<td>Asynchronous</td>
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<td>MAGR</td>
<td>Asynchronous</td>
</tr>
<tr>
<td>AGRICULTURAL EDUCATION</td>
<td>EDD</td>
<td>Synchronous course offered worldwide via PC or LMS</td>
</tr>
<tr>
<td>AGRICULTURAL SYSTEMS MANAGEMENT</td>
<td>MS</td>
<td>Asynchronous</td>
</tr>
<tr>
<td>ANALYTICS</td>
<td>MS</td>
<td>Asynchronous</td>
</tr>
<tr>
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<td>MED</td>
<td>Asynchronous</td>
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<td>MS</td>
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<th>Program</th>
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<td>NONPROFIT MANAGEMENT</td>
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<td>McAllen, TX</td>
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<tr>
<td>REGULATORY SCIENCE IN FOOD SYSTEMS</td>
<td>CERT</td>
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<td>SAFETY ENGINEERING</td>
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5. Accreditation

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<tr>
<th>Accreditation Council for Pharmacy Education</th>
<th>Program Description</th>
<th>Last Review:</th>
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<tbody>
<tr>
<td>The pharmacy professional degree program</td>
<td>Last Review: April 2014</td>
<td>April 2014</td>
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<tr>
<td>American Council for Construction Education</td>
<td>The B.S. and M.S. curriculum in construction science</td>
<td>Last Review: 2011 (B.S.) and 2012 (M.S.)</td>
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<tr>
<td>American Psychological</td>
<td>The clinical psychology program</td>
<td>Last Review: April/May 2015</td>
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<td><strong>Association</strong></td>
<td>in the Department of Psychology and the counseling psychology and school psychology program in the Department of Educational Psychology</td>
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<tr>
<td>---</td>
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<tr>
<td><strong>American Veterinary Medical Association Council on Education</strong></td>
<td>The veterinary medicine degree program</td>
<td>Last Review: 2013</td>
</tr>
<tr>
<td><strong>Association to Advance Collegiate Schools of Business (AACSB)</strong></td>
<td>The business baccalaureate, master’s, and doctoral programs in Mays Business School</td>
<td>Last Review: Fall 2012</td>
</tr>
<tr>
<td><strong>Commission on Accreditation for Dietetics Education</strong></td>
<td>The dietetic track in the nutritional sciences curriculum and the dietetic internship program</td>
<td>Last review: January 2015</td>
</tr>
<tr>
<td><strong>Commission on Accreditation of Athletic Training Education (caATe)</strong></td>
<td>Athletic Training (College of Education)</td>
<td>Last Review: 2013</td>
</tr>
<tr>
<td><strong>Commission on Accreditation of Healthcare Management Education</strong></td>
<td>The Master of Health Administration</td>
<td>Last Review: Fall 2010</td>
</tr>
<tr>
<td><strong>Commission on Collegiate Nursing Education and the Texas Board of Nursing</strong></td>
<td>The nursing degree programs</td>
<td>Last Review: July 2013</td>
</tr>
<tr>
<td><strong>Commission on Dental Accreditation. (CODA)</strong></td>
<td>The degree programs in dentistry and dental hygiene and the certificate programs in the ten advanced dental graduate education programs</td>
<td>Last Review: August 2013</td>
</tr>
<tr>
<td><strong>Commission on English Language Program Accreditation (CEA)</strong></td>
<td>The English Language Institute</td>
<td>Last review: 2013</td>
</tr>
<tr>
<td><strong>Computing Accreditation Commission of ABET</strong></td>
<td>The computer science program</td>
<td>Last review: 2010</td>
</tr>
<tr>
<td><strong>Council of the Section of Legal Education and Admissions to the Bar of the American Bar Association</strong></td>
<td>Texas A&amp;M University School of Law</td>
<td>Last review: 2010</td>
</tr>
<tr>
<td><strong>Council on Education for Public Health</strong></td>
<td>The School of Public Health degree programs</td>
<td>Last Review: April 2011</td>
</tr>
<tr>
<td><strong>Engineering Accreditation Commission of ABET</strong></td>
<td>Undergraduate programs in aerospace, biological and agricultural, biomedical, chemical, civil, computer, electrical, industrial, mechanical, nuclear, ocean, petroleum and radiological health engineering</td>
<td>Last Review: 2010-2011 (College Station) and 2015 (Qatar)</td>
</tr>
<tr>
<td><strong>Engineering Accreditation Commission of ABET</strong></td>
<td>Maritime systems engineering (Offshore and Coastal Systems Engineering) – TAMU Galveston</td>
<td>Last review: 2010-11</td>
</tr>
<tr>
<td>Organization Name</td>
<td>Program Details</td>
<td>Last Review:</td>
</tr>
<tr>
<td>--------------------------------------------------------------</td>
<td>---------------------------------------------------------------------------------</td>
<td>--------------</td>
</tr>
<tr>
<td>Engineering Technology Accreditation Commission of ABET</td>
<td>The electronic systems engineering technology program, the manufacturing and mechanical engineering technology program,</td>
<td>2013-2014 (College Station) and 2015 (Qatar)</td>
</tr>
<tr>
<td>Engineering Technology Accreditation Commission of ABET</td>
<td>marine engineering technology – TAMU Galveston</td>
<td>2013-14</td>
</tr>
<tr>
<td>Forensic Science Education Programs Accreditation Commission (FEPAC)</td>
<td>The forensics and investigative sciences program</td>
<td>Last Site Visit: October 2011 Accreditation dates: 1/2012-1/2017</td>
</tr>
<tr>
<td>Institute of Food Technologists</td>
<td>The food science and technology curriculum</td>
<td>December 2011</td>
</tr>
<tr>
<td>Landscape Architectural Accreditation Board</td>
<td>The curriculum in landscape architecture</td>
<td>July 2015</td>
</tr>
<tr>
<td>Liaison Committee on Medical Education</td>
<td>The medical education degree program</td>
<td>August 2012</td>
</tr>
<tr>
<td>National Architectural Accrediting Board</td>
<td>The curriculum in architecture</td>
<td>March 2013</td>
</tr>
<tr>
<td>Network of Schools of Public Policy, Affairs, and Administration</td>
<td>The Master of Public Service and Administration degree in the Bush School of Government and Public Service</td>
<td>April 2014</td>
</tr>
<tr>
<td>National Recreation and Park Association</td>
<td>The curriculum in recreation, park and tourism sciences</td>
<td>June 2010</td>
</tr>
<tr>
<td>Planning Accreditation Board</td>
<td>The Master of Urban Planning curriculum</td>
<td>2013</td>
</tr>
<tr>
<td>Society for Range Management</td>
<td>The curriculum in rangeland ecology and management</td>
<td>2006</td>
</tr>
<tr>
<td>Society of American Foresters</td>
<td>The curriculum in forestry</td>
<td>2013</td>
</tr>
<tr>
<td>State Board of Educator Certification Texas Education Agency</td>
<td>Programs in professional education and degrees conferred by Texas A&amp;M University</td>
<td>2011</td>
</tr>
</tbody>
</table>

(2) If SACS Commission on Colleges is not your primary accreditor for access to USDOE Title IV funding, identify which accrediting agency serves that purpose.

Not applicable.

(3) List any USDOE recognized agency (national and programmatic) that has terminated the institution’s accreditation (include the date, reason, and copy of the letter of termination) or list any agency from which the institution has voluntarily withdrawn (include copy of letter to agency from institution).

None.
(4) Describe any sanctions applied or negative actions taken by any USDOE-recognized accrediting agency (national, programmatic, SACSCOC) during the two years previous to the submission of this report. Include a copy of the letter from the USDOE to the institution.

None.

6. Relationship to the U.S. Department of Education.

Texas A&M University does not have any limitations or suspensions, nor have we been terminated by the U.S. Department of Education in regard to student financial aid or other financial aid programs during the previous three years. We are not on reimbursement nor do we have any other exceptional status in regard to federal or state financial aid.
**BIOGRAPHICAL SKETCH**

Provide the following information for the Senior/key personnel and other significant contributors. Follow this format for each person. **DO NOT EXCEED FOUR PAGES.**

<table>
<thead>
<tr>
<th>NAME</th>
<th>POSITION TITLE</th>
</tr>
</thead>
<tbody>
<tr>
<td>Aramayo, Rodolfo</td>
<td>Associate Professor</td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>eRA COMMONS USER NAME (credential, e.g., agency login)</th>
</tr>
</thead>
<tbody>
<tr>
<td>raramyo</td>
</tr>
</tbody>
</table>

**EDUCATION/TRAINING** (Begin with baccalaureate or other initial professional education, such as nursing, include postdoctoral training and residency training if applicable.)

<table>
<thead>
<tr>
<th>INSTITUTION AND LOCATION</th>
<th>DEGREE (if applicable)</th>
<th>MM/YY</th>
<th>FIELD OF STUDY</th>
</tr>
</thead>
<tbody>
<tr>
<td>University of Brasília</td>
<td>BSc</td>
<td>1982</td>
<td>Molecular Biology</td>
</tr>
<tr>
<td>University of Brasília</td>
<td>MSc</td>
<td>1986</td>
<td>Molecular Biology</td>
</tr>
<tr>
<td>University of Georgia</td>
<td>PhD</td>
<td>1992</td>
<td>Genetics</td>
</tr>
<tr>
<td>University of Wisconsin, Madison</td>
<td>Postdoctoral</td>
<td>1996</td>
<td>Genetics</td>
</tr>
<tr>
<td>Stanford University</td>
<td>Postdoctoral</td>
<td>1997</td>
<td>Genetics</td>
</tr>
</tbody>
</table>

**A. Personal Statement**

I am a fungal molecular geneticist. I obtained a Masters degree in Molecular Biology, working on the isolation and purification of peptides produced by *Bacillus subtilis* with antifungal activity. I attended the University of Georgia, in Athens, where I obtained a PhD degree in Genetics, working under the supervision of Dr. William E. Timberlake in the genetic and molecular characterization of the asexual sporulation pathway of *Aspergillus nidulans*. For my Post-doctoral studies, I broadened my knowledge of genetics and fungal biology by studying the sexual developmental pathway of *Neurospora crassa* working under the supervision of the late Dr. Robert L. Metzenberg. During this time, I discovered an unusual genetic meiotic phenomenon we called Meiotic Silencing. In 1997, I moved from Stanford to Texas A&M University where, funded by the National Institutes of Health, my lab has further the genetic and molecular characterization of Meiotic Silencing.

The general aim of this proposal is to speed the rate of discovery of natural products through development of genome and synthetic biology. I am specially qualified to work on this area for several reasons: I am a fungal molecular geneticist that has been trained in both asexual and sexual aspects of fungal development, stages of the life cycle that closely correlate with secondary metabolites production. I am a natural engineer that had to overcome experimental roadblocks by designing and implementing molecular and genetic technologies not existent at the time, to study meiotic silencing, a genetic phenomenon I discovered. I am a geneticist that understanding the need for a global "Systems" view of genetics resurrected a long passion I have with computers and acquired substantial expertise in the areas of Genomics, Bioinformatics and Computational Biology. I started teaching Genomics >12 years ago, well before Genomics textbooks were available, and currently teach Genomics, Computational Genomics and Digital Biology, all at the graduate and undergraduate level. I currently am the Director of the Laboratory for Genome Analysis at Texas A&M, a unit whose objective is to bring Bioinformatics and Computational Biology expertise to the campus community. I coordinate the campus-wide training of scientists in these areas. My understanding of Molecular Biology, Genetics, Genomics and computers has forced me to look at Biology from a highly modular point of view. As a result, I am a strong believer that the combination of genetics, genomics with synthetic biology will revolutionize Biology.

**B. Positions and Honors**

**Positions and Employment**

<table>
<thead>
<tr>
<th>ACADEMIC/RESEARCH POSITIONS</th>
<th>TITLE</th>
<th>INSTITUTION AND LOCATION</th>
<th>YEAR(s)</th>
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<tbody>
<tr>
<td>Assistant</td>
<td></td>
<td>Department of Biology. Texas A&amp;M University. College Station, Texas, USA</td>
<td>1997-2004</td>
</tr>
</tbody>
</table>
C. Selected Peer-reviewed Publications

Most relevant to the current application


D. Research Support

Ongoing Research Support

| SOURCE: | College of Science/Department of Biology |
| TITLE: | Implementation of a Galaxy Server to Enhance and expand Computational Genomics at Texas A&M University |
| PRINCIPAL INVESTIGATOR: | Dr. Rodolfo Aramayo, Dr. Tom McKnight, Dr. Alan Pepper |

| SOURCE: | Tier One Program (TOP)/Activity 2 grant |
| TITLE: | Comparative genomics of endosymbiotic bacteria (genus Spiroplasma) associated with Drosophila flies |
| PRINCIPAL INVESTIGATOR: | Dr. Mariana Mateos, Dr. Rodolfo Aramayo |

Completed Research Support

| SOURCE: | National Institutes of Health |
| TITLE: | Genetics and Molecular Study of Meiotic Trans-sensing and Meiotic Silencing |
| PRINCIPAL INVESTIGATOR: | Dr. Rodolfo Aramayo |
| NUMBER: | R01-GM58770 |
| PERIOD: | 01/01/1999 to 12/31/2011 |
**APPOINTMENTS**

**January 2015-Present**  
Assistant Professor of Genomics  
Department of Poultry Science  
Texas A&M University

**2010-2014**  
Postdoctoral Research Associate  
Texas A&M University (Uncovering the genetic basis of anthropophily in malaria vector mosquitoes, with Dr. Michel A Slotman)

**July-Dec 2010**  
Visiting Postdoctoral Associate  
Wageningen University, Netherlands (Uncovering the genetic basis of anthropophily in malaria vector mosquitoes, working with Prof. Willem Takken)

**2000-2001**  
Ecological Research Coordinator, SEEK Foundation, India (Organized environmental outreach for middle school students)

**1998-2001**  
Founder and Research Coordinator, Eco Logic Foundation, India (Ecological research and outreach)

**EDUCATION**

**2009**  
Ph.D. Evolutionary and Environmental Biology  
Birds in space & time: patterns and processes of spatiotemporal genetics in two endangered songbirds.  
Department of Biology, University of Louisiana at Lafayette  
Supervisor: Prof. Paul L. Leberg

**2004**  
M.S. Biology  
Effects of selection for resistance to cadmium on genetic variation in the least killifish, *Heterandria formosa*.  
Department of Biology, University of Louisiana at Lafayette  
Supervisor: Dr. Paul L. Klerks

**2001**  
B.Sc. Honours with Gold Medal for Honours Project  
(Microbiology, Chemistry, Botany, with Honours in Genetics)  
Epidemiology of the mysterious Handigodu Syndrome & Epidemiology of the Kyasanur Forest Disease.  
Bangalore University, Bangalore, India

**1995**  
Diploma in Computer Programming  
NICE Institute, Bangalore, India
RESEARCH FOCI

- Genomics of complex quantitative traits
- Adaptation in disease vectors
- Functional genomics

LIST OF PUBLICATIONS

publications in peer-reviewed scientific journals

2015


2014


2013


2012


2011


2010


2009 and prior


published proceedings and thesis


*publications in preparation*

**Athrey G, Hodges TK, Cosme L, Takken W and Slotman MA.** The genetic basis of adaptation to human hosts in the malaria vector Anopheles gambiae

Muhia, DM ☯, **Athrey, G ☯, Kamau, L, Shililu, J, Bayoh, N, Slotman, MA, Gimnig, J and Walker, E.** Population genetic structure of Anopheles gambiae s.s and Anopheles arabiensis in Western Kenya after long term use of Insecticide Treated bed Nets

**Athrey G, Barr KR, Lance RF and Leberg PL;** Nets, relatives and randomness: on the likelihood of non-randomly capturing relatives in targeted mist netting

☯ equal contribution
BIOGRAPHICAL SKETCH

NAME
Judith M. Ball

POSITION TITLE
Associate Professor

eRA COMMONS USER NAME
Jball

EDUCATION/TRAINING (Begin with baccalaureate or other initial professional education, such as nursing, and include postdoctoral training.)

<table>
<thead>
<tr>
<th>INSTITUTION AND LOCATION</th>
<th>DEGREE (if applicable)</th>
<th>YEAR(s)</th>
<th>FIELD OF STUDY</th>
</tr>
</thead>
<tbody>
<tr>
<td>Louisiana State University, Baton Rouge, LA</td>
<td></td>
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</tr>
<tr>
<td>Univ. of Pittsburgh School of Medicine, Pittsburgh, PA</td>
<td>Postdoc</td>
<td>1990-1992</td>
<td>Biochemistry</td>
</tr>
<tr>
<td>Univ of Alabama at Birmingham, Birmingham, AL</td>
<td>Postdoc</td>
<td>1992-1994</td>
<td>Microbiology</td>
</tr>
<tr>
<td>Baylor College of Medicine, Houston, TX</td>
<td>Postdoc/Research</td>
<td>1994-1997</td>
<td>Virology</td>
</tr>
<tr>
<td>Baylor College of Medicine, Houston, TX</td>
<td>Associate</td>
<td></td>
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</table>

A. Positions and Honors

Positions and Employment
1975 - 1981 Medical Technologist (ASCP), Baton Rouge General Hospital, Dept. of Pathology, Baton Rouge, LA.
1981 - 1984 Research Associate III, State Diagnostic Virology Laboratory, Louisiana State Univ., Baton Rouge, LA.
1997 - 2002: Assistant Professor, Dept. of Pathobiology, Texas A&M University, College Station, TX.
1997 – Present Graduate Faculty Member, Texas A&M University
1997 – Present Director, Peptide Core Facility
1998 - 2002: Assistant Professor, Joint appointment, Dept. of Molecular and Cellular Medicine, Texas Health Science Center, Texas A&M University, College Station, TX.
1998 – Present: Director, Peptide Synthesis Core Facility, Texas A&M University.
2000 – Present: Full member and officer, Interdisciplinary Faculty of Virology, Texas A&M University, College Station, TX.
2001 – Present: Full member, Interdisciplinary Faculty of Toxicology, Texas A&M University, College Station, TX.
2002 – Present Associate Professor, Dept. of Pathobiology, Texas A&M University, College Station, TX.
2002 – Present Associate Professor, Joint appointment, Dept. of Molecular and Cellular Medicine, Texas Health Science Center, Texas A&M University, College Station, TX.
2002 – Present Faculty of Biotechnology, member and executive committee
2003 – 2006 Graduate Advisor, Department of Pathobiology, Texas A&M University, College Station, TX.
2003 – Present: Member, Center for Microencapsulation & Drug Delivery, Texas A&M University.
2005 – 2007 Member, Center for Environmental and Rural Health, Texas A&M University.

Other Experience and Honors
1997 Recipient of the Dr. Chris Noonan Award, Molecular Virology Division, Baylor College of Medicine
1998 Texas A&M University Nominee for the David and Lucile Packard Fellowship
1998 Texas A&M University Nominee for the Searle Scholar Program
1999 University Council of Principle Investigators, Texas A&M University, College Station, TX.
1999 CVM Nominee, Montague Scholars Teaching Award, Texas A&M University
2001 Office of Scientific Quality Control Panel, USDA, ARS, NP103 Animal Health – Virology & Prion Disease
2012 TAMU Writing Assessment Project
2012-2014 TAMU AgriLife Leadership Program
2012-2015 Biotechnology Executive Committee
2014 Named as Undergraduate Research Scholar Mentor
B. Selected peer-reviewed publications


BIOGRAPHICAL SKETCH

NAME
SAKHILA K. BANU, MS, MPhil, PhD.,

POSITION TITLE
Assistant Professor

eRA Commons user Name
SKBANU

EDUCATION/TRAINING (Begin with baccalaureate or other initial professional education, such as nursing, and include postdoctoral training.)

<table>
<thead>
<tr>
<th>INSTITUTION AND LOCATION</th>
<th>DEGREE (if applicable)</th>
<th>YEAR</th>
<th>FIELD OF STUDY</th>
</tr>
</thead>
<tbody>
<tr>
<td>Madurai Kamaraj University, India</td>
<td>BS</td>
<td>1988</td>
<td>Biology</td>
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<tr>
<td></td>
<td>MS</td>
<td>1991</td>
<td>Biology</td>
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<tr>
<td>University of Madras, India</td>
<td>MPhil</td>
<td>1993</td>
<td>Endocrinology</td>
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<tr>
<td>University of Madras, India</td>
<td>PhD</td>
<td>2002</td>
<td>Endocrinology</td>
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<tr>
<td>Laval University, Canada</td>
<td>Post doc I</td>
<td>2003</td>
<td>Reproductive Endocrinology</td>
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<tr>
<td>University of Montreal, Canada</td>
<td>Post doc II</td>
<td>2004</td>
<td>Endocrine Oncology</td>
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</table>

A: RESEARCH AND/OR PROFESSIONAL EXPERIENCE:
I started my appointment in the College of Veterinary Medicine at Texas A&M University as a Research Assistant Professor in 2005, and was promoted to an Assistant Professor (Tenure track) in Jan 2012. In the past 10 years I have had 25 publications in peer reviewed journals. I have been awarded 7 grants (PI in 5 grants and Co-PI in two USDA grant) including NIH/NIEHS R03 and R21. My interdisciplinary background in Endocrinology and Molecular Reproductive Biology and Toxicology has enabled me to develop extensive expertise in the effect of heavy-metal endocrine disruptors on reproductive failures in women and developmental defects in children. My main research focus has been on the effect of hexavalent chromium, CrVI, on female reproductive function, premature ovarian failure and fetal development. Novel findings from my laboratory at Texas A&M University supported by NIH R03 (ES016605-01A21) and R21 awards (ES020561-01) laid the ground work for the proposed research by revealing that gestational exposure to CrVI advances oocyte nest breakdown and induces premature ovarian failure (POF) in F1 female offspring (Developmental Biology, 2014). Our latest finding has identified a novel role for X-prolyl aminopeptidase (Xpnpep) 2, a POF marker gene in women, in CrVI-induced adverse effects on germ cell nest breakdown and follicle development (BOR, 2015). Our recent studies also identified oxidative stress pathway as one of the major mechanisms that lead to increased follicle atresia in F1 offspring (Free Radical Biology of Medicine, 2013; Biology of Reproduction, 2014). Thus, my lab is one of the leading labs in the nation to identify Cr-induced female reproductive toxicology. My current focus and long-term goals are to unravel the molecular and cellular mechanisms of gestational and lactational exposure to heavy-metal endocrine disruptors on reproductive and developmental failures in subsequent generations.

B. POSITIONS & HONORS:

Positions:
2000-2001: Research Assistant, Reproductive Toxicology, Dept of Endocrinology, Univ. of Madras, Chennai, India.
2001-2003: Post Doctoral Fellowship -I, Reproductive Molecular Endocrinology, Dept of Obstetrics & Gynecology, CHUL, Laval University, Quebec, Canada.
2003 –2004 : Post Doctoral Fellowship- II, Molecular Oncology, Dept. Pathology and Microbiology, Faculty of Veterinary Medicine, University of Montreal, St. Hyacinthe, J2S 7C6, Quebec, Canada.
2005-2008 April: Research Assistant Professor, Endocrine/Reproductive Toxicology & Oncology Dept of Integrative Biosciences, College of Veterinary Medicine & Biomedical Sciences, Texas A&M University, College Station, Texas 77843, USA.
2008 May-present: Clinical Assistant Professor, Endocrine/Reproductive Toxicology & Oncology, Dept of Integrative Biosciences, College of Veterinary Medicine & Biomedical Sciences, Texas A&M University, College Station, Texas 77843, USA.
2012 January-present: Assistant Professor, Endocrine/Reproductive Toxicology, Dept of Integrative Biosciences, College of Veterinary Medicine & Biomedical Sciences, Texas A&M University, College Station, Texas 77843, USA.

Membership in scientific/professional Societies: Active life member (1994 –till date), Society for Reproductive Biology and Comparative Endocrinology; Member (20001-till date), Society for Study of Reproduction; External examiner, University of Madras, PhD theses (2006- till date).

Honors:
<table>
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<tr>
<th>Name of the Awards</th>
<th>Type/Organization</th>
<th>Year</th>
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<tbody>
<tr>
<td>Honorary Visiting Professor</td>
<td>University of Madras, India</td>
<td>2009</td>
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<tr>
<td>FY-08 Program Development Award</td>
<td>VIBS, Texas A&amp;M University</td>
<td>2008</td>
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<tr>
<td>Winn Research Award</td>
<td>Winn Feline Foundation, USA</td>
<td>2008</td>
</tr>
<tr>
<td>Canine Health Foundation</td>
<td>ACORNs Grant Award, USA</td>
<td>2007</td>
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<tr>
<td>FY-07 Program Development Award</td>
<td>VIBS, Texas A&amp;M University</td>
<td>2007</td>
</tr>
<tr>
<td>AAFP- First Grant Award</td>
<td>American Association of Feline Practitioners, USA</td>
<td>2006</td>
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<tr>
<td>SSR Trainee Travel Award</td>
<td>Society for the Study of Reproduction, USA.</td>
<td>2003</td>
</tr>
<tr>
<td>CIHR Merit Award</td>
<td>CIHR, Govt. of Canada</td>
<td>2003</td>
</tr>
<tr>
<td>Larry Ewing Memorial Award</td>
<td>Society for the Study of Reproduction, USA.</td>
<td>2003</td>
</tr>
<tr>
<td>USDA-NRI Merit Award</td>
<td>USDA-NRI, USA</td>
<td>2002</td>
</tr>
<tr>
<td>CIHR Merit Award</td>
<td>CHIR, Govt. of Canada</td>
<td>2002</td>
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<tr>
<td>SSR Trainee Travel Award</td>
<td>Society for the Study of Reproduction, USA.</td>
<td>2002</td>
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<tr>
<td>Senior Research Fellowship</td>
<td>Council of Scientific &amp; Industrial Research, Govt. of India</td>
<td>1997-2000</td>
</tr>
<tr>
<td>Senior Research Fellowship</td>
<td>Lady Tata Memorial Trust &amp; Hospitals, Mumbai, India.</td>
<td>1993-1995</td>
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C. Selected Peer-reviewed Publications: (From 32; PubMed search: Banu SK or Banu KS).

D. Ongoing Research Support:
USDA (2011-03140) 09/01/2013 to 08/31/2017 $499,986
The Role of Intraluteal prostaglandins in luteolysis and luteal protection in sheep. Role: Co-Investigator
The goal of the project is to determine the factors regulating intraluteal PGF2a and PGE2 biosynthesis and signaling during luteolysis and establishment of pregnancy using sheep as a ruminant model.
NAME
BERGHMAN, Luc R.

POSITION TITLE
Associate Professor

eRA COMMONS USER NAME
berghman

EDUCATION/TRAINING (Begin with baccalaureate or other initial professional education, such as nursing, and include postdoctoral training.)

<table>
<thead>
<tr>
<th>INSTITUTION AND LOCATION</th>
<th>DEGREE (if applicable)</th>
<th>YEAR(s)</th>
<th>FIELD OF STUDY</th>
</tr>
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<tbody>
<tr>
<td>University of Leuven, Belgium</td>
<td>MSc</td>
<td>1982</td>
<td>Zoology</td>
</tr>
<tr>
<td>University of Leuven, Belgium</td>
<td>PhD</td>
<td>1988</td>
<td>Zoology</td>
</tr>
<tr>
<td>University of Leuven, Belgium</td>
<td>Postdoc</td>
<td>1988-1994</td>
<td>Zoology</td>
</tr>
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</table>

A. Positions and Honors

1988: Postdoctoral Research Fellow, National Fund for Scientific Research, Belgium
1994: Senior Research Associate, National Fund for Scientific Research, Belgium
1994: Assistant Professor, Department of Zoology, University of Leuven (partim)
06/1998 – 08/2005: Assistant Professor, Department of Poultry Science, TAMU
09/1998 – 08/2005: Assistant Professor, Department of Veterinary Pathobiology, TAMU
09/2005 – present: Associate Professor, Depts. of Poultry Science and Vet. Pathobiology

B. Selected peer-reviewed publications (selected from a total of 104)


VICTORIA BUENGER, Ph.D.  
Clinical Professor

Department of Management  
Mays School of Business  
Texas A&M University  
College Station, TX 77843  
Email: vbuenger@mays.tamu.edu  
Phone: 979-845-4851

EDUCATION

1990 Ph.D., Management, Texas A&M University  
1983 M.A., History, Texas A&M University  
1981 B.A., History, Texas A&M University, Magna Cum Laude

EXPERIENCE

2015-present  Clinical Professor, Texas A&M University  
2004-2015  Clinical Associate Professor, Texas A&M University  
1994-2004  Visiting Assistant Professor, Texas A&M University  
1990-1994  Assistant Professor, Owen Graduate School of Management, Vanderbilt University

UNIVERSITY TEACHING EXPERIENCE

Academic Service
  University Graduate Faculty  
  University and Mays Business School Honors Faculty  
  Joint Appointment, Biotechnology Professional Program

Undergraduate Teaching (courses)
  Strategic Management  
  Survey of Management  
  Project Management

Graduate Teaching (courses)
  Managing Projects  
  Strategic Management  
  Survey of Management  
  Human Resources Information Systems
Graduate Academic Committees

2013
Sakshi Gupta—Masters Candidate in Biotechnology
Kathik Sankaranarayanan—Masters of Science Candidate in Industrial Engineering

2012
Dev Unnati—Masters Candidate in Biotechnology
Sreeram M. Reddy—Masters Candidate in Biotechnology
Eric Puls—Masters of Science Candidate in Civil Engineering
Pallav Shah—Masters Candidate in Biotechnology

2011
Joshua Street—Masters of Arts Candidate in Communications
Reuben D. Sequeira—Masters Candidate in Biotechnology
Dilsher Dhillon—Masters Candidate in Biotechnology

2010
John David Lowderman—Masters Candidate in Biotechnology
Joan Marie Scaparra—Masters Candidate in Biotechnology

2009
Suzanne Marie McElheney—Masters Candidate in Public Service and Administration
Vidhi Sunil Danak—Masters of Science Candidate in Construction Management
Oluwafunmike Owolabi—Masters Candidate in Biotechnology

2008
Amy Sanders—Masters of Arts Candidate in Communications
Kenneth Justin Bull—Masters of Science Candidate in Kinesiology
Laura Brown—Masters of Arts Candidate in Communications
Daniel Aaron Cisneros—Masters of Engineering Candidate in Biomedical Engineering
James Jerry—Masters of Education Candidate in Agricultural Education
Deepthi Mikkili—Masters Candidate in Biotechnology
Ashwin Mohan—Masters Candidate in Biotechnology
Sreeedvi Vijay Kumar—Masters Candidate in Biotechnology
Kelly Mueller—Masters Candidate in Biotechnology
Megan Leigh Buro—Masters of Science in Recreation Park & Tourism Science
Huajun He—Masters Candidate in Biotechnology
Yun-An Shen—Masters Candidate in Biotechnology
Manoj Nagarajan Sunder—Masters of Science Candidate in Mechanical Engineering
Gaurav Singh Sehra—Masters of Science Candidate in Civil Engineering
Sachin Pingle—Masters of Engineering Candidate in Mechanical Engineering
Vineet Bailur—Masters of Science Candidate in Construction Management

2007
Wan-Chi Yang—Masters of Science Candidate in Educational Human Resources
Dev. Harshwardhan Banda—Masters Candidate in Biotechnology
Mayur Gadhikar—Masters Candidate in Biotechnology
Latoya Anderson—Masters of Engineering in Industrial Engineering

2006
Leslie Chavez—Masters of Public Service in the Bush School
Carolyn Igwe—Masters of Public Service in the Bush School
REFEREED PUBLICATIONS


CONFERENCE PRESENTATIONS


"CAC2 and Barriers to Drug Development.”  National Cancer Institute—Director’s Consumer Liaison Group, Bethesda, Maryland, 2014.


UNREFEREED PUBLICATIONS


Numerous book reviews

UNIVERSITY SERVICE

Executive Committee—Biotechnology Professional Program, 2011-present
Mays Undergraduate Curriculum and Assessment Committee, 2010-present
“W” and “C” Course Working Group, 2010-2012
Mays Academy on Learning and Teaching (M.A.L.T.), 2011-present
Departmental Representative–WEAVE Online, 2009-present
Departmental Assessment Committee, 2009-present
Departmental Committee, Not-for-Profit Track, 2012
Management Department, Library Representative, 2009-2012
Faculty Advisor, American Childhood Cancer Organization-TAMU, 2011-present
Faculty Advisor, Team InCellerate Case Team, 2012
Faculty Advisor, United Campus Ministry in Aggieland, 2014-present

PROFESSIONAL ACTIVITIES

Personnel Psychology, Book Review Advisory Panel
Academy of Management
  Business Policy & Planning Division
  Organization & Management Theory Division
  Management History Division
Beta Gamma Sigma, National Business School Honor Society

NATIONAL AND INTERNATIONAL OUTREACH ACTIVITIES

Campaign Co-Lead, #StepUp media and social media campaign, a national cooperative project of the Alliance for Childhood Cancer and the Coalition Against Childhood Cancer, in progress
Project Shepherd, #SaveJosh media and social media campaign, March 2014*
Advisor, All-Party Childhood Cancer Advocacy Coalition, London, UK, 2014
Co-Founder, President, Executive Committee, and Board Member—the Coalition Against Childhood Cancer, 2013-present
Consultant, Texas State Historical Association, Strategic and Operational Audit, 2013-2014
Team Member, STORM (Standardized Tumor Outcome Repository Management)—a multidisciplinary, multi-institutional research project addressing therapeutic interventions for childhood cancers, 2012
Team Member, STS—Soft Tissue Sarcoma Dream Team, 2012
Project Manager, Project Collaborate, Organizational Start Up, 2012-2013
Co-Lead/Advisor, Project Collaborate, Design Phase, 2011
Unpaid Staff—Congressman Chet Edwards-Health Care Issues, Summer 2010

COMMUNITY OUTREACH ACTIVITIES

Co-Founder, Steering Committee, and Volunteer—Carter Creek After School Program, 2011-present
Executive Committee and Board Member—Brazos Valley Hospice, 2010-present
Board Member—Southwest Chapter, Children’s Neuroblastoma Cancer Foundation, 2008-present
Executive Committee, Brazos Democrats, 2008-present
Co-Founder, Treasurer, and Board Member, Brazos Interfaith Immigration Network, 2009-2013
Board of Directors, Brazos Youth Sports Foundation, 2010-2012
“You’re the TOPS” honoree—Pre-Natal Clinic, 2011
**BIOGRAPHICAL SKETCH**

Provide the following information for the Senior/key personnel and other significant contributors in the order listed on Form Page 2. Follow this format for each person. **DO NOT EXCEED FOUR PAGES.**

<table>
<thead>
<tr>
<th>NAME</th>
<th>POSITION TITLE</th>
</tr>
</thead>
<tbody>
<tr>
<td>Burghardt, Robert C.</td>
<td>Professor, Veterinary Integrative Biosciences, Texas A&amp;M University</td>
</tr>
</tbody>
</table>

| eRA COMMONS USER NAME | rburghardt |

**EDUCATION/TRAINING** *(Begin with baccalaureate or other initial professional education, such as nursing, include postdoctoral training and residency training if applicable.)*

<table>
<thead>
<tr>
<th>INSTITUTION AND LOCATION</th>
<th>DEGREE (if applicable)</th>
<th>MM/YY</th>
<th>FIELD OF STUDY</th>
</tr>
</thead>
<tbody>
<tr>
<td>University of Michigan, Ann Arbor, MI</td>
<td>B.S.</td>
<td>1969</td>
<td>Zoology</td>
</tr>
<tr>
<td>Wayne State University, Detroit, MI</td>
<td>M.S.</td>
<td>1973</td>
<td>Biology</td>
</tr>
<tr>
<td>Wayne State University, Detroit, MI</td>
<td>Ph.D.</td>
<td>1976</td>
<td>Biology</td>
</tr>
<tr>
<td>Harvard Medical School, Boston, MA</td>
<td>Postdoc</td>
<td>1976-78</td>
<td>Reproductive Biology</td>
</tr>
</tbody>
</table>

**A. Personal Statement**

The Burghardt laboratory makes extensive use of non-invasive imaging technologies to investigate the physiology of cells along with the analysis of the mechanisms by which a variety of biological response modifiers ranging from hormones and growth factors to chemotherapeutic agents and environmental chemicals alter cellular signaling pathways and cellular homeostasis. Particular emphasis has been focused on real time visualization of the in situ metabolism of polycyclic aromatic hydrocarbons using benzo[a]pyrene as a model compound to identify individual reactive metabolites and DNA adducts within living cells along with intervention strategies that modulate PAH metabolism and/or reverse cellular injury. The laboratory is also involved in probe development and serves as an Advanced Imaging Facility Core for the NIEHS-supported Center for Translational Environmental Health Research to provide state-of-the-art imaging tools that can be used to visualize cell and tissue physiology in a homeostatic framework and in response to environmental perturbations. Research in the laboratory has involved the participation of undergraduates, graduate and professional students and postdoctoral fellows including service on more than 255 Ph.D. and M.S. student graduate advisory committees.

**B. Positions and Honors**

1976 -1978 Ford Foundation Postdoctoral Fellow, Department of Anatomy and Laboratory of Human Reproduction and Reproductive Biology, Harvard Medical School

1978 -1987 Assistant, Associate Professor, Department of Biology, Texas A&M University (TAMU)

1982 -1987 Director, Electron Microscopy Center, TAMU

1987 -1991 Associate Professor, Department of Veterinary Integrative Biosciences, TAMU

1987 -1991 Director, Image Analysis Laboratory, College of Veterinary Medicine, TAMU

1991 - Professor, Department of Veterinary Integrative Biosciences, TAMU

2005 - 2010 Chair, Interdisciplinary Faculty of Toxicology

2010 - 2012 Chair, Interdisciplinary Faculty of Reproductive Biology

2013 - Associate Dean for Research and Graduate Studies, CVM, TAMU

**Professional Activities:** Associate Editor, *Biology of Reproduction*, 1992-95; Editorial Boards, *Cells Tissues Organs*, 2004-; *Journal of Applied Toxicology*, 2006-; Chair, Publications Committee, *Society for the Study of Reproduction (SSR)*, 1996-99, 2005-07; Chair, Awards Committee, SSR, 2004-05; Director, SSR, 2000-03; Secretary, SSR, 2010-2013; Ad hoc reviewer: 48 different journals; Review committee service: Ad hoc reviews, NSF (Integrative Animal Biology, Signal Transduction and Regulation), NIH (HED-1, Metabolism Reproduction, NIEHS, NIH/NIGMS MBRS; Member, NIH/USDA PAR), USDA (Animal Reprod Efficiency), Wellcome Trust (Joint Infrastructure Fund, UK), Veterans Health Administration, Israel Science Foundation, Natural Sciences and Engineering Research Council of Canada, March of Dimes.

**Honors:** Association of Former Students, Distinguished Teaching Award, 1995; College of Vet. Medicine, Wiley Distinguished Teaching Professorship 2000-03; Vice Chancellor’s Award in Excellence for Team Research in Uterine Biology and Pregnancy, 2005; SSR Distinguished Service Award, 2010
C. Selected Peer-reviewed Publications (From 251 peer-reviewed publications)


5. Sivakumar KK, JA Stanley, JA Arosh, ME Pepling, RC Burghardt, SK Banu (2014) Prenatal exposure to chromium induces early reproductive senescence by increasing germ cell apoptosis and advancing germ cell cyst breakdown in the F1 offspring. Develop Biol 388:22-34. PMC3991725


D. Research Support

**Ongoing Research Support**

**ACTIVE**

<table>
<thead>
<tr>
<th>Project ID</th>
<th>PI</th>
<th>Start Date</th>
<th>End Date</th>
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<tr>
<td>5R01CA142697-02</td>
<td>Safe</td>
<td>07/01/10 – 05/31/15</td>
<td>0.6 calendar</td>
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**NCI**

**Molecular Mechanisms and Application of AH Receptor-MicroRNA Interactions**

The goal of these studies is to investigate the molecular mechanisms and potential clinical applications of MCDF and structurally-related SAhRMs for treatment of ER-negative breast cancer.

Role: Co-Investigator

<table>
<thead>
<tr>
<th>Project ID</th>
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<th>End Date</th>
<th>Calendar</th>
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<td>USDA 2013-00840</td>
<td>Arosh</td>
<td>09/01/13 – 08/31/17</td>
<td>0.6 calendar</td>
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</tbody>
</table>

**The Role of Intraluteal Prostaglandins in Luteolysis and Luteal Protection in Sheep**

The objective is to determine the factors regulating intraluteal PGF2a and PGE2 biosynthesis and signaling during luteolysis and establishment of pregnancy using sheep as a ruminant model.

Role: Collaborator

<table>
<thead>
<tr>
<th>Project ID</th>
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<th>End Date</th>
<th>Calendar</th>
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<td>1R21HD071468-01A1</td>
<td>Johnson</td>
<td>02/01/13 – 1/31/15</td>
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</table>

**Incorporation of Endothelial Progenitor Cells into Placental Vasculature.**

The objectives are to: Determine the intercellular signals that allow EPCs to incorporate into established vasculature; and determine whether EPCs incorporate into placental vascular networks pigs.

Role: Co-Investigator

<table>
<thead>
<tr>
<th>Project ID</th>
<th>PI</th>
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<th>End Date</th>
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<tr>
<td>P30 ES023512-01</td>
<td>Walker</td>
<td>02/01/14 – 1/31/17</td>
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**NIEHS**

**Center for Translational Environmental Health Research**

The goal of the Center is to promote integrated translational research, and catalyze interdisciplinary research in human environmental health. The CTEHR Mission is to improve our understanding of environmental influences on human health by integrating basic, biomedical and engineering research across translational boundaries from the laboratory to the clinic and to the community and back.

Role: Advanced Imaging Core Co-Director; Career Development Core Co-director
JAMES J. CAI

Work Address
Veterinary Integrative Biosciences
Texas A&M University
College Station, Texas 77843, USA
1-979-458-5482
jcai@tamu.edu

PROFESSIONAL EXPERIENCE
Texas A&M University – Dept. of Vet. Integrative Biosciences, Faculty of Genetics
Assistant Professor
2011–present

EDUCATION
Postdoc, Evolutionary Population Genomics
Stanford University (Dmitri Petrov Lab)
2006–2010

Ph.D., Genomics
University of Hong Kong, Hong Kong
2002–2006

M.S., Biotechnology
University of New South Wales, Sydney, Australia
1999–2001

B.S., General Medicine
Henan Medical University, Zhengzhou, China
1991–1996

PEER-REVIEWED PUBLICATIONS

*Corresponding author


**BOOK CHAPTER**


**SOFTWARE**


4. Stickleback transcriptome database —**stickleback.genomezoo.net**
A. Personal Statement: Dr. Chapkin is an expert in environmental modulators related to chemoprevention of colon cancer and chronic inflammatory diseases, e.g., inflammatory bowel disease. He has been continuously funded by NIH for the past 25 years and has made highly significant contributions in cancer chemoprevention and T cell/inflammation biology with specific emphasis in: (i) elucidation of signal transduction processes in intestinal stem cells, (ii) membrane biology and nutritional modulation of epithelia/immune cell membrane structure and function, (iii) investigation of the role of inflammation as a critical factor in cancer development, and its modulation by environmental agents, (iv) establishment of models for chronic inflammation and cancer prevention studies, and (v) development of novel noninvasive Systems Biology-based methodologies to assess crosstalk between the gut microbiome and the host transcriptome and its application to translational research. These activities, together with a history of basic and translational (biomarkers) research using cutting-edge genomics and computational biology methodologies, demonstrate that Dr. Chapkin has the scientific credentials necessary to contribute to this proposal. Dr. Chapkin serves as the Deputy Director of the – the P30 NIEHS sponsored Texas A&M Center for Translational Environmental Health Research (CTEHR).

B. Positions and Honors:
1986-1988: Postdoctoral Fellow, Immunology-Tumor Biology Laboratory, Department of Cell Biology and Human Anatomy, School of Medicine, University of California-Davis.
1988-1993: Assistant Professor, Human Nutrition, Center for Environmental and Rural Health, Texas A&M University.
1994-1999: Associate Professor, Department of Veterinary Integrated Biosciences and Faculty of Nutrition.
1999-Present: American Institute for Cancer Research Grant Review Panel
1999-Present: Professor, Nutrition, Center for Environmental and Rural Health (CERH), Texas A&M University.
2000: Texas A&M Faculty Fellow Award
2001-2006: Texas A&M University Faculty Fellow Scholar
2002-2005: Chair, Intercollegiate Faculty of Nutrition, Texas A&M University
2002-2005: NIH Charter Member: Metabolic Pathology/Chemo-Dietary prevention (CDP) Study Sections
2004-2010: Member, Division Hematol./Oncology, Scott & White Hospital, Texas A&M Health Sci. Center. Co-Director, Genomics and Systems Biology Facility Core, Texas A&M University.
2005-Present: Editorial Board, Chemistry & Physics of Lipids
2005-2010: Director of the P30 NIEHS CERH Genomics & Bioinformatics Core, Texas A&M University
2006: Sigma Xi Distinguished Scientist Award, Texas A&M University Chapter
2007: Texas A&M Senior Faculty Fellow Award
2010-Present: Regents Professor, Texas A&M University System
2010-Present: Editorial Board, British Journal of Nutrition
2011: Distinguished Achievement Award – Association of Former Students, Texas A&M University
2011-2013: Review Editor – Frontiers in Nutrigenomics
2012-Present: Deputy Director – Center for Translational Environmental Health Research, Texas A&M University and Baylor College of Medicine

2012-Present: co-Director – Quantitative Biology Core - Center for Translational Environmental Health Research, Texas A&M University and Baylor College of Medicine

2013: American Society for Nutrition (ASN) Osborne and Mendel Award

2014-Present: Distinguished Professor, Texas A&M University System

C. SELECTED (15) PEER REVIEWED PUBLICATIONS FROM A TOTAL OF 229:

Most relevant to the current application:


<table>
<thead>
<tr>
<th>Name</th>
<th>Zhengdong Cheng</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Education</strong></td>
<td></td>
</tr>
<tr>
<td>Princeton University, Ph.D., Physics, 1999</td>
<td></td>
</tr>
<tr>
<td>Institute of High Energy Physics, M.S., Particle Physics, 1993</td>
<td></td>
</tr>
<tr>
<td>University of Science and Technology of China, B.S., Modern Physics, 1990</td>
<td></td>
</tr>
<tr>
<td>2002-2004 Harvard University Postdoctoral Fellow</td>
<td></td>
</tr>
<tr>
<td>2000-2001 ExxonMobil Research &amp; Engineering Postdoctoral Fellow</td>
<td></td>
</tr>
<tr>
<td>1999-2000 Princeton Materials Institute Postdoctoral Fellow</td>
<td></td>
</tr>
<tr>
<td><strong>Academic Experience</strong></td>
<td></td>
</tr>
<tr>
<td>Texas A&amp;M University, Professor, Chemical Engineering, 2004-Present; Asst Prof, 2004-2010; Assoc. Prof, 2010-present.</td>
<td></td>
</tr>
<tr>
<td>2004-present The Professional Program in Biotechnology</td>
<td></td>
</tr>
<tr>
<td>2005-present Materials Science and Engineering</td>
<td></td>
</tr>
<tr>
<td>2008-present Faculty fellow, Mary Kay O'Connor Process Safety Center</td>
<td></td>
</tr>
<tr>
<td><strong>Non-academic experience</strong></td>
<td></td>
</tr>
<tr>
<td>2001-2002 DiCon Fiberoptics (CA) Engineer</td>
<td></td>
</tr>
<tr>
<td><strong>Certifications &amp; prof registration</strong></td>
<td></td>
</tr>
<tr>
<td>AIChE, ACS, American Physics Society, Sigma Xi, ASGSR (American Society for Gravitational and Space Research)</td>
<td></td>
</tr>
<tr>
<td><strong>Honors and Awards</strong></td>
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<tr>
<td>William Keeler Memorial Award (Contribution), 2015, Look College of Engineering</td>
<td></td>
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<tr>
<td><strong>Principal Publications of Last Five Years</strong></td>
<td></td>
</tr>
<tr>
<td>A. F. Mejia, Ratna Ng (Undergraduate), Peter Nguyen (Undergraduate),Min Shuai, Hugo Y. Acosta, M. Sam Mannan and Z. Cheng, “Thermo-responsive discotic nematic hydrogels” Soft Matter 9, 10257-10264 (2013).</td>
<td></td>
</tr>
<tr>
<td>J. S. Guevara (undergraduate), A.F. Mejia, Y. Chang, M. Shuai, M.S. Sam</td>
<td></td>
</tr>
</tbody>
</table>
| Service Activities | Mentor to undergraduate students in Chemical engineering.  
Serve on various advisor committees of graduate students.  
Actively participated in faculty recruiting (went to seminars and meals, giving feedback to the department)  
Actively participate in graduate student recruiting (networking with professors in India and China, help evaluating international students)  
Serve as advisor to “Afghan Student Association”  
Mbr. of the MSEN Curriculum Committee (since 2010).  
Mbr. of the T&P Committee of the Chem. Engr. Department (since 2010).  
Member of the Awards Committee of the Chemical Engineering Department (2011-2015).  
Member of the undergraduate committee (2012-2014)  
**Taught the summer course** to facilitate the smooth flow of the students’ study (CHEN 323, 2012)  
**Taught Freshman Engineer course** (Fall 2012) *(solving the short hand problem in the department)*  
**Taught MSEN 603** (SP 2014, extra teaching load to solve the shorthand problem of the newly established MSEN department)  
**Taught CHEN 455** (SUM 14,15, China Study abroad program) |
| --- | --- |
BIOGRAPHICAL SKETCH

Provide the following information for the key personnel and other significant contributors in the order listed on Form Page 2.
Follow this format for each person. DO NOT EXCEED FOUR PAGES.

NAME
Coates, Craig, J.

POSITION TITLE
Assistant Professor

eRA COMMONS USER NAME
cjcoates

EDUCATION/TRAINING (Begin with baccalaureate or other initial professional education, such as nursing, and include postdoctoral training.)

<table>
<thead>
<tr>
<th>INSTITUTION AND LOCATION</th>
<th>DEGREE</th>
<th>YEAR(s)</th>
<th>FIELD OF STUDY</th>
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<tbody>
<tr>
<td>Australian National University, Canberra, Australia</td>
<td>B.Sc. (Hons)</td>
<td>1988-1991</td>
<td>Biochemistry and Molecular Biology</td>
</tr>
<tr>
<td>Australian National University, Canberra, Australia</td>
<td>Ph.D.</td>
<td>1992-1996</td>
<td>Biochemistry and Molecular Biology</td>
</tr>
<tr>
<td>University of California, Irvine, Irvine, California</td>
<td>Postdoctoral Training</td>
<td>1996-1998</td>
<td>Insect Molecular Biology</td>
</tr>
</tbody>
</table>

A. Positions and Honors

Employment

1996-1998 Postdoctoral Research Associate, UCI, Irvine California
1999 - 2005 Assistant Professor, Texas A&M University
2005 - Associate Professor, Texas A&M University
Member, Faculty of Genetics
Member, Faculty of Biotechnology

Other Experience and Professional Memberships

March 2005 Chair, Session VI at the 4th International Workshop on Transgenesis and Genomics of Invertebrate Organisms
June 2005 Study Section Member, NIH - IDM-M
July 2005 Study Section Member, NIH – VB

Entomological Society of America (ESA)

Honors

2002 Texas A&M University Center for Teaching Excellence Montague Scholar

B. Selected peer-reviewed publications (Postdocs and Graduate Students as shown)


Brett Cornwell is the Executive Director for Texas A&M Technology Commercialization. He leads the Licensing and IP Management and New Ventures division activities. This includes partnering with industry to commercialize the A&M System’s portfolio of technologies to spin out new companies in support of the commercialization of technologies. The services for new spin out companies include screening stage market assessments, business plan development, marketing plan development, market research studies, strategic business planning, and the development of venture pitches.

He is on the adjunct graduate faculty at Texas A&M University teaching courses in technology commercialization in the Mays Business School. His courses focus on technology market screening and evaluation, venture planning and evaluation, and business planning and launch. He is also a Faculty member at the IC2 Institute at The University of Texas at Austin and is an Adjunct Lecturer in the McCombs School at the University of Texas at Austin as an instructor in the Master’s in Science and Technology Commercialization degree program. He has led a number of international technology commercialization benchmarking and training projects including projects with CONACYT in Mexico, Innovisa in Portugal, The University of Otago in New Zealand, and ProTın in Europe.

Brett Cornwell was a program coordinator for the NASA Mid-Continent Technology Transfer Center (MCTTC) for ten years and served as the deputy director for three. At MCTTC, his experience and knowledge was used to write marketing studies for new technologies, outreach to companies, and define market opportunities and barriers for potential licensees.

He has over twenty years experience in technology transfer and two years experience with small companies as sales and marketing manager. He was recognized as the Outstanding Technology Transfer Intermediary in Arkansas in 1997, received the Distinguished Service Award from the Mid-Continent Federal Laboratory Consortium in 2001, designed major portions of the Federal Laboratory Consortium’s Technology Assessment process for the RIB-IT program and has been published in R&D Enterprise, Asia Pacific. He is a co-author of Marketing Scientific Results published in October 2004.

Cornwell holds an MBA from Texas A&M University and a BBA in marketing from Baylor University.
CURRICULUM VITAE

ERNEST GUS COTHRAH, JR.

EDUCATION
B.S. Biology, North Texas State University, Denton, Texas - 1973
M.S. Zoology, North Texas State University, Denton, Texas - 1975
Ph.D. University of Oklahoma, Norman, Oklahoma - 1982

Positions and Employment
1981-1982 Research Analyst, Population Genetics Laboratory, Savannah
River Ecology Laboratory, Aiken, SC
1982-1985 Postdoctoral Scientist, Department of Genetics, Southwest
Foundation for Biomedical Research, San Antonio, TX
1985-1986 Assistant Scientist, Department of Genetics, Southwest Foundation for
Biomedical Research, San Antonio, TX
1986-1992 Assistant Research Professor, Department of Veterinary Science, University of
Kentucky, Lexington, KY
1991-1992 Adjunct Professor, Department of Biological Sciences, University of North
Texas, Denton, TX
1992-2000 Associate Research Professor, Department of Veterinary Science, University of
Kentucky, Lexington, KY
2000-2006 Research Professor, Department of Veterinary Science, University of Kentucky,
Lexington, KY
2006- Clinical Professor, Department of Veterinary Integrative Biosciences, College of
Veterinary Medicine and Biomedical Science, Texas A&M University,
College Station, TX

GRANTS AND AWARDS:

PROFESSIONAL AND HONORARY SOCIETIES:
American Association for the Advancement of Science
Society for the Study of Evolution
Sigma Xi
American Society of Mammalologists

PUBLICATIONS:
NAME Criscitiello, Michael Frederick

POSITION TITLE Associate Professor of Veterinary Pathobiology

Email Address: mcriscitiello@cvm.tamu.edu

Phone Number: 1 979 845 4207

EDUCATION/TRAINING (Begin with baccalaureate or other initial professional education, such as nursing, and include postdoctoral training.)

<table>
<thead>
<tr>
<th>INSTITUTION AND LOCATION</th>
<th>DEGREE (if applicable)</th>
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<tr>
<td>University of North Carolina, Chapel Hill, NC</td>
<td>B.S.</td>
<td>1989-1993</td>
<td>Biology</td>
</tr>
<tr>
<td>East Carolina University, Greenville, NC</td>
<td>M.S.</td>
<td>1995-1997</td>
<td>Molecular Biology</td>
</tr>
<tr>
<td>University of Miami, Miami, FL</td>
<td>Ph.D.</td>
<td>1997-2003</td>
<td>Microbiology and Immunology</td>
</tr>
<tr>
<td>University of Maryland, Baltimore, MD</td>
<td>Postdoctoral</td>
<td>2003-2008</td>
<td>Immunology</td>
</tr>
</tbody>
</table>

The Comparative Immunogenetics Laboratory studies immunology, molecular genetics and evolution. Most of my group’s research focuses on the natural history of the vertebrate adaptive immune system, with particular attention given to the genetics of lymphocyte antigen receptors, mucosal immune mechanisms in the gut and antigen presentation, as well as applied shrimp immunogenomics in mariculture. A focus of my lab has been antigen receptor immunogenetics in aquatic vertebrates, and we are well-poised to investigate the adaptive immune loci of these two manatee species.

2008-present; Assistant Professor in Veterinary Pathobiology, College of Veterinary Medicine and Biomedical Sciences, Texas A&M University (TAMU)

2008-present; Ecology and Evolutionary Biology Interdisciplinary Research Program (TAMU)

2008-present; Interdisciplinary Faculty of Genetics (TAMU)

2009-present; Whole Systems Genomics Initiative (TAMU)

2010-present; Interdisciplinary Faculty of Toxicology (TAMU)

2010-present; Professional Program in Biotechnology (TAMU)

2014-present; joint appointment in Microbial Pathogenesis and Immunology, School of Medicine (TAMU)

2014-present; Associate Professor with tenure (TAMU)

Peer Reviewed Publications from last three years (total n=28, h index=12)


Criscitiello, M.F. “What the shark immune system can and cannot provide for the expanding landscape of immunotherapy.” Expert Opinion in Drug Discovery 9(7):725-739, 2014. PMID: 24836096.

Federal Research Support as PI

Ongoing Research Support
NSF Evolution of loci critical in antigen recognition Role: PI $655,000 (to Criscitiello) 2013-2016

INAPESCA RNA Sequencing for Annotation of a Reference Genome for Augmentation of Shrimp Disease Resistance (renewal) Role: Co-PI $96,420 (to Criscitiello)

Recently Completed Research Support
National Institutes of Health (AI73888) Origins of Specialized Mucosal Lymphocyte Subsets and Immunoglobulin Isotypes Role: PI Criscitiello (PI) 2008-2011

$270,000 (to Criscitiello)
BIOGRAPHICAL SKETCH

NAME Paul de Figueiredo

POSITION TITLE
Associate Professor

eRA COMMONS USER NAME (credential, e.g., agency login)
PDEFIGUEIREDO

EDUCATION/TRAINING (Begin with baccalaureate or other initial professional education, such as nursing, include postdoctoral training and residency training if applicable.)

<table>
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<th>INSTITUTION AND LOCATION</th>
<th>DEGREE (if applicable)</th>
<th>MM/YY</th>
<th>FIELD OF STUDY</th>
</tr>
</thead>
<tbody>
<tr>
<td>Rice University, Houston TX</td>
<td>B.A.</td>
<td>1986</td>
<td>Mathematics &amp; Political Science</td>
</tr>
<tr>
<td>Stanford, Palo Alto CA</td>
<td>M.A.</td>
<td>1989</td>
<td>Religious Studies</td>
</tr>
<tr>
<td>Cornell, Ithaca NY</td>
<td>Ph.D.</td>
<td>1997</td>
<td>Biochemistry, Molecular &amp; Cell Biology</td>
</tr>
<tr>
<td>MIT, Cambridge MA</td>
<td>Postdoc</td>
<td>1998-1999</td>
<td>Vertebrate genetics</td>
</tr>
<tr>
<td>U. Washington, Seattle WA</td>
<td>Postdoc</td>
<td>2000-2005</td>
<td>Microbiology</td>
</tr>
</tbody>
</table>

A. PERSONAL STATEMENT
N/A

B. POSITIONS AND HONORS

SELECTED RECENT PROFESSIONAL EXPERIENCE
2006  Member, Faculty of Genetics, Texas A&M University
2010  Investigator, Norman Borlaug Center, Texas A&M University
2013  Assoc. Professor, Dept. of Microbial Pathogenesis and Immunology, Texas A&M Health Science Center

SELECTED OTHER EXPERIENCE AND PROFESSIONAL ACTIVITIES
2008, 2010  Panel Member, NSF Integrated and Organismal systems (IOS)
2008-2012  Panel Member, NIH Special Emphasis Panel/Scientific Review Group ZRG1 IDM-A, Intracellular bacterial pathogenesis
2009-2012  Panel Member, NSF Chemical, Bioengineering, Environmental, and Transport Systems (CBET)
2011  Panel Member, CDC-NIH Family History and Diamond Blackfan Anemia
2005-present  Member, American Association for the Advancement of Science
2010-present  Associate Editor, Frontiers in Cellular and Infection Microbiology
2013-present  Associate Editor, Frontiers in Cell and Developmental Biology

C. SELECTED SERVICE

TEXAS A&M UNIVERSITY
2006-2013  Co-Director, Research Experience for Undergraduates, Texas A&M Agrilife Research
2008-present  Faculty mentor, University Scholars Program
2009-present  Faculty Mentor, “Invisible Jungle”, a weekly National Public Radio broadcast
2009-2012  Member, Graduate Student Recruiting Committee, Faculty of Genetics
2009-2012  Member, Curriculum Committee, Biotechnology Program
2012-present  Member, Institutional Biosafety Committee
2013-present  Member, Faculty of Genetics Graduate Mentoring Committee

D. PUBLICATIONS (30 total, 1 in press, 1 in review)

SELECTED RECENT PUBLICATIONS


D. RESEARCH SUPPORT

Current support


3. Qatar National Research Fund (QNRF) (PI: Sadr; co-PI: Han; co-PI: de Figueiredo), Microfluidic Platforms for High-Throughput Screening of Microbes Utilizing Wastewater, 9/11/2012-9/10/2015


Prior support (last 4 years)


10. Leaf Energy, Inc. (PI: Dickman; co-PI: de Figueiredo), Microdiesel—a next generation biofuel platform, 6/2012-6/2013

11. Texas A&M Genomics and Bioinformatics Seed Grant Program (PI: Ficht; co-PI: de Figueiredo), Subcellular pathogenomics, 7/2012-7/2013


13. NSF/CBET (PI: Paul de Figueiredo; co-PI: Han), Microbe-mediated electricity generation, 8/2009-8/2012


16. Department of Defense Army Research Office (PI: de Figueiredo; co-PIs—Samuel, Ficht, Rice-Ficht, Adams), Confocal microscopy instrumentation for biodefense research


18. NIH NIAID (PI: de Figueiredo), Microscopy for infectious disease research, 1/2010

19. NIH NIDDK (PI: de Figueiredo), Supplementation for undergraduate research, 6/2009-8/2010

20. NIH MLPCN (PI: de Figueiredo), Drug discovery for bone marrow failure diseases, 6/2009-6/2011, No monies, resources only

21. NIH NIAID, (PI: de Figueiredo; co-PI: Ficht), Identification and analysis of host factors that support *Brucella* infection, 2/08-1/2010

22. NSF IOS (PI: de Figueiredo; co-PI: Ficht), Molecular analysis of *Brucella* host factors, 8/2008-8/2011
BIOGRAPHICAL SKETCH

NAME                     DERR, James N.
POSITION TITLE             Professor

EDUCATION/TRAINING

<table>
<thead>
<tr>
<th>INSTITUTION AND LOCATION</th>
<th>DEGREE</th>
<th>YEAR CONFERRED</th>
<th>FIELD OF STUDY</th>
</tr>
</thead>
<tbody>
<tr>
<td>Cameron University</td>
<td>B.S.</td>
<td>1980</td>
<td>Biology</td>
</tr>
<tr>
<td>Sul Ross State University</td>
<td>M.S.</td>
<td>1982</td>
<td>Zoology</td>
</tr>
<tr>
<td>Texas A&amp;M University</td>
<td>Ph.D.</td>
<td>1990</td>
<td>Genetics</td>
</tr>
</tbody>
</table>

Professional Experience

1985-1987         Graduate Teaching Assistant, WFSC, TAMU
1987-1989 Tom Slick Research Fellow, WFSC, TAMU
1989-1990 Staff Research Assistant, WFSC, TAMU
1990-1993 Post-Doc Research Associate, ANSC, TAMU
1993-1999 Assistant Professor, VTPB, TAMU
1995- Director, DNA Technologies Laboratory, VTPB, TAMU
1999- 2006 Associate Professor, VTPB, TAMU
2000-2002 Chair, Graduate Faculty of Genetics, TAMU
2001-2003 President-Elect and President, Texas Genetics Society
2006 - Professor, VTPB. TAMU

Honors and Awards

Phi Kappa Phi Distinguished Alumnus Award, Cameron University, 2000.
Outstanding Student in Training, The Texas Genetics Society. April, 1987, College Station, Texas.

Peer-reviewed publications (last 10 years).


Osterstock, JB; Fosgate, GT; Cohen, ND; Derr, JN; Manning, EJB; Collins, MT; Roussel, AJ. 2010. Familial associations with paratuberculosis ELISA Results in Texas Longhorn cattle. Veterinary Microbiology.129 (1-2), 131-138.


EDUCATION

2001 B.S., Biochemistry and Molecular Biology
Pennsylvania State University, University Park, PA

2008 Ph.D., Functional Genomics, Biotechnology Minor
North Carolina State University, Raleigh, NC

2009 Post-Doctoral Fellowship, Molecular Pathogenesis
Washington State University, Pullman, WA

PROFESSIONAL EXPERIENCE

2000 Research Co-op Intern, Research and Development-Technologies
McNeil Consumer and Specialty Pharmaceuticals, Fort Washington, PA

2001 Teaching Assistant, Department of Chemistry
Pennsylvania State University, University Park, PA

2001 Research Intern, Genomics Core Facility
Wistar Institute, Philadelphia, PA

2002 Research Technician, Genomics Core Facility
Wistar Institute, Philadelphia, PA

2002 – 2007 Graduate Research Assistant, Department of Food Science
North Carolina State University, Raleigh, NC

2008 – 2009 Postdoctoral Research Associate, School of Molecular Biosciences
Washington State University, Pullman, WA

2009 - Present Assistant Professor, Department of Poultry Science
Texas A&M University, College Station, TX

PUBLICATIONS

Journal Articles:


A. Personal Statement

Dr. Fuchs-Young brings over 25 years of experience in investigations of the basic mechanisms of mammary tumorigenesis. Her research focuses on interacting signaling networks involving the estrogen receptor (ERα), p53 and IGF-1 and includes studies of the impact of energy balance and refined carbohydrates on breast cancer susceptibility. Studies in her lab use a broad array of in vitro and in vivo models, including mammary epithelial and breast cancer cells and genetically modified animals. Using a unique transgenic model of IGF-1 overexpression, she and her team recently reported that developmentally regulated, nongenomic (membrane and cytoplasmic) ERα actions determine the impact of IGF-1 on normal and transformed mammary epithelium and susceptibility to mammary carcinogenesis. Dr. Fuchs-Young’s laboratory also studies breast cancer health disparities and the biophysiological mechanisms underlying disproportionately poor cancer outcomes in women of color.

Dr. Fuchs-Young has also directed a community outreach and engagement program for over 15 years. She has developed and implemented a wide variety of high impact programs providing science education and career development for K-16 students, particularly underrepresented minorities in science, and professional development for K-12 teachers. The goal of these programs is to enhance preparation for and stimulate excitement about careers in EHS, medicine and technology. Her community engagement efforts are also aimed at enhancing EHS literacy and promoting community capacity to achieve environmental justice.

B. Positions and Honors.

Research and Professional Experience:

1991-1992  Research Associate, Ben May Institute, University of Chicago, Chicago IL
1992-1996  Senior Scientist, Endocrine Research, Lilly Research Laboratories, Indianapolis IN
1996-2003  Assistant Professor, Department of Carcinogenesis, Science Park - Research Division (SPRD), The University of Texas MD Anderson Cancer Center (UT MDACC), Smithville TX
2004-2011  Associate Professor, Department of Carcinogenesis, SPRD, UT MDACC
2011-2012  Professor, Department of Molecular Carcinogenesis, SPRD, UT MDACC
2012-pres.  Professor, Department of Molecular and Cellular Medicine, College of Medicine and the Institute for Bioscience and Technology (IBT), Texas A&M Health Science Center, TAMU

Patents:

US Patent #5604248 Method for minimizing the uterotrophic effect of tamoxifen and tamoxifen analogs. Issue: 2/18/97
US Patent #5658931 Method for inhibiting mammalian breast carcinoma with tamoxifen and analogs thereof, and certain naphthyl compounds. Issue: 8/19/97

C. Selected peer-reviewed publications or manuscripts in press (relevant to this proposal).


D. Current Research and Outreach Support
R01MD006228 (Fuchs-Young, PI) 03/01/11–02/29/16 1.44 calendar month
NIH/NIMHHD $250,000
Role of p53 polymorphisms in disparities in breast carcinogenesis and outcome.
This project will investigate the role of racially disparate p53 polymorphisms in mediating the lack of pregnancy protection and increased susceptibility of minority women to early onset breast cancer.

RP130639 (Shippen, Fuchs-Young, Co-PIs) 12/1/13-11/31/15 0.6 Calendar Months
CPRIT $100,000
A role for non-coding RNA in the regulation of telomerase in breast cancer. Specific aims are: 1. To examine the effect of DNA damage on telomerase enzyme activity in mammary cancer cell lines. 2. To identify DNA damage-induced non-coding RNAs that associate with human telomerase. 3. To investigate the expression profile and biochemical interactions of TERT-associated non-coding RNAs.

BC123455 (Fuchs-Young, PI) 09/01/13 – 08/31/15 1.2 Calendar Months
DOD/BCRP – IDEA Expansion
Undoing the damage: reprogramming the effects of early high sugar/high fat diets through exercise. This project will investigate the potential of exercise to counteract the effects of exposure to hyperinsulinemia/hyperglycemia-inducing diet, during early development, by changing the "metabolic programming" induced by these early dietary exposures.

P30 ES023512 (Walker, C., PI) 4/2014-3/2018 2.6 Calendar Months
NIEHS/NIH Center for Translational Environmental Health Research (CTEHR). The goal of this project is to develop a Center to support environmental health research projects at Texas A&M.
Role: Director of the Community Outreach and Engagement Core; Co-director, Career Development Program.

Training Grants
NIH/NCI R25T (PI: R. Carroll) 8/1/11 – 7/31/16 unspecified effort
Post-doc in Nutrition, biostatistics and bioinformatics $2,467,870 direct costs/5 years
Role: Faculty Mentor
BARBARA GASTEL

Mailing Address:       Telephone Numbers:
Department of Veterinary Integrative Biosciences       (979) 845-6887 (office)
107 Veterinary Medicine Administration Building       (979) 731-8781 (home)
4458 TAMU        Fax: (979) 847-8981
College Station, TX 77843-4458   USA    E- Mail: b-gastel@tamu.edu

Degrees
MD, 1978, Johns Hopkins
MPH, 1978, Johns Hopkins
BA, 1974, Yale, summa cum laude (major: biology/history of medicine)

Honors
Texas A&M University Bush Excellence Award for Faculty in Public Service, 2015
Texas A&M University Association of Former Students Distinguished Achievement Award in Extension,
Continuing Education, or Professional Development, 2012
John P. McGovern Science and Society Award, Sigma Xi, The Scientific Research Society, 2010
Council of Science Editors Award for Meritorious Achievement, 2010
Honored Editor in the Life Sciences, Board of Editors in the Life Sciences, 2006
John P. McGovern Award for Excellence in the Field of Medical Communications, American Medical
Writers Association Southwest Chapter, 2006
Outstanding Texas A&M Science Communicator, Texas A&M University Chapter of Sigma Xi, 2003
Distinguished Service Award, Council of Science Editors, 2002
Fellow, American Association for the Advancement of Science, elected 2001
Harold Swanberg Distinguished Service Award, American Medical Writers Association, 1998
Golden Apple Award, American Medical Writers Association, 1993
Fellow, American Medical Writers Association, elected 1991
Phi Beta Kappa, 1973

Academic and Related Employment
2008-       Professor of Veterinary Integrative Biosciences and of Humanities in Medicine
            Texas A&M University
2004-2008   Associate Professor of Veterinary Integrative Biosciences
            and of Humanities in Medicine
            Texas A&M University
1989-2004   Associate Professor of Journalism and of Humanities in Medicine
            Texas A&M University
1985-1989   Assistant Dean for Teaching and Teaching Evaluation
            and Assistant Adjunct Professor of Epidemiology and International Health
            University of California, San Francisco School of Medicine
1983-1985   Visiting Professor of Technical Communication
            Beijing Medical University (now Peking University Health Science Center)
1981-1983   Assistant Professor of Science Writing
            Massachusetts Institute of Technology
1980-1981   Special Assistant to the Director
            National Center for Health Care Technology
            US Department of Health and Human Services
1978-1980   Special Assistant, Office of the Director
            National Institute on Aging, National Institutes of Health
Editorial and Related Posts

2013- INASP Associate, AuthorAID (international project to help researchers in developing countries to write about and publish their work, www.authoraid.info)
2007-2013 Knowledge Community Editor, AuthorAID
2000-2010 Editor, Science Editor (periodical of the Council of Science Editors)
1998-1999 Editor, CBE Views (periodical of the Council of Biology Editors)
1988-1997 Consulting Editor in Medicine and Pathology, McGraw-Hill Yearbook of Science and Technology
1987-1996 Consulting Editor in Medicine and Pathology, McGraw-Hill Encyclopedia of Science and Technology
1993-1995 Associate Editor, Sciphers (newsletter, Science Communication Interest Group, Association for Education in Journalism and Mass Communication)
1987-1990 Book Review Editor, American Journal of Preventive Medicine

Teaching

Summary of Courses Taught

Texas A&M University

Science Journalism Graduate Program
- Biomedical Reporting
- Issues in Science and Technology Journalism
- Reporting Science and Technology
- Research Methods in Science and Technology Journalism
- Risk and Crisis Reporting
- Science Editing

Biomedical Sciences Undergraduate Program
- Biomedical Explorations Through Narrative
- Biomedical Writing

Texas A&M Health Science Center College of Medicine Department of Humanities in Medicine
- Cultural Diversity in Medicine
- Medical Essays: Current and Classic
- Medicine and Literature
- Medicine and the Media
- Introduction to Medical Ethics (discussion leader and occasional lecturer)
- Introduction to Leadership in Medicine (discussion leader)

College of Liberal Arts Honors Program
- Journal Editing and Publication: A Look Behind the Scenes
- Medical Literacy Through Narrative
- Physicians’ Recollections
- Words and Health
Department of Journalism
Editing for the Mass Media
Magazine Editing and Production
Magazine Writing
Media Writing II/Reporting and Editing II
Methods of Specialized Journalism

University of California, San Francisco School of Medicine
Teaching Techniques
Scientific Writing
Journalism for Health Science Students
Fundamentals of Epidemiology (discussion leader)
Medical Problem Solving (discussion leader)
Introduction to Clinical Medicine (discussion leader)

Beijing Medical University (now Peking University Health Science Center)
Scientific Communication
American-Style Teaching Methods

Capital (Peking Union) Medical College
Scientific Communication

Chinese Medical Association
Scientific Communication for Editors

Massachusetts Institute of Technology
Science Writing for the Public
Scientific and Engineering Writing
The Scientific Essay

Recent Workshops for International Researchers
AuthorAID Workshop on Teaching Research Communication: Colombo, Sri Lanka, 27-31 May 2013
AuthorAID Workshop on Effective Mentorship in Research Communication: Colombo, Sri Lanka, 3-4 March 2015
AuthorAID Train the Trainers Workshops on Teaching Research Writing: Addis Ababa, Ethiopia, 30 November 2012; Kathmandu, Nepal, 18 March 2011; Dar es Salaam, Tanzania, 25 June 2010
AuthorAID Workshops on Proposal Writing: Addis Ababa, Ethiopia, 14-17 May 2012; Butare, Rwanda, 7-10 June 2011
AuthorAID/University of Colombo Faculty of Medicine Workshop for Research Trainers, Colombo, Sri Lanka, 3-4 March 2015
Health Reporting Workshop for Health Professionals and Journalists, Accra, Ghana, 21-22 November 2011 (co-facilitator)
International Training Workshops: Revision of Research Proposals and Development of
Scientific Manuscripts for Publication (led the portion on scientific manuscripts): Cali, Colombia, 9-14 November 2009; Nairobi, Kenya, 29 April-4 May 2008
Lecture Series on Biomedical Writing and Scientific Publication, Sichuan University, Chengdu, China, 24-26 December 2007 (one of two main lecturers)
Scientific-Communication Capacity-Building Workshop, Nairobi, Kenya, 7-8 May 2015
Scientific-Communication Workshop, Havana, Cuba, 13-14 October 2014
Workshop on Medical Writing and Publication, Bangladesh Society of Medicine, Dhaka, Bangladesh, 10-14 December 2011
Workshop on Scientific Writing and Publishing, Makerere University, Kampala, Uganda, 13-17 August 2007
Workshops in Mexico on Scientific Writing: Mexico City, 25-27 November 2009; Monterrey, 10-12 September 2009; Torreón, 16-20 March 2009

Workshops at American Medical Writers Association Annual Conferences
Medical Essays: 1995
Teaching Medical Journalism: 1993, 1994
How to Teach Medical Writing for the Lay Readership: 1992

Selected Other Teaching-Related Activities
Master's Degree Program in Science and Technology Journalism, Texas A&M University:
  Coordinator, 1995-1999, 2004-
  Chair of Graduate Advisory Committees of about 50 Students, 1996-
China Medical Board Program in Biomedical Writing and Editing, 1996-2007
  Principal Consultant/US Coordinator
  Instructor: Intensive Course and Online Lessons
  Internship Placement Coordinator and Internship Host
Science Editor Magazine, 2000-2010
  Supervisor of Interns

Teaching Grants
University Scholars Mentorship Grants, Honors Program, Texas A&M University,
  Spring and Fall 2006 and Spring 2007 ($500 per semester)
College of Liberal Arts Honors Course Grant, Texas A&M University, 2005 ($1,000)
Honors Curriculum Development Grant, Texas A&M University, 1992 ($2,000)

Teaching Awards and Nominations
2002  Class Friend Award, Class of 2002, Texas A&M College of Medicine
1997  Graduate Student Council Faculty Excellence Award, Texas A&M University
1989  Nomination for teaching award, UCSF School of Medicine
1988  Nomination for teaching award, UCSF School of Medicine
1987  Award for Outstanding Dedication to Quality Teaching, presented by classes of 1989 and 1990, UCSF School of Medicine

Publications

Books


Self-Study Workshop (Workbook and CD)


Monographs


Volumes Edited


Gary NE, Boelen C, Gastel B, Ayers WR, eds.  *Improving the Social Responsiveness of Medical Schools.*  *Academic Medicine* 74 (Supplement to Number 8), 1999.

Gastel B, Wilson MP, Boelen C, eds.  *Toward a Global Consensus on Quality Medical Education:*
Serving the Needs of Populations and Individuals. Academic Medicine 70 (Supplement to Number 7), 1995.


Articles

Selected Articles in Peer-Reviewed Publications


**Selected Other Pieces for Professional Readerships**


Gastel B. Writing and publishing journal articles: from typewriters and postal deliveries to electronic everything. *Johns Hopkins Public Health* (online extra), Special Issue 2012. Available at: http://magazine.jhsph.edu/2012/technology/online_extras/alumni_dispatches/barbara_gastel/.


CURRICULUM VITAE

I. PERSONAL INFORMATION

Name: Terry Joe Gentry
Title: Associate Professor
Address: 550A Heep Center
        2474 TAMU
        College Station, TX  77843
Department: Soil and Crop Sciences
Date of initial appointment: January 1, 2006

II. EDUCATION

2003-2005 Postdoctoral Research Associate, Oak Ridge National Laboratory
1999-2003 Doctor of Philosophy (Microbiology & Immunology), University of Arizona
1995-1998 Master of Science (Agronomy), University of Arkansas
1988-1993 Bachelor of Science (Agronomy), University of Arkansas

III. EXPERIENCE

2006-Present Assistant/Associate Professor, Department of Soil and Crop Sciences, Texas A&M University
2003-2005 Postdoctoral Research Associate, Environmental Sciences Division, Oak Ridge National Laboratory
1999-2003 Graduate Research/Teaching Associate, Department of Soil, Water, and Environmental Science, University of Arizona
1995-1999 Research Specialist/Graduate Assistant, Department of Crop, Soil, and Environmental Sciences, University of Arkansas
1993-1995 Research Analyst, Agronomy, Agricultural Experiment Station, University of the Virgin Islands

Undergraduate Courses Taught
SCSC 405 – Soil and Water Microbiology, 4 credit hour course offered in fall and spring semesters. Discussion of the roles of soil and water microorganisms in the sustainability and productivity of various ecosystems with specific emphasis on plant-microbial interactions, nutrient cycling, degradation of pesticides and other xenobiotics, generation of trace gases, and soil and water quality. The laboratory portion of the course reinforces these concepts and provides hands-on experience with current techniques in soil and water microbiology.

SCSC 425 (489) - Biofuels and the Environment, 2 credit hour course offered in fall semester of even-numbered years. Stacked with SCSC 625. Discussion of different biofuel crops, production systems, and conversion technologies. Impacts of biofuel cropping systems on sustainability of yields and various aspects of soil and water quality. Environmental issues related to use/disposal of biofuel by-products. Economics and net C and energy budgets for various biofuel production systems.
Curriculum Vitae – Terry J. Gentry

SCSC 455 – Environmental Soil Science, 3 credit hour course offered every spring semester. Stacked with SCSC 657. Environmental aspects of soil receiving organic and inorganic materials involved with crop production and from wastes associated with agriculture, industry and municipalities; soil properties largely determine environmentally sound practices of applying these materials and the quantities that may be added without polluting air, soil and water resources.

Graduate Courses Taught
SCSC 625 (689) - Biofuels and the Environment, 2 credit hour course offered in fall semester of even-numbered years. Stacked with SCSC 425. Discussion of different biofuel crops, production systems, and conversion technologies. Impacts of biofuel cropping systems on sustainability of yields and various aspects of soil and water quality. Environmental issues related to use/disposal of biofuel by-products. Economics and net C and energy budgets for various biofuel production systems.

SCSC 637 (689) - Environmental Microbiology, 3 credit hour course offered in fall semester of odd-numbered years. Microbial diversity and interactions in various environments with emphasis on soil and freshwater systems. Molecular methods for detection and characterization of indigenous and introduced microorganisms. Environmental sources and fate of pathogens. Biotechnological applications of environmental microorganisms.

SCSC 657 (689) – Environmental Soil Science, 3 credit hour course offered every spring semester. Stacked with SCSC 455. Environmental aspects of soil receiving organic and inorganic materials involved with crop production and from wastes associated with agriculture, industry and municipalities; soil properties largely determine environmentally sound practices of applying these materials and the quantities that may be added without polluting air, soil and water resources.

Peer-Reviewed Journal Articles (publications since 2011; out of 55 total articles)


**BIOGRAPHICAL SKETCH**

<table>
<thead>
<tr>
<th>NAME</th>
<th>POSITION TITLE</th>
</tr>
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<tbody>
<tr>
<td>Gill, Clare A.</td>
<td>Professor</td>
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</table>

**EDUCATION/TRAINING**

<table>
<thead>
<tr>
<th>INSTITUTION AND LOCATION</th>
<th>DEGREE</th>
<th>YEAR(s)</th>
<th>FIELD OF STUDY</th>
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<tbody>
<tr>
<td>Flinders University of South Australia, Australia</td>
<td>B.Biot.</td>
<td>1995</td>
<td>Biotechnology</td>
</tr>
<tr>
<td>University of Adelaide, Australia</td>
<td>Ph.D.</td>
<td>2001</td>
<td>Molecular Genetics</td>
</tr>
<tr>
<td>Texas A&amp;M University, College Station, TX</td>
<td>Post-doc.</td>
<td>1999</td>
<td>Animal Genomics</td>
</tr>
</tbody>
</table>

**A. Positions and Honors**

**Positions and Employment:**

- 1995 - 1998: Graduate Student; University of Adelaide, South Australia, Australia.
- 2000 - 2001: Associate Research Scientist; Texas A&M University.
- 2001 - present: Member of the Graduate Faculty, Texas A&M University.
- 2001 - 2007: Assistant Professor of Animal Genomics; Texas A&M University.
- 2002 - present: Member of the Interdisciplinary Faculty of Genetics, Texas A&M University.
- 2003 - present: Member of the Interdisciplinary Faculty of Biotechnology, Texas A&M University.
- 2007 - 2013: Associate Professor of Animal Genomics; Texas A&M University.
- 2011 - present: Associate Vice President for Diversity; Texas A&M University.
- 2013 - present: Professor of Animal Genomics; Texas A&M University.
- 2013 - present: Faculty Ombuds Officer; Texas A&M University.

**Professional Memberships and Honors:**

**Memberships:** American Society of Animal Science, International Society of Animal Genetics, Texas Genetics Society, American Association for the Advancement of Science

1995: AMGEN Australia prize for excellence in biotechnology research
1995: Flinders University Chancellor’s letter of commendation
1998 & 1999: Finalist in the Young Australian of the Year Awards: nominated for The SA Water Science and Technology award for outstanding achievement
2009: Vice Chancellor’s Award in Excellence for Research (The McGregor Bovine Genomics Team)
2011: ADVANCE Administrative Fellow


**B. Selected Peer-Reviewed Publications (2009-2014)**


* Graduate student as first author
† Graduate student that I advised as first author
BIOGRAPHICAL SKETCH

Provide the following information for the key personnel and other significant contributors in the order listed on Form Page 2. Follow this format for each person. DO NOT EXCEED FOUR PAGES.

NAME
Melissa A. Grunlan

POSITION TITLE
Associate Professor

eRA COMMONS USER NAME
mgrunlan

EDUCATION/TRAINING (Begin with baccalaureate or other initial professional education, such as nursing, and include postdoctoral training.)

<table>
<thead>
<tr>
<th>INSTITUTION AND LOCATION</th>
<th>DEGREE (if applicable)</th>
<th>YEAR(s)</th>
<th>FIELD OF STUDY</th>
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<tbody>
<tr>
<td>North Dakota State University</td>
<td>B.S.</td>
<td>1991-1995</td>
<td>Chemistry</td>
</tr>
<tr>
<td>North Dakota State University</td>
<td>M.S.</td>
<td>1995-1997</td>
<td>Polymers &amp; Coatings</td>
</tr>
<tr>
<td>University of Southern California</td>
<td>Ph.D.</td>
<td>2001-2004</td>
<td>Chemistry</td>
</tr>
<tr>
<td>Texas A&amp;M University</td>
<td>Post-doc</td>
<td>2004-2005</td>
<td>Chemistry</td>
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A. Personal Statement
The PI is an Associate Professor in the Department of Biomedical Engineering at Texas A&M University (TAMU). She is the author of 39 journal articles in press. Dr. Grunlan received her Ph.D. training in silicon polymer chemistry with Prof. Bill Weber (USC). She specializes in the synthesis and fabrication of silicon-based polymeric materials including coatings, shape memory polymers and hydrogels. These materials are directed towards improving the performance of tissue-contacting devices (e.g. hemodialysis catheter and subcutaneously implanted glucose biosensors) as well the guiding the regeneration of osteochondral tissues.

Dr. Grunlan has been involved with numerous training/mentoring activities with graduate and undergraduate students in Biomedical Engineering and Materials Science & Engineering at TAMU. To date, she has advised 12 Ph.D. students (7 graduated), 1 M.S. student (1 graduated) and 42 undergraduate students (currently 9). In addition, she has co-chaired 2 Ph.D. students (1 graduated). In addition, 1 post-doc will start ~January 2015. Her students train in cross-cutting research including collaborations with science, engineering and clinical researchers. These students are mentored through weekly research meetings as well as with activities including manuscript and grant preparation as well as conference participation. Senior students are also afforded opportunities to train as mentors themselves by mentoring undergraduate student researchers. This system has notable produced 18 (out of 42) undergraduate students as co-authors of a journal article and numerous students who have presented at national &/or local conferences.

B. Positions and Honors

Positions and Employment
2004-2005 Post-doctoral research associate, Dept. of Chemistry, Texas A&M University (College Station, TX)
2005-2011 Assist. Professor, Dept. of Biomedical Engineering, Texas A&M University (College Station, TX)
2011- date Assoc. Professor, Dept. of Biomedical Engineering, Texas A&M University (College Station, TX)

Other Experience and Professional Memberships
1997- American Chemical Society (ACS)
2007- Materials Research Society (MRS)
2009- Society for Biomaterials (SFB)

Selected Honors & Awards
2001 Quarterly Technical Achievement Award, The H.B. Fuller Company
2005 Doctoral Dissertation Award, University of Southern California
2010 The Association of Former Students (AFS) Teaching Award, Texas A&M University
2010-2011 Herbert H. Richardson Fellow, Texas A&M University
2012-2013 British Petroleum (BP) Teaching Excellence Award, Texas A&M University
2013 Texas A&M Engineering Experiment Station (TEES) Faculty Fellow
C. Selected peer-reviewed publications (in chronological order; selected from 39 peer-reviewed publications in press).

Most relevant to current application


Additional recent publication of importance to the field


ARUM HAN
Associate Professor, Department of Electrical and Computer Engineering
Associate Professor (joint appointment), Department of Biomedical Engineering
Member of the Texas A&M Institute for Neuroscience
Graduate Faculty of Texas A&M Health Science Center
Texas A&M University, College Station, TX 77843-3128
309C WERC, Tel (979) 845-9686, Fax (979) 845-6259, E-mail: arum.han@ece.tamu.edu

EDUCATION
Ph.D. Electrical and Computer Engineering, Georgia Institute of Technology, Atlanta, GA, 2005.
M.S. Electrical and Computer Engineering, University of Cincinnati, Cincinnati, OH, 2000.
B.S. Electrical Engineering, Seoul National University, Seoul, Korea, 1997.

POSITIONS AND EMPLOYMENT
2011-present Associate Professor, Department of Biomedical Engineering, Texas A&M University, TX
2011-present Associate Professor, Department of Electrical and Computer Engineering, Texas A&M, University, College Station, TX
2011-present Graduate Faculty, Texas A&M Health Science Center
2011-present Faculty, Texas A&M Institute for Neuroscience (TAMIN)
2009 Visiting Professor, Institute of Industrial Science (IIS), University of Tokyo (Jul. – Aug.)
2006 - 2011 Assistant Professor, Department of Biomedical Engineering, Texas A&M University, TX
2005 - 2011 Assistant Professor, Department of Electrical and Computer Engineering, Texas A&M, University, College Station, TX
2000 - 2005 Research Assistant, School of Electrical and Computer Engineering, Georgia Institute of Technology, Atlanta, GA
1998-2000 Research Assistant, Department of Electrical & Computer Engineering and Computer Science, University of Cincinnati, Cincinnati, OH

RESEARCH INTEREST
Solving Grand Challenge Problems in the broad area of Energy and Health through the use of Micro/Nano Systems Technology and Multidisciplinary Team Approach

Microbes as Biorefinary for Bioenergy: Microbial fuel cells for electricity generation, microalgae for transportation fuel production
Microbial Physiology and Functions in Infectious Disease: Understand microbial communications in microbial pathogenesis, understand host-pathogen interactions and evolutionary emergence of virulence, develop point-of-care (POC) diagnosis systems
Microphysiological Systems (Organ-on-Chip): developmental neurobiology models of the central nervous system (CNS)
Metastatic Cancer Analysis: Single-cell physical analysis of metastatic cancer cells

OTHER EXPERIENCES AND PROFESSIONAL MEMBERSHIP
2014- Executive Committee, Whole Systems Genomics Initiative (WSGI)
2011- Editorial Board Member, PLoS ONE
2014 Tutorial Co-Chair, IEEE 57th International Midwest Symposium on Circuits and Systems, College Station, TX, USA
2012  Promotion Committee, The 16th International Conference on Miniaturized Systems for Chemistry and Life Sciences (μTAS), Okinawa, Japan
2011-2012  General Co-Chair, The 3rd Circuits and Systems for Medical and Environmental Applications (CASME 2012), 2012, Merida, Mexico
2010-2011  Technical Program Committee (TPC), The 16th International Conference on Solid-State Sensors, Actuators, and Microsystems (Transducers) 2011, Beijing, China
2010-present  Member, American Chemical Society (ACS)
2009-present  Member, American Society of Mechanical Engineers (ASME)
2007-present  Member, Material Research Society (MRS)
2006-present  Member, The Society for Neuroscience
1997-present  Senior Member, Institute of Electrical & Electronics Engineers (IEEE)

HONORS AND AWARDS
2014  Engineering Genesis Award for Multidisciplinary Research, Texas A&M University
2014  Eugene Webb Faculty Fellow, Texas A&M University
2012  Texas A&M Engineering Experiment Station (TEES) Fellow
2012  Department of Electrical and Computer Engineering Outstanding Professor Award
2003  DARPA/NSF/Transducers Research Foundation Student Travel Award, Boston, MA
2002  IEEE EMBS Student Travel Grant, Wisconsin
2000  DARPA/NSF/Transducers Research Foundation Student Travel Award, Nara, Japan
1997-2000  University Graduate Scholarship, Department of Electrical and Computer Engineering and Computer Science, University of Cincinnati, OH

JOURNAL REVIEWER
(Regular Reviewer for 30 Journals as Listed Below)

GRANT REVIEWER
National Institutes of Health (NIH), Biotechnology Review Panel (ZRR1 BT-7 01), Review Panelist, 2012
National Institutes of Health (NIH), Biotechnology Review Panel (ZRR1 BT-B 02), Review Panelist, 2007
National Science Foundation (NSF), Division of Electrical, Communications and Cyber Systems (ECCS) CAREER Award Panelist, 2012
National Science Foundation (NSF), Sensors and Sensing Systems Program at Division of Civil, Mechanical, and Manufacturing Innovation (CMMI), Review Panelist, 2012
National Science Foundation (NSF), Communications, Circuits, and Sensing Systems (CCSS) Program at Division of Electrical, Communications and Cyber Systems (ECCS), Review Panelist, 2011, 2013
National Science Foundation (NSF), the Integrative, Hybrid & Complex Systems (IHCS) Program at Division of Electrical, Communications and Cyber Systems (ECCS), Review Panelist, 2010, 2011
Romanian National Council for Development and Innovation, 2011
Italian Ministry of Health, Proposal Reviewer, 2010
CURRENT RESEARCH SUPPORT

**IDBR: TYPE A – Microfluidic Fungal Transformation System for Ultra High-Throughput Functional Genomics**
National Science Foundation (NSF)
DBI-1353759 (Han) 5/15/2014 – 4/30/2016 $302,791
Role: PI

**Microfluidic Platforms for High-Throughput Screening of Microbes Utilizing Wastewater**
Qatar National Research Foundation (QNRF)
NPRP 5-671-2-278 (Sadr) 10/15/2012 – 10/15/2015 $1,049,779
Role: PI
This project is to develop a high throughput microbial electrolysis cell array for screening microbes and conditions that maximizes hydrogen production from wastewater.

**EFRI-REM (Research Experience and Mentoring) Supplement**
National Science Foundation (NSF)
EFRI 1431209 (Han) 8/15/2012 – 7/31/2016 $100,000
Role: PI

**EFRI-PSBR: Microalgae Lab-on-Chip Photobioreactor Platform for Genetic Screening and Metabolic Analysis Leading to Scalable Biofuel Production**
National Science Foundation (NSF)
EFRI 1240478 (Han) 8/15/2012 – 7/31/2016 $2,000,000
Role: PI
This multi-disciplinary project is to develop microfluidic lab-on-chip devices with capabilities to precisely assay and manipulate parallel samples at single-cell resolution and utilize it to analyze and optimize the growth and hydrocarbon production potential of an engineered recombinant photosynthetic microalgae.

**Multi-Frequency Multi-Parametric Acoustophoretic Microfluidic System for Particle and Cell Separation**
National Science Foundation (NSF)
ECCS 1232251 (Kim) 8/1/2012 – 7/30/2015 $380,000
Role: Co-PI
This project is to develop numerical models of acoustic standing wave based particle and cell separation system and validating them with microfluidic platforms.

**Defeating Antibiotic Resistance Before It Emerges**
Bill and Melinda Gates Foundation
OPP1058695 (de Figueiredo) 5/1/2012 – 10/31/2014 (no-cost extension) $100,000
Role: Co-PI
This project is to develop a microfluidic lab-on-a-chip platform to accelerate research in antibiotic resistance.

FINISHED RESEARCH GRANT

**Microfluidics based High Throughput Analysis of Polymicrobial Interactions**
Defense Threat Reduction Agency (DTRA)
HDTRA1-12-1-0028 (Han)  6/18/2012 – 6/17/2013  $74,819
Role: PI
This project is to develop a microfluidic system capable of investigating microbe-to-microbe interactions at high throughput.

Hybrid Microbial-Electrochemical System for Waste Utilization
Bill and Melinda Gates Foundation
OPP1044645 (Han)  11/1/2011 – 4/30/2013  $100,000
Role: PI
This project is funded to develop a hybrid microbial fuel cell (MFC) – microbial electrolysis cell (MEC) for hydrogen generation from waste.

Development of a Microfluidic High-Throughput Platform for Genetic Screening of Microalgae
2012 Whole Systems Genomics for Improved Human, Animal, and Environmental Wellbeing Catalyst Grant Internal (Han)  7/1/2012 – 8/31/2013  $10,000
Role: PI
This project is to develop a high throughput microfluidic screening system for genetic variant screening.

Microsystem for Low-Concentration Oil Detection from Environment
U.S. Army Corp of Engineers
W9132T-12-2-0022 (Han)  5/1/2012 – 6/30/2013  $80,000
Role: PI
This project is funded to develop a portable microsystem capable of detecting low-concentration oil from the environment.

Development of Biosample Pre-Processing Microfluidic Devices
Korean Ministry of Knowledge Economy
C11-00841 (Han)  7/1/2011 – 6/30/2013  $138,062
Role: PI
This project is funded to develop a portable diagnosis system utilizing cell separation microsystems and nanowire-based antibody detection scheme.

Microbe-mediated Electricity Generation
National Science Foundation (NSF)
CBET-0854684 (de Figueiredo)  4/1/2009 – 3/31/2013 (no-cost extension)  $300,000
Role: Co-PI
This project is funded to develop a microfabricated microbial fuel cell array for high-throughput screening of bioelectrically active microbes.

Development of Prototype Pathogen Detection Lab-On-a-Chip (PADLOC) Systems for Real-time On-field Plant Disease Diagnostics
United States Department of Agriculture (USDA)
2009-55605-05005 (Shim)  1/1/2009 – 12/31/2012 (no-cost extension)  $999,988
Role: Co-PI
This project is funded to develop a portable plant pathogen detection system based on microchip real-time PCR.

Micropatterned Thermoresponsive Nanocomposite Hydrogel Surfaces with Self-Cleaning Behavior
National Science Foundation (NSF)
CBET-0854462 (Grunlan)  9/1/2009 – 8/31/2012  $300,000
Role: Co-PI
The major goals of this project are to develop a micropatterned thermoresponsive nanocomposite hydrogel surfaces and characterize its cell releasing behavior.

CNS Myelination Co-Culture Microsystem for Axon-Glia Signaling
National Institutes of Health/National Institute of Mental Health (NIH/NIMH)
R21MH085267 (Han) 1/1/2009 – 12/31/2011 $387,053
Role: PI
The major goals of this project are to develop a neuron-glial co-culture microfluidic system to investigate the effect of localized axon-glial contacts on myelination of central nervous system.

An Integrated Microfluidic Cryo-Cooling System for MR Microcoils
National Institutes of Health/National Institute of Biomedical Imaging and Bioengineering (NIH/NIBIB)
R21EB07297-01 (Han) 6/1/2007-5/31/2011 $387,373
Role: PI
The major goals of this project are to develop a microfluidic cryo-cooling channel integrated with MR surface coils for MR imaging.

Hybrid Nano/Micro/Bio Packaging for Nano/Micro Scale Bio-IT Elements
Seoul Technopark and the Korean Ministry Knowledge Economy
1002970790 (Han) 6/1/2007-5/31/2009 $144,513
Role: PI
This project is to develop microfluidic and lab-on-a-chip packing technologies.

Pigment Ink Flow Optimization through Analysis of Particle Laden Flow in Microchannel
Samsung Electronics, Inc.
C08-00680 (Han) 6/20/2008 – 5/19-2009 $120,000
Role: PI
This project is to evaluate ink flowability inside microfluidic channels embedded in ink cartridges in inkjet printing systems.

Ink Flowability inside Microchannel of Ink Cartridge and Chip
Samsung Electronics, Inc.
C07-00535 (Han) 7/1/2007 – 6/30/2008 $99,800
Role: PI
This project is to evaluate ink flowability inside microfluidic channels embedded in ink cartridges in inkjet printing systems.

Transmit/Receive Single Echo Acquisition MRI
National Institutes of Health/National Institute of Biomedical Imaging and Bioengineering (NIH/NIBIB)
1R21EB005695 (Wright) 8/1/2006-7/31/2010 $403,695
Role: Co-PI
This project is to develop a surface coil array for MRI application.

BOOK CHAPTERS
JOURNAL PUBLICATIONS


NAME
Dr. Christian Hilty, Ph.D.

POSITION TITLE
Assistant Professor of Chemistry

eRA COMMONS USER NAME : chilty

EDUCATION/TRAINING

<table>
<thead>
<tr>
<th>INSTITUTION AND LOCATION</th>
<th>DEGREE</th>
<th>MM/YY</th>
<th>FIELD OF STUDY</th>
</tr>
</thead>
<tbody>
<tr>
<td>Swiss Federal Institute of Technology, Zürich</td>
<td>Diploma</td>
<td>1999</td>
<td>Physics</td>
</tr>
<tr>
<td>Swiss Federal Institute of Technology, Zürich</td>
<td>Dr. sc.</td>
<td>2004</td>
<td>Biophysics</td>
</tr>
<tr>
<td>University of California, Berkeley</td>
<td>(postdoc)</td>
<td>2006</td>
<td>Chemistry</td>
</tr>
</tbody>
</table>

A. Personal Statement
My laboratory currently is pioneering the development of dynamic nuclear polarization, a hyperpolarization technique, for real-time study of chemical and biochemical reactions by high-resolution NMR. We are applying the newly developed methods for the study of processes as diverse as enzyme catalyzed reactions, protein folding, and polymerization reactions. While a faculty member at Texas A&M University, where I have recently been granted tenure, I have been managing several grants from federal and private institutions. These include a CAREER award from the National Science Foundation and a New Faculty Award from the Camille and Henry Dreyfus Foundation. They also include an award for an upgrade of a departmental NMR spectrometer with a sensitive, state-of-the-art cryoprobe. Previously, I have carried out postdoctoral work with Alex Pines at Berkeley (hyperpolarized magnetic resonance imaging coupled to microfluidics), and doctoral work with Kurt Wüthrich at ETH Zürich (NMR spectroscopy of membrane proteins). The ensemble of this work has resulted in a total of over 40 journal articles with over 900 citations.

B. Positions and Honors
Professional Positions:
1999-2004 Research Assistant, Swiss Federal Institute of Technology, ETH, Zürich, Switzerland
2004-2006 Postdoctoral Researcher, Lawrence Berkeley National Laboratory, University of California, Berkeley, California
2006-2012 Assistant Professor, Department of Chemistry, Texas A&M University, College Station, Texas

Honors:
2009 CAREER Award, National Science Foundation
2006 Camille and Henry Dreyfus New Faculty Award
2005 Raymond Andrew Prize, for an outstanding PhD thesis in magnetic resonance, European Magnetic Resonance Conference (EUROMAR)

C. Selected Peer-reviewed Publications (5 selected from appointment at TAMU)

D. Research Support
ACTIVE
Ltr. Dated 4/3/12Hilty (joint PI): 9/1/2012-8/31/2014
Texas A&M – Weizmann Collaborative Initiative, $100,000 (Hilty portion)
Ultrafast Multidimensional NMR on Hyperpolarized Peptides and Proteins
The goal of this project is to provide proof of principle for the use of DNP hyperpolarization in multidimensional biomolecular NMR, including the determination of protein structure and function, and drug discovery.

50813-ND7 Hilty (PI): 1/1/11-8/31/2013
The American Chemical Society Petroleum Research Fund, $100,000
Metalloocene Catalyzed Polymerization Investigated by Hyperpolarized NMR
The goal of this project is to apply hyperpolarization by dissolution dynamic nuclear polarization to the study of polymerization reactions.
Role: PI

A-1658 Hilty (PI): 7/1/10-5/31/12
The Welch Foundation, $150,000
Molecular basis for autotransporter function
The goal of this project is to identify structural features of molecular interactions that arise in the assembly of helical membrane proteins.

0846402 Hilty (PI): 02/01/09-01/31/14
National Science Foundation, $550,003
CAREER: Reaction mechanisms by real-time, hyperpolarization enhanced nuclear magnetic resonance
This award was given for the development of methods to exploit hyperpolarization for the study of enzyme catalysis and protein folding.

0840464 Russell (PI): 8/1/2009-7/31/2012
National Science Foundation, $247,238
CRIF:MU: Acquisition of a cryoprobe for a NMR spectrometer
Role: Co-Investigator and Lead Writer (PI: Department Head per program requirement). This award was given to upgrade a departmental 500 MHz NMR spectrometer with a cryoprobe for enhanced sensitivity.

COMPLETED
Camille and Henry Dreyfus Foundation, $50,000
Structure and function of membrane proteins by NMR using DNP hyperpolarization
This award was given in support of a research program aiming to study membrane proteins by NMR, and to develop novel methods of pre-polarization for determining interactions and dynamic processes.

The Welch Foundation, $150,000
Structural perspectives on transmembrane Helix Assembly by NMR
The goal of this project was to identify structural features of molecular interactions that arise in the assembly of helical membrane proteins.

Fellowship for Prospective Researchers: 7/1/04-6/30/05
Swiss National Science Foundation, $52,402
Xenon Biosensors applied to Microcoil NMR and NMR at Ultralow Magnetic Fields
This fellowship was awarded for postdoctoral training at UC Berkeley.

E. Contributions in Research Training and Mentoring (9/2006 – present)

<table>
<thead>
<tr>
<th>Graduate Students</th>
<th>Undergraduate Students</th>
<th>Research Associates</th>
<th>Ph.D.’s Awarded</th>
<th>M.S.’s Awarded</th>
</tr>
</thead>
<tbody>
<tr>
<td>Current group</td>
<td>6</td>
<td>0</td>
<td>0</td>
<td>N/A</td>
</tr>
<tr>
<td>Total</td>
<td>9</td>
<td>5</td>
<td>0</td>
<td>3 (non-thesis, from BIOT program)</td>
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F. Contributions in Classroom Education
Courses taught (9/2006 – present)

<table>
<thead>
<tr>
<th>Course Name</th>
<th>Course Number</th>
<th>Number of Sections</th>
<th>Number of Students</th>
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</thead>
<tbody>
<tr>
<td>General Chemistry for Engineering Students</td>
<td>CHEM 107</td>
<td>1</td>
<td>307</td>
</tr>
<tr>
<td>Physical Chemistry Laboratory I</td>
<td>CHEM 325</td>
<td>1</td>
<td>16</td>
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<tr>
<td>Physical Chemistry Laboratory II</td>
<td>CHEM 326</td>
<td>3</td>
<td>38</td>
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<tr>
<td>Physical Chemistry I</td>
<td>CHEM 327</td>
<td>4</td>
<td>198</td>
</tr>
<tr>
<td>Analytical Chemistry I</td>
<td>CHEM 601</td>
<td>5x(1/4 team taught)</td>
<td>91</td>
</tr>
<tr>
<td>Physical Methods in Biological Chemistry</td>
<td>CHEM 689</td>
<td>3x(1/3,1/3,0.45 team taught)</td>
<td>26</td>
</tr>
</tbody>
</table>

Classroom innovations
- Constructed low-field NMR spectrometer and developed laboratory experiment for CHEM-325 (resulting in publication in J. Chem. Ed.)
- Developed quantum-first approach and lecture hall demonstration experiments for CHEM-327.
- Developed an enzyme kinetics laboratory experiment for middle/high school, which has been used twice in TAMU Youth Adventure Program, and will be distributed next semester with Chemistry
<table>
<thead>
<tr>
<th><strong>Name</strong></th>
<th>Mark T. Holtzapple</th>
</tr>
</thead>
</table>
| **Education**      | University of Pennsylvania, Ph.D., Chemical Engineering, 1981  
Cornell, B.S., Chemical Engineering, 1978 |
Tufts University, Chemical Engineering, Lecturer, 1983–1985 |
| **Non-academic experience** | US Army, Lieutenant and Captain, 1981–1985  
StarRotor Corporation, president and vice president, 2001–present |
| **Certifications & prof registration** | none |
| **Current Membership in prof organizations** | American Institute of Chemical Engineers, American Chemical Society, American Society for Engineering Education, International Horn Society, Sigma Xi, Tau Beta Pi, Omega Chi Epsilon |
| **Honors and Awards** | Odebrecht Award for Sustainable Development, 2014  
William Keeler Memorial Award for Contribution, 2014  
Bush Excellence Award for Faculty in Public Service, 2013  
Commercialization Rising Star Award, Research Valley Partnership, 2008  
Excellence in Innovation Award, Texas A&M University, 2007  
Walston Chubb Award for Innovation, Sigma Xi, 2006  
Texas A&M University Distinguished Lecture, 2006  
Texas A&M Ingenuity Award, 2003  
McGraw-Hill Environmental Champion Award, 1997  
President's Green Chemistry Challenge Award, 1996 |
| **Principal Publications of Last Five Years** | M. Holtzapple, S. Lonkar C. Granda, Producing Biofuels via the Carboxylate Platform, Chemical Engineering Progress, 52–57 (March 2015).  
S Taco-Vasquez, MT Holtzapple, Biomass Conversion to Hydrocarbon Fuels Using the MixAlcoTM Process, Oil & Gas Science and Technology – Revue |
<table>
<thead>
<tr>
<th></th>
<th></th>
</tr>
</thead>
<tbody>
<tr>
<td>Chair Tenure and Promotion Committee</td>
<td>Holtzapple, M.T. (PI), Task 4 – Seawater Deoxygenation, Cameron, Mar 2013 to May 2013, $104,140.</td>
</tr>
<tr>
<td>Undergraduate Chair</td>
<td>Holtzapple, M.T. (PI), Task 3 – Seawater Deoxygenation, Cameron, Mar 2013 to May 2013, $225,475.</td>
</tr>
<tr>
<td>Graduate Chair</td>
<td>Holtzapple, M.T. (PI), Liquid Biofuels: Creating Economic Incentives for Improved Sanitation, Bill and Melinda Gates Foundation, Nov 2011 to Oct 2013, $100,000.</td>
</tr>
</tbody>
</table>

**Professional Development Activities in the Last Five Years**

A. Personal Statement

My research focuses on steroid hormone-regulated gene expression in mammalian reproductive tissues. My independent laboratory discovered the post-transcriptional mechanism by which estradiol up-regulates estrogen receptor expression to enhance estrogen responsiveness in the uterus: estradiol stabilizes estrogen receptor mRNA via specific sequence elements in the 3' untranslated region of the message. These studies are leading to investigations of microRNAs regulating gene expression via steroid hormones in responsive tissues. I am excited to extend my studies to glucocorticoid repression of testosterone synthesis in stallion testes, expected to have high relevance to man. I am dedicated to mentoring diverse students at undergraduate as well as graduate levels and my track record extends throughout my career.

B. Positions and Honors.

Positions and Employment

<table>
<thead>
<tr>
<th>Year</th>
<th>Position</th>
<th>Department</th>
<th>Institution</th>
</tr>
</thead>
<tbody>
<tr>
<td>1986-88</td>
<td>Research Assistant</td>
<td>Department of Animal Science</td>
<td>University of Missouri</td>
</tr>
<tr>
<td>1988-92</td>
<td>Post-Doctoral Fellow</td>
<td>Department of Cell Biology</td>
<td>Baylor College of Medicine</td>
</tr>
<tr>
<td>1992</td>
<td>Assistant Professor</td>
<td>Department of Animal Science</td>
<td>Texas A&amp;M University</td>
</tr>
<tr>
<td>1992</td>
<td>Joint Appointment</td>
<td>Department of Veterinary Anatomy</td>
<td>Texas A&amp;M University</td>
</tr>
<tr>
<td></td>
<td>(renamed Veterinary</td>
<td>and Public Health</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Integrative Biosciences)</td>
<td></td>
<td></td>
</tr>
<tr>
<td>1998-</td>
<td>Associate Professor</td>
<td>Department of Animal Science</td>
<td>Texas A&amp;M University</td>
</tr>
</tbody>
</table>

Other Experience and Professional Memberships

<table>
<thead>
<tr>
<th>Year</th>
<th>Experience and Membership</th>
<th>Institution</th>
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</thead>
<tbody>
<tr>
<td>1986</td>
<td>Member, Publication and</td>
<td>Society for the Study of Reproduction</td>
</tr>
<tr>
<td></td>
<td>Membership Committees</td>
<td></td>
</tr>
<tr>
<td>1993</td>
<td>Member, Exec. Comm.,</td>
<td>Texas A&amp;M University</td>
</tr>
<tr>
<td></td>
<td>Faculty of Genetics</td>
<td></td>
</tr>
<tr>
<td>1996</td>
<td>Member</td>
<td>Endocrine Society</td>
</tr>
<tr>
<td>1999</td>
<td>Member, Exec. Comm.,</td>
<td>Texas A&amp;M University</td>
</tr>
<tr>
<td></td>
<td>Faculty of Reproductive</td>
<td></td>
</tr>
<tr>
<td></td>
<td>Biology</td>
<td></td>
</tr>
<tr>
<td>1997-01</td>
<td>Editorial Board</td>
<td>Biology of Reproduction</td>
</tr>
<tr>
<td>2000</td>
<td>Member, Exec. Comm.,</td>
<td>Texas A&amp;M University</td>
</tr>
<tr>
<td></td>
<td>Faculty of Biotechnology</td>
<td></td>
</tr>
<tr>
<td>1998-2</td>
<td>Editorial Board</td>
<td>Domestic Animal Endocrinology</td>
</tr>
<tr>
<td>2002</td>
<td>Member</td>
<td>Texas Faculty Association</td>
</tr>
</tbody>
</table>
Honors

1979 Rita McTigue O'Connell Award                     Gainesville Women’s Club
1979 Phi Beta Kappa
1980 ERF Award                             American Medical Association
1980 Graduate Fellowship for Women Entering Non-Traditional Careers  University of Florida
1995 American Registry of Professional Animal Scientists
2000 Gamma Sigma Delta (Agricultural Honor Society) Texas A&M University
2005 Phi Zeta (Veterinary Medicine Honor Society) Texas A&M University
2012 Dean’s Outstanding Achievement Award for Faculty Mentoring Texas A&M University

C. Peer-reviewed publications (Selected from 45 peer-reviewed publications)


BIOGRAPHICAL SKETCH

NAME
Ivanov, Ivan V.

POSITION TITLE
Clinical Associate Professor of Bioinformatics

eRA COMMONS USER NAME
IIVANOV

EDUCATION/TRAINING

<table>
<thead>
<tr>
<th>INSTITUTION AND LOCATION</th>
<th>DEGREE</th>
<th>YEAR(s)</th>
<th>FIELD OF STUDY</th>
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<tbody>
<tr>
<td>Sofia University, Bulgaria</td>
<td>M.S.</td>
<td>1987</td>
<td>Mathematics</td>
</tr>
<tr>
<td>University of South Florida, Tampa, Florida</td>
<td>Ph.D.</td>
<td>1999</td>
<td>Mathematics</td>
</tr>
<tr>
<td>Syracuse University, Syracuse, NY</td>
<td>Post-doctoral</td>
<td>1999-2000</td>
<td>Mathematics</td>
</tr>
<tr>
<td>Texas A&amp;M University, College Station, TX</td>
<td>Post-doctoral</td>
<td>2000-2003</td>
<td>Mathematics</td>
</tr>
<tr>
<td>Texas A&amp;M University, College Station, TX</td>
<td>Post-doctoral</td>
<td>2003-2005</td>
<td>Bioinformatics</td>
</tr>
</tbody>
</table>

A. Personal Statement

My training in mathematics, statistics, and bioinformatics provides me with the skill set needed to analyze complex high dimensional multimodal datasets. I have made contributions in several key areas of systems and computational biology: (i) system identification and inference from genome-wide data, (ii) complexity reduction and compression, and (iii) control of the dynamical behavior for the purposes of therapeutic intervention. My research is focused specifically on mathematical modeling of gene regulatory networks and more generally, on analyzing the responses of biological systems to various types of treatment and thus, given my background, expertise, and extensive experience, I am qualified to serve on this project.

B. Positions and Honors

2005-2013  Clinical Assistant Professor of Bioinformatics, VTPP, Texas A&M University
2013-    Clinical Associate Professor of Bioinformatics, Department of Veterinary Physiology and Pharmacology, Texas A&M University
2014-  Director, Quantitative Biology Core, Center for Translational and Environmental Health Research, Texas A&M University
2012-   Member of the Intercollegiate Faculty of the Professional Program of Biotechnology, Texas A&M
2009-   Member of the Intercollegiate Faculty of Toxicology, Texas A&M University
2010-   Application Researcher, IAMCS, Texas A&M University

C. Contributions to Science

Dr. Ivanov has made significant contributions to several areas of systems and computational biology:

(i) Worked on system identification and inference from genome-wide data.
(ii) Developed methods for complexity reduction and compression of computational models of genomic regulation.
(iii) Studied the problem of control of dynamical systems for the purposes of therapeutic intervention.
(iv) Developed a novel Bayesian computational framework for the purposes of classification involving next generation sequencing data.

This body of work has advanced the methodology of computational modeling for the purposes of prediction of multimodal high dimensional data and the respective biological processes. It is the interface between biology, mathematics, statistics, and engineering where one can expect to advance the understanding and scientific
modeling of complex biological systems. Dr. Ivanov’s contributions and close interactions with scientists from these fields can be traced in the select list of publications below.

Selected peer-reviewed publications (in chronological order)


D. Current Research Support

U01CA162077 Lampe/Hullar/Chapkin (Multi-PIs) 9/1/11-8/31/16
NIH/NCI
Subcontract with the Fred Hutchinson Cancer Center, Seattle, WA. We study how dietary lignans, metabolized by gut bacteria, affect colon cell signaling pathways and impact colorectal cancer risk in humans.
Role: Co-Investigator

RO1 CA168312 Chapkin (PI) 9/1/11-8/31/16
NIH/NCI
*Chemoprotective effects of natural products on colonic adult stem cells*
The focus of this proposal is to elucidate the effects of curcumin and a citrus bioactive, limonin, on colonic stem cell function and gene expression.
Role: Co-Investigator

P30 ES023512-01 Walker (PI) 4/1/2014-3/31/2018
NIH/NIEHS
*Center for Translational Environmental Health Research*
The objectives are to: Build programmatic and scientific capacity for environmental health science research through member participation in Thematic Focus Areas; Enhance the capabilities of existing programs in environmental health sciences through Facility Core resources and the Pilot Project Program. The overall mission is to improve understanding of environmental influences on human health by integrating basic biomedical and engineering research.
Role: Director of the Quantitative Biology Core
BIOGRAPHICAL SKETCH

NAME
ARUL JAYARAMAN

POSITION TITLE
Professor, Chemical Engineering, Biomedical Engineering, Microbial Pathogenesis and Immunology

eRA COMMONS USER NAME
1JAYARAMAN

EDUCATION/TRAINING

<table>
<thead>
<tr>
<th>INSTITUTION AND LOCATION</th>
<th>DEGREE</th>
<th>YEAR(s)</th>
<th>FIELD OF STUDY</th>
</tr>
</thead>
<tbody>
<tr>
<td>Birla Institute of Technology &amp; Science, India</td>
<td>B.E</td>
<td>1992</td>
<td>Chemical Engineering</td>
</tr>
<tr>
<td>Birla Institute of Technology &amp; Science, India</td>
<td>M.Sc</td>
<td>1992</td>
<td>Physics</td>
</tr>
<tr>
<td>Tufts University</td>
<td>M.S</td>
<td>1994</td>
<td>Biochemical Engineering</td>
</tr>
<tr>
<td>University of California, Irvine</td>
<td>Ph.D</td>
<td>1998</td>
<td>Biochemical Engineering</td>
</tr>
<tr>
<td>Massachusetts General Hospital</td>
<td>Postdoc</td>
<td>2000</td>
<td>Biomedical Engineering</td>
</tr>
</tbody>
</table>

A. Personal Statement
Research in my laboratory focuses on inter-domain signaling between bacteria and human cells in complex, multi-signal environments, with the goal of identifying design principles underlying recognition of noncanonical signals. Specifically, we focus on signal recognition in different aspects of GI tract infections and inflammation. Work in my laboratory is highly inter-disciplinary in nature and involves development of novel microscale model systems for investigating bacterial chemotaxis and bacterial community and biofilm development, quantitative metabolomics for prediction and identification of bioactive microbiota metabolites, and elucidating the mechanisms of microbiota metabolites recognition in eukaryotic cells. My lab has ongoing inter-disciplinary collaborations with Dr. Michael Manson that have led to identification of mechanisms underlying sensing of non-canonical signals such as the autoinducer-2 (AI-2) and norepinephrine by enteric bacteria, with Dr. Robert Alaniz on the discovery that the microbiota-derived metabolite indole modulates host cell inflammation, with Dr. Kyongbum Lee on predicting and validating putative microbiota metabolites, with Dr. Robert Chapkin on the role of microbiota metabolites on stem cell behavior, and with Dr. Stephen Safe on the recognition of metabolites by the arylhydrocarbon receptor.

B. Positions and Honors.

Positions
1992-1993 Fermentation Engineer, Madurai Kamaraj University, India
1998-2000 Research Fellow in Surgery, Shriners Burns Hospital, Boston
2000-2003 Instructor in Surgery (Bioengineering), Harvard Medical School, Boston
2001-2003 Principal Investigator, Shriners Burns Hospital, Boston
2004-2010 Assistant Professor, Dept. of Chemical Engineering, Texas A&M University
2010 - 2013 Associate Professor, Dept. of Chemical Engineering, Texas A&M University
2013 - Professor, Dept. of Chemical Engineering, Texas A&M University

Awards and Honors
1994 Dean’s Fellowship, University of California, Irvine
1998 U.C. Regents Dissertation Fellowship, University of California, Irvine
2009 NSF CAREER Awardee
2009 Ray Nesbitt I Faculty Development Professorship
2009 TEES Select Young Faculty Award
2013 Ray Nesbitt I Professorship

Professional Memberships
American Society of Microbiology
American Chemical Society
American Institute of Chemical Engineers
C. Selected peer-reviewed publications (out of 70 total)

Relevant

Representative

D. Research Support

NSF CBET
Role: PI
Title: Collaborative Research: Identification of Immunomodulatory Microbiota Metabolites
The goal of this proposal is to quantify microbiota metabolites and assess their immunomodulatory activity in vitro.

NIH 1R21GM106251-01A1
Role: Co-PI
Title: Computational Metabolomics of Gut Microbiota Metabolites
The goal of this proposal is to develop predictive models for identifying putative metabolic derivatives of dietary molecules that can be generated in the GI tract.
BIOGRAPHICAL SKETCH

Provide the following information for the Senior/key personnel and other significant contributors. Follow this format for each person. **DO NOT EXCEED FOUR PAGES.**

<table>
<thead>
<tr>
<th>NAME</th>
<th>POSITION TITLE</th>
</tr>
</thead>
<tbody>
<tr>
<td>Charles D. Johnson</td>
<td>Director, Genomics &amp; Bioinformatics</td>
</tr>
<tr>
<td>eRA COMMONS USER NAME</td>
<td></td>
</tr>
<tr>
<td>(credential, e.g., agency</td>
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**EDUCATION/TRAINING**

<table>
<thead>
<tr>
<th>INSTITUTION AND LOCATION</th>
<th>DEGREE</th>
<th>YY</th>
<th>FIELD OF STUDY</th>
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<tbody>
<tr>
<td>Texas A&amp;M University</td>
<td>B.S.</td>
<td>1988</td>
<td>Agronomy</td>
</tr>
<tr>
<td>Clemson University</td>
<td>M.S.</td>
<td>1993</td>
<td>Plant Physiology</td>
</tr>
<tr>
<td>Texas A&amp;M University</td>
<td>Ph.D.</td>
<td>2000</td>
<td>Plant Physiology</td>
</tr>
<tr>
<td>Texas A&amp;M University</td>
<td>Postdoc</td>
<td>2003</td>
<td>Computational Biology</td>
</tr>
<tr>
<td>University of Louisville</td>
<td>Postdoc</td>
<td>2004</td>
<td>Bioinformatics</td>
</tr>
</tbody>
</table>

**Employment and Appointments**

**Associate member Texas A&M University graduate faculty 2013- present**

**Associate Director 8/2013-present**
Center for Bioinformatics and Genomics System Engineering
Texas A&M System, College Station, TX

**Director 6/2010-present**
Genomics and Bioinformatics
Texas A&M AgriLife, College Station, TX

**President 2007-2010**
BioMath Solutions, LLC, Austin TX

**Senior Manager: Statistics / Bioinformatics 2006 – 2007**
Asuragen, Inc. Austin, TX

**Manager of Expression Bioinformatics 2004 – 2006**
Ambion, Inc. Austin TX

**Publications**


14. Leming et. al. (201 authors), The MAQC-II Project: A comprehensive study of common practices for the development and validation of microarray-based predictive models. 2010. Accepted for Publication, Nature Biotechnology.


21. Leming, Shi et al. (200 authors), FDA SEQC RNASEQ Quality Control Study, submitted Nature Biotechnology, 2013

Book Chapter

Patents (US and EU)


17. Bader, A.G.; Byrom, M.W.; Patrawala, L.; Johnson, C.D.; Brown, D.; miR-15, miR-26, miR-31, miR-145, miR-147, miR-188, miR-215, miR-216, miR-331, mmu-miR-292-3P REGULATED GENES AND PATHWAYS AS TARGETS FOR THERAPEUTIC INTERVENTION 2008 US Patents 20090131356


Scientific Software
1. mirInform: Led the development of miRInform® an automated data packaging and interactive exploration software tool that was launched as part of the DiscovArray product. Project manager, responsible for planning, design, implementation management, and marketing. Has been used over the last five years at Asuragen Inc. to process and deliver the majority of their service projects.

2. miRNA –QC Tool: Distributed by Affymetrix for three years as their primary signal process and analysis tool for their miRNA array product line. - http://goo.gl/Of7Ox Used throughout the miRNA field and part of hundreds of papers. The software was produced by BioMath Solutions LLC, under contract to Affymetrix.

3. FlexmiR – Data Analysis Software: Distributed by Luminex Inc. the software conducts signal process and basic statistical analysis and provides the user with basic plate QC information, both in figure and table form. The software has an intuitive and easy to use graphical user interface (GUI) and require no programming skills to operate. The software a key part of their miRNA product line. The software was produced by BioMath Solutions LLC, under contract to Luminex.

Microarray Design
1. Led bioinformatics team at Asuragen that developed the first custom Affymetrix miRNA array - DiscovArray®, Served as consultant to Affymetrix on their commercial miRNA array development and developed the analysis method and designed the analysis software used by Affymetrix (see miRNA-QC Tool)

Ambion TechNotes
1) Robert Setterquist, Mike Wilson, Charles Johnson, Shika Agarwal, Sharmili Moturi. Synthesize High Yields of Biotinylated aRNA. Ambion TechNote 12(3) page17-18


3) Charlie Johnson, Robert Setterquist, Sharmili Moturi, Charmaine San Jose, Penn Whitley. Increase Signal and Detect More Genes on Affymetrix® Arrays Ambion, Inc. TechNote 12(4) page 28-29

Synergistic Activities
As director of the Texas A&M AgriLife Genomics and Bioinformatics Service, I am responsible for promoting and facilitating genomics research across the Texas A&M system by providing individualized consulting services, access to instrumentation through a professional lab service group and bioinformatics analysis team. Worked with >500 of researchers over the last 3 years and assisted in the submission of over 250 genomics related grant applications.
Curriculum Vitae

**J. Spencer Johnston**

**Professor of Genetics/Entomology, Member of Genetics Faculty, Member of Graduate Faculty**

Email: spencerj@tamu.edu

Phone: 979.845.8295

**Undergraduate Education**

University of Washington, Seattle, Washington, Zoology, B.S., 1967

**Graduate Education**

University of Texas, Austin, Texas, Drosophila genetics, 1972-1975, NIH Fellow

University of Arizona, Tucson, Arizona, Genetics, Ph.D., 1972 (Advisor: W. B. Heed)

**Appointments**

Sept. ’97 – Present: Professor, Dept. Entomol., Texas A&M University, College Station, TX

1989 – Present: Dtr. Flow Cytometry, Center for Biosystematics and Biodiversity, TAMU

Sept. ’86 – Aug. ’97: Assoc. Prof., Dept. Entomology, Texas A&M University, Col. Sta., TX


Sept. ’75 – Dec. ’79: Asst. Prof., Dept. Biology, Baylor University, Waco, TX


**Teaching Activities**

My teaching involves undergraduate courses in forensic genetics (FIVS 308), population and ecological genetics (GENE 412 and 412H) and genetics seminar (GENE 481). The FIVS course covers the application of genetics in forensic science. GENE 412 covers the basic principles of population genetics, the impact of DNA sequence data on population studies, and presents population genetics through examples. GENE 481 involves student attendance at the regularly scheduled seminars of the TAMU faculty of genetics plus graded written summaries of selected seminars.

**Research Interests:**
Genomics: My laboratory is interested in the diversity of Arthropod genomes, and contributes to efforts to describe and annotate the complete genomic sequence of a wide variety of Arthropods, including the honey bee, mosquito, Antarctic midge, bedbug, body louse, varroa mite and others. A long term goal of my laboratory is to understand the forces that shape genomic diversity, between cells in an individual, between single individuals and between populations of a species, and among species.

Population level studies: We have been assessing the genetic impact of the arrival of the Africanized form of the honey bee, *Apis mellifera scutellata*. We have extensive collections of feral bees from colonies in South Texas and bait hive bees in Mexico spanning the period 1990 to 2003, which is three years prior, the time during, and the successive years after the invasion of the Africanized bee. We score mtDNA mitotypes and nuclear microsatellite loci and single nucleotide polymorphisms (SNPs). The data shows that the African and European mitochondrial lineages coexist, while the nuclear genome is a mixture of the genomes of both lineages. Using the same genetic approach, we are studying the population structure of the honey bee in Western Europe. This is an area of diversity, and endemism, that contains a significant portion of the genetic variation needed to enhance honey bee survival and productivity. We have studies on a wide variety of Arthropods, including, the walking stick, Drosophila species, a several species of beetles.

Genome size estimation: Our laboratory uses flow cytometry to provide genome size estimates for a variety of insects, plants and other animals. We measure genome size to correct questionable values produced by other methods, and provide new values for researches who need to know genome size to develop gene libraries. We uniquely determine genome size in groups of closely related organisms in an effort to better understand the process of genome size evolution.

Publications (Last 5 years)


<table>
<thead>
<tr>
<th>Name</th>
<th>Katy C. Kao</th>
</tr>
</thead>
<tbody>
<tr>
<td><strong>Education</strong></td>
<td></td>
</tr>
<tr>
<td>University of California, Los Angeles, 2005</td>
<td></td>
</tr>
<tr>
<td>University of California, Irvine, 1997</td>
<td></td>
</tr>
<tr>
<td><strong>Academic Experience</strong></td>
<td>Associate Professor - Department of Chemical Engineering, Texas A&amp;M University (9/2014 - present)</td>
</tr>
<tr>
<td></td>
<td>Assistant Professor – Department of Chemical Engineering, Texas A&amp;M University (8/2008 – 8/2014)</td>
</tr>
<tr>
<td><strong>Non-academic experience</strong></td>
<td>Chemical Analysis Engineer. (8/1997-8/1999) Western Digital Corporation, Lake Forest, CA.</td>
</tr>
<tr>
<td><strong>Certifications &amp; prof registration</strong></td>
<td>AICHE, American Chemical Society, American Society of Microbiology, Society of Industrial Microbiology and Biotechnology</td>
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<td><strong>Current Membership in prof organizations</strong></td>
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<td><strong>Honors and Awards</strong></td>
<td>Fluor Distinguished Teaching Award - 2013</td>
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<td>TEES Select Young Faculty - 2011 – 2012</td>
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<td>National Science Foundation - Faculty Early Career Development (CAREER) Award - 2011</td>
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<td></td>
<td>National Inst. of Health-National Research Service Award (NRSA) - 2007</td>
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<td>Presidential Undergraduate Research Award - 1996-1997</td>
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<td>• Undergraduate committee - 2008 - current</td>
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<td>• Graduate admissions committee - 2012 - 2013</td>
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<td>• Faculty mentor - 2009 - 2011</td>
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<td>• Departmental climate committee - 2010 - 2011</td>
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<td>• ABET course coordinator for CHEN 282/382 - 2011 - current</td>
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<td>• Special Biosafety committee - 2013 - 2014</td>
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<td>• Awards committee - 2012 – current</td>
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<td>• Women Faculty Network (WFN) – 2014 – current</td>
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<td>• Outstanding Mentoring Award review committee for WFN – 2014</td>
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<td>• Faculty advisor for OXE – Spring 2014 - present</td>
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<td>• WSGI executive committee – 2014 - present</td>
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<td>• OXE faculty advisor - Spring 2014 - present</td>
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<td>EXTERNAL SERVICE:</td>
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<td></td>
<td>• Journal reviewer</td>
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<td></td>
<td>• Panel reviewer</td>
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<td></td>
<td>o National Science Foundation</td>
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<td>o Carolina Biotechnology Center</td>
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<td>o NASA</td>
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<td>o ERASys</td>
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<td>• Editorial board membership</td>
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<tr>
<td></td>
<td>o PLoS ONE (May 2010 – present)</td>
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<td>o Journal of Biological Engineering (January 2013 - present)</td>
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<td>• Professional Society Program committees</td>
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<td>o Society of Industrial Microbiology and Biotechnology</td>
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<td></td>
<td>• Fermentation program committee - 2014 - 2016</td>
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<td>• Program chair - 2015</td>
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<td>• Session chair</td>
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<td>o AIChE National Meeting</td>
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<td>o Society of Industrial Microbiology Annual Meeting</td>
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<td>o ACS Spring Meeting</td>
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<tr>
<td></td>
<td>o Biochemical and Molecular Engineering Conference XIX</td>
</tr>
</tbody>
</table>
BIOGRAPHICAL SKETCH
Provide the following information for the Senior/key personnel and other significant contributors. DO NOT EXCEED FIVE PAGES.

NAME: Maria D. King

eRA COMMONS USER NAME (credential, e.g., agency login): MARIAKING

POSITION TITLE: Research Associate Professor, Director of Bio-Chem Air Quality

EDUCATION/TRAINING (Begin with baccalaureate or other initial professional education, such as nursing, include postdoctoral training and residency training if applicable. Add/delete rows as necessary.)

<table>
<thead>
<tr>
<th>INSTITUTION AND LOCATION</th>
<th>DEGREE (if applicable)</th>
<th>Completion Date MM/YYYY</th>
<th>FIELD OF STUDY</th>
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<tbody>
<tr>
<td>Technical University, Budapest, Hungary</td>
<td>B.A.</td>
<td>1979</td>
<td>Biology/Chemistry</td>
</tr>
<tr>
<td>Technical University of Budapest, Hungary</td>
<td>M.S.</td>
<td>11/85</td>
<td>Biochemistry</td>
</tr>
<tr>
<td>Institute for Biotechnology, Berlin, Germany</td>
<td>Ph.D.</td>
<td>06/86</td>
<td>Biotechnology /Chemistry</td>
</tr>
<tr>
<td>Rutgers University (New Brunswick, New Jersey)</td>
<td>Postdoctoral</td>
<td>09/89</td>
<td>Microbiology</td>
</tr>
<tr>
<td>ICGEB, Trieste, Italy</td>
<td>Postdoctoral</td>
<td>09/90</td>
<td>Biotechnology</td>
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<tr>
<td>Cornell University (Ithaca, New York)</td>
<td>Postdoctoral</td>
<td>09/92</td>
<td>Molecular Biology</td>
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<tr>
<td>University of California, Davis</td>
<td>Postdoctoral</td>
<td>09/94</td>
<td>Microbiology, Chemistry</td>
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A. Personal Statement
I am very excited to apply the wetted wall cyclone (WWC) bioaerosol collection technology for the detection and diagnosis of tuberculosis, one of the most infectious disease in the world. The WWC was developed in our Aerosol Technology Laboratory to sample bioaerosols at high air flows and concentrate the microbes over a million times in liquid. The cutpoint (where the collection efficiency is 50%) for the collector is 300 nm - 1 µm; it is currently the only device that can efficiently sample bioaerosols and aerosolized nanoparticles from large air volumes.

The current R21 application offers a novel opportunity for the WWC to protect human health by integrating it with a Mycobacterium tuberculosis detector developed by our collaborator at the TAMU Health Science Center for the rapid diagnosis of the infectious lung disease tuberculosis.

Our laboratory focuses on the optimization and application of the wetted wall cyclone system for the collection of aerosolized pathogens (viruses, bacteria, fungi) and their speciation and characterization by Illumina sequencing and real-time PCR (Polymerase Chain Reaction). We have been applying the collector system in a wide range of environmental projects, sampling air at different locations including mass transit systems, shower units, portable classrooms, corn fields, poultry facilities and analyzing the collected microbiomes by Illumina sequencing and real-time PCR. In our interdisciplinary projects we combine mechanical and electrical engineering with molecular biology and microbiology.

B. Positions and Honors

Positions and Employment
1983-1993 Senior Scientist, Biochemistry Dept, Central Food Research Institute, Budapest
1993-1996 Head of Biochemistry Dept, Central Food Research Institute, Budapest
1993-1994 Head of Lignocellulose Group, Int. Centre for Genetic Eng. & Biotechnology (ICGEB), Trieste
1996-2000 Research Associate, Biotechnology, Seminis Vegetable Seed Research Center, Woodland, CA
2000-2002 Senior Research Associate, Department of Plant Science, University of California, Davis
2002-2005  Senior Research Scientist, Biochemistry and Biophysics, Texas A&M University, TX
2005-  Research Associate Professor, PI of Aerosol Technology Laboratory, Mechanical Engineering Dept., and Lecturer, Professional Program in Biotechnology (MS), Texas A&M University, TX

Selected Other Experience and Professional Memberships
1983   Member, Hungarian Biochemical Society
1986   Member, Hungarian Society of Microbiologists
1988   Secretary, Federation of European Chemists' Societies
1989   Member, American Society of Microbiology
2006   Member, American Association of Aerosol Research (AAAR)

Honors
1994   "Vas Karoly" “Outstanding Scientist” Institute Award
1999   Selected Employee Bonus Award, Seminis Research Center, Woodland, CA
2005   Michele Costato Award, Best Conference Presentation, UpON Conference, Italy
2005   Science and Technology: Screening for screams; Bacteriology. The Economist. London, Apr.16, 2005. Vol.375. Iss.8422; pg.81
2012   Guest Editor, Biosensors
2014   “Professor of the Year 2013-2014” Texas A&M University Award

C. Contributions to Science
1. Development of novel biosensing and bacterial diagnostic technologies:
   My initial research at the Department of Biochemistry and Biophysics at Texas A&M University led to the development of a prompt bacterium identification method based on fluctuation-enhanced sensing in fluid medium. The resulting patented SEPTIC nanowell technology, licensed by the company Telemedicine DxUpClose is in commercialization phase with the potential to be one of the first point-of-care diagnostics tools for bacterial identification at remote rural locations and in battlefields. It also forms the basis for our current odor-based bacterial identification technology that is under development in collaboration with faculty in Electrical and Chemical Engineering.

2. Development of the wetted wall cyclone collection technology:
   In our Aerosol Technology Laboratory we have developed effective wetted wall cyclone (WWC) units with air flow rates of 100, 300 and 1250 L/min. The autonomous WWC aerosol samplers utilize an air blast atomizer to create a liquid spray in the aerosol inlet. The sprayer creates droplets with a volume median diameter of about 40 µm, which are carried by the airflow through a rectangular cyclone inlet slot into the cyclone body where they impact on the inner wall. Air shear causes the impacted liquid to form a film that initially flows primarily in the angular direction where the majority of the liquid in the film interacts with the high velocity (~ 25 - 50 m/s) air jet, and is then transported along the cyclone wall to the region of the skimmer, where the entrapped liquid is then aspirated from the cyclone by an external pump.
   The WWC units operate efficiently at extreme temperatures (-22°C to 50°C), and in dry/wet air environments. For the 100 L/min cyclone, the average collection efficiency for single cells and clusters of bacterial particles is 86% over a size range of 1 to 8.6 µm AD. Also, for the 100 L/min cyclone, typical output liquid flow rates are 100 µL/min, and the pressure loss is 1.6 kPa (6.4 inches H2O). Tests of the upgraded wetted wall cyclone (WWC-1250) with single cell and near-monodisperse clusters of bacterial spores showed an average aerosol-to-hydrosol collection efficiency of about 98% for the size range of 1.0 to 9.3 µm AD. The 100 L/min WWC unit, developed by the Aerosol Technology Laboratory (ATL) and the Applied Research Laboratory (ARL) at UT Austin, and fabricated by TSI Inc., (Shoreview, MN), (Fig. 2), has been used extensively in environmental
collections, demonstrating the potential for rapid collection and concentration of airborne particles at different environments.


3. Environmental bioaerosol – nanoaerosol collection and analysis:

My current research in an interdisciplinary research team is uniquely positioned to address the needs for improved monitoring of public health emergencies by focusing on the collection, detection and speciation of potentially hazardous bioaerosols and aerosolized nanoparticles. We use the autonomous wetted wall cyclone (WWC) collector systems developed at our Aerosol Technology Laboratory to sample and concentrate aerosols in room-size air volumes. The bioaerosol (fungi, bacteria, viruses and toxins) and nanoparticle samples have been collected from industrial areas, residential buildings, classrooms, agricultural fields, and hospital and transportation centers. Indeed, in collaboration with faculty at TAMU and at UT Austin, we have been collecting aerosol, water and soil samples from urban environments using the WWC and a Hexacopter collector and develop a three dimensional TamuMAP. Within an NSF-funded project in collaboration with UT Austin we are currently studying bioaerosol exposure during shower events in residential and hospital environments and modeling the liquid flow pattern using particle image velocimetry to study and prevent biofilm formation in shower heads and stalls and minimize potential human health risks. This collaboration has also resulted in the development of our WWC system for the detection of tuberculosis in a joint preclinical study with TAMHSC. Another collaborative project with the faculty at UT Austin funded by the Sloan Foundation focuses on HVAC-related air quality measurements in portable classrooms. We have also extended our air sampling studies to meat processing facilities within a NAMI proposal with faculty at Animal Science. In this work the management of the data collection, the bio-chemical and molecular analysis in our laboratory, the statistical evaluation and the modeling of microbiomes are equally important and hence need a system-like approach.


D. Research Support

**Ongoing Research Support**

Title: Collaborative Research: Characterization of the Microbiome Aerosolized in Shower Units

PI (TAMU): Maria King

Collaborator PI (UT): Kerry Kinney

Type: NSF (NSF PD 12-1440 (1236040), Period: 09/01/12 - 08/31/16

The objectives of this project are to use metagenomics to delineate the microbiome collected with the wetted wall cyclone collector in residential shower units on three different water supplies. The study also includes the testing of biofilm formation related to droplet patterns using particle imaging velocimetry in an experimental shower unit in the PI’s laboratory. The proposed work is the first of its kind to interrogate the effect of municipal water source, season, shower operation and cleaning protocol on the bacterial and fungal microbiome released from showers.
Title: Particle Tracking Velocimetry Analysis of Electrostatic Spray Patterns  
PI: Maria King  
Type: Clorox Co.  Period: 04/01/16 - 08/31/16  
The objectives of this contract are to develop an imaging technology for the measurement of the polydisperse particle size distribution of the droplet pattern generated by the electrostatic disinfectant sprayer and design and test an impactor to be collocated with the nozzle for the removal of small particles (< 10 µm) that could enter the human respiratory system and pose a health hazard.

Title: Sampling in Portable Classrooms  
PI (TAMU): Maria King  
Collaborator PI (UT): Kerry Kinney  
Type: Sloan Foundation  Period: 06/01/15 - 08/31/16  
The objectives of this project are to determine the factors affecting the aerosolized microbiome in portable classrooms, by delineating the microbiomes of the air conditioning systems, crawl spaces, ceiling enclosures and the ambient environment and correlating them to temperature, humidity and chemical compounds/toxics (SOCs, VOCs).
Pushkar P. Lele
Artie McFerrin Department of Chemical Engineering,
Texas A&M University
College Station, TX 77843

EDUCATION
Ph.D., Chemical Engineering 2010
University of Delaware, Newark DE
Bachelor, Chemical Engineering 2005
Mumbai University Institute of Chemical Technology (UDCT), Mumbai, India

PROFESSIONAL POSITIONS
Assistant Professor, 2015
Chemical Engineering, Texas A&M University, College Station TX,
Postdoctoral Fellow, 2010
Molecular and Cellular Biology, Harvard University, Cambridge MA,
Teaching Assistant, 2007
Chemical Engineering, University of Delaware, Newark DE
Graduate Research Assistant, 2005
Chemical Engineering, University of Delaware, Newark DE

PUBLICATIONS

Office room: Jack E. Brown 241
Email: plele@tamu.edu
Pushkar P. Lele

INVITED TALKS
1. ACS 72nd Annual Southwest Regional Meeting, Galveston, TX (2016)
2. Interface of Engineering and Life Sciences, Texas A&M University, College Station, TX (2016)
4. Department of Chemical Engineering, University of Virginia, Charlottesville, VA (2015)
5. Department of Chemical and Biological Engineering, Tufts University, Somerville, MA (2015)
7. Department of Chemical and Biological Engineering, Rensselaer Polytechnic Institute, Albany, NY (2014).
11. Indian Institute of Science (IISc), Bangalore, India (2011).

SELECT PRESENTATIONS AND POSTERS
Pushkar P. Lele

20. P. P. Lele and E. M. Furst, “Particle interactions driven by double layer polarization in AC electric fields”, 81st ACS Colloid Symposium, June 24-27, 2007, Newark, DE.

AWARDS


TEACHING EXPERIENCE

CHEN 382: Biprocess Engineering                 Fall, 2015
CHEN 689: Experimental and Computation Techniques in Cell Biology      Spring, 2016
CHEN 382: Biprocess Engineering                 Fall, 2016

PROFESSIONAL ACTIVITIES

Texas A&M, Chemical Engineering Department Committees
• Graduate Student Committee Member
• Graduate Admissions and Recruitment Committee Member
• Student Research Week, Lunch Panel

Memberships
• Board of Advisors, TEPTU, Inc (non-profit STEM Education Endeavor)
• American Institute of Chemical Engineers, Senior Member
• Biophysical Society
• American Society of Microbiology

Journal Referee
• Proc. Natl. Acad. Sci; Trends Microbiol; E-Life; Scientific Reports; Biophysical Journal; PloS One
Richard H. Lester, Ph.D.
Clinical Associate Professor
Executive Director Center for New Ventures and Entrepreneurship

Department of Management
Mays School of Business
Texas A&M University
Email: rlester@mays.tamu.edu
Phone: 979-862-7091

EDUCATION

Ph.D., Texas A&M University, College Station Texas, 2003
• Major: Strategic Management
• Minor: Sociology
• Dissertation title: A Road Less Traveled: Investigating the Outside Directors of America’s Corporate Boards. Chair of Committee: Albert A. Cannella, Jr.

E.M.B.A., University of Houston, Houston Texas, 1999
• Major: Business Management

B.S., Wright State University, Dayton Ohio, 1974
• Major: Business Administration
• Minor: Operations and Production Management

TEACHING EXPERIENCE

Texas A&M University – 12-2006 to present
Undergraduate and Graduate Strategic Management (Mgmt 466-Mgmt 680)
Graduate Principles of Management (Mgmt 655)
Graduate Foundations of New Ventures (Mgmt 637)
Center for Executive Development
LEMIT Program
EBV
Engineering Certificate Summer Program

Louisiana Tech University – 2003 to 2006
Entrepreneurship and New Ventures
Small Business Growth
Principles of Management
Strategic Management for the MBA

Texas A&M University (while Ph.D. Candidate) 2001-2003
Undergraduate Strategic Management (Mgmt 466)
Undergraduate Entrepreneurship (Mgmt 461)
Undergraduate Principles of Management (Mgmt 309)
PROFESSIONAL ACTIVITIES

Professional Experience

- Triten Corporation Houston, Texas
  - Vice-President General Manager TAPCO International, 1996-1999

- Cooper Industries Houston, Texas
  - Plant Manager Cooper/Cameron Energy Services Group Missouri City, TX, 1989-1992

- Koehring Bomag Springfield, Ohio
  - Production Control Manager, Purchasing Agent, First Line Supervisor, Shop Floor Coordinator, 1974-1981.

Professional Service

- Center for New Ventures and Entrepreneurship and Texas Engineering Extension Service (TEEX). Submitted a grant to develop entrepreneurial curriculum for dislocated workers due to the recession.
- Center for New Ventures and Entrepreneurship- Texas A&M University
  - Named executive director November 2008
- Editorial Board Member
  - Journal of Small Business Management
- Ad Hoc reviewer
  - Academy of Management Review
  - Academy of Management Journal
  - Academy of Management annual meeting
  - Journal of Business Studies
  - Journal of Small Business Management
  - Organization Science
  - Strategic Entrepreneurship Journal

- ABC 40, July 28, 2009
  The time is right for local entrepreneurs says Richard Lester in this segment, which aired on the 10 o’clock news: http://www.abc40.com/Global/category.asp?C=143385&nav=menu511_5

Lester, Richard H.


- Academy of Management
  - Session Chair- Diversification / M&A: Adding Stakeholder Sauce to the Mix (16226). Atlanta Georgia 2006

**Academic Committees**

- 2007- 2010
  - Member department of management executive committee.
- 2005- 2006 (Louisiana Tech University)
  - Member- University wide Committee on Intellectual Property (nominated by Dean of Business School)- Rich Kordall chair
- 2003 – 2006 (Louisiana Tech University)
  - Member- Graduate Management council, Department of Management
  - Member- Information Technology Committee-School of Business
  - Member – CENIT, Center for Entrepreneurship and Information Technology

**Other Academic Service**

- 2012 Academic Committee Member for Doctor in Engineering for Daniel Cisneros from Biomedical Engineering
- 2011 Academic Committee Member for PhD in ERHD candidate Sarah Minnis.
- 2011 Academic Committee Member for Doctor in Engineering (D. Eng.) candidate Adnan Ayub.
- 2011 Academic Committee Member for Masters Candidate Josh Fritz in Department of Biotechnology, Anticipated graduation December 2012
- 2011 Academic Committee Member for Masters Candidate Ryan Huffman Department of Economics (Graduation summer 2011)
- 2011 Academic Committee Member for Masters Candidate Shen Ge Department of Aeronautical Engineering (Graduation summer 2011)
- 2011 Academic Committee Member for Masters Candidate Chad Workman Department of Land Development (Graduation spring 2011)
- 2011- MGMT 484- Internship Professor
  - Entrepreneurial Internship- Greg Glass/ Zach Coppinger/ Colin Marsh/ Doug Sebastian/ Krishan Patel/ Matt Morton/ Matthew Morris/ Luis Salinas/ Emmy Richardson/ Stephen Haltom
- 2011-04 Faculty advisor for Myron Hawryluk. Project for Dr. Marcantonio BAUD 692 class in the EMBA program
- 2011 Society of Aggie Entrepreneurs (a TAMU student organization)
  - Faculty Advisor
- 2007-2011 Phi Beta Lambda- Texas A&M Univ
  - Faculty Advisor
- 2010- MGMT 685 Internship Professor
  - Entrepreneurial Internship - Marty Morrison
Lester, Richard H.

- 2010- MGMT 484 Internship Professor
  - Entrepreneurial Internship-
- 2010-03 Faculty advisor for Tim Rebhorn. Project for Dr. Marcantonio BAUD 692 class in the EMBA program.
- 2010-03. Faculty advisor for Dr. Marcantonio BAUD 692 class in the EMBA program.
- 2009-12. Faculty advisor for Seawinn Project in Dr. Marcantonio capstone class for the MBA program.
- 2010-03. Finalized negotiation and development of a 20 year $410,000 scholarship program for Mays Entrepreneurship students.
- 2009 I2P competition- Austin Texas October- Won third place using Tech Transfer technology surrounding concept developed by GigaFect aka Lone Star Molecular.
- 2009- MGMT 484 Internship Professor
  - Entrepreneurial Internship- Dan Newbold/ LaShanta Green/ Alexandra Delgado/ Austin Farmer
- 2009 Academic Committee Member for Masters candidate Alexander Leonard Ronge (11-12).
- 2009 Academic Committee Member for Masters of Agriculture Candidate Jarrett Irwin- Successful defense (11-10). Professional paper titled “Internship Experience at Pleasant Hill Winery”.
- 2009 Academic Committee Member for Masters Candidate Binghuan Li- Successful defense (11-12).
- 2008 Academic Committee Member for Masters Candidate Alberto Aleman. Successful completion of oral exam (November).
- 2008 Academic Committee Member for Masters Candidate Pierre Morel-Fatio. Plan of study approved (09-08). Final presentation of thesis completed (12-10).
- 2008 Academic Committee member for Masters Candidate Andrew Gardner – Successful completion of oral exam (November).
- 2004-2006 Delta Sigma Pi (Louisiana Tech Univ)
  - Faculty Advisor- Student nominated, appointed by dean of the business school. 2004-2006.

Organizations

- Academy of Management 1999-2010
Self-development Activities

- TUNIE (Texas University Network for Innovation and Entrepreneurship). Attended and presented CNVE initiatives at annual meeting in Houston Texas, October 2009 and October 2010.
- NCEC (National Consortium of Entrepreneurship Centers) Attended annual conference in Cincinnati, Ohio- October 2006
- Participant “The Experiential Classroom VI” at Syracuse University Sept 2005. Clinic theme “Reaching and Teaching Tomorrow’s Entrepreneurs”.
- NCEC (National Consortium Entrepreneurship Centers) Attended annual conference in Portland Oregon- October 2004
- International Conference on the Mexican Auto Industry InAuto 2000, Mexico City, Mexico. May 2000. Presentation in conjunction with Dr. Kaye Husbands Fealing on first tier suppliers in the Canadian auto industry (report on survey results, MIT motor vehicular investment program MVIP).

HONORS AND RECOGNITIONS

- (2011) Received the Association of Former Students Distinguished Achievement Award College Level for teaching.
- (2011) Selected to receive the 2011 Mays Teaching Grant
- (2007) Received the 2007 Outstanding Doctoral Student Paper Award at the Southern Management Association Conference in Nashville, Tn. in the Strategic Management and Organizational Theory Track. First author Susie Cox a doctoral candidate at Louisiana Tech University (2007-11).
Lester, Richard H.

- (2006) Summer research grant for 2003-2006 through the Center for Entrepreneurship and Innovation Technology at Louisiana Tech University.

RESEARCH AND INTELLECTUAL CONTRIBUTIONS

I. Discipline-Based Scholarship

A. Peer Reviewed Journal Articles (most recent first)


  
  i. Family and Lone Founder Ownership and Strategic Behaviour' won the Best Paper Prize for JMS for 2011.


Lester, Richard H.


- **Outlets quoting or using this research:**
  - Renaissance Radio- Interview Jan 19, 2009 conducted by Ron Morris Pittsburgh- RR founder Ron Morris previews Tuesday’s Presidential inauguration, and just what the transfer of power from George Bush to Barack Obama means for the business community. We’ll talk with Richard Lester, a Texas A & M Professor who co-authored a recent study that determines just how much CEO’s can change from red to blue depending on where the political power lies in our nation’s capital, and why it happens more than you may think. And we’ll get live analysis from Washington D.C., as well as local reaction to just what business owners can expect.
  - USA Today, 2009-01-15. Jones, D. Are businesses feeling more blue? When Obama moves into the White House, will Republican-leaning companies change their politics? Page 1B.
  - USNEWS.com (U.S. News and World Report, Nov 28, 2008), Ewers, J. *Bush Cabinet Officials May Be Left Out in the Cold When They Enter the Private Sector*.


BIOGRAPHICAL SKETCH

NAME
Wenshe R. Liu

POSITION TITLE
Associate Professor

eRA COMMONS USER NAME (credential, e.g., agency login)
WENSHELIU

EDUCATION/TRAINING (Begin with baccalaureate or other initial professional education, such as nursing, include postdoctoral training and residency training if applicable.)

<table>
<thead>
<tr>
<th>INSTITUTION AND LOCATION</th>
<th>DEGREE (if applicable)</th>
<th>MM/YY</th>
<th>FIELD OF STUDY</th>
</tr>
</thead>
<tbody>
<tr>
<td>Beijing University, China</td>
<td>B.S.</td>
<td>2000</td>
<td>Chemistry</td>
</tr>
<tr>
<td>University of California, Davis, CA</td>
<td>Ph.D.</td>
<td>2005</td>
<td>Biological Chemistry</td>
</tr>
<tr>
<td>The Scripps Research Institute, La Jolla, CA</td>
<td>Postdoc</td>
<td>2007</td>
<td>Chemical Biology</td>
</tr>
</tbody>
</table>

A. Personal Statement

The PI has more than seven years of experience in the development of the genetic noncanonical amino acid incorporation technique and has published close to twenty papers in this field. His group has independently developed a system that uses evolved pyrrolysyl-tRNA synthetase-tRNA_{PUA} pairs to genetically incorporate modified lysines into proteins in E. coli. The PI's group is composed of both organic chemistry section and molecular biology section that guarantee the proposed work can be independently carried out in his group. Based on the PI's credentials on the development of the genetic noncanonical amino acid incorporation technique and his recent success in leading his own independent research group, there is no doubt he is well suited for directing the proposed work. The PI has also formed a strong collaboration with Prof. Weston Porter in College of Veterinary Medicine of Texas A&M University. Prof. Porter's group will provide necessary resources and expertise for the proposed p53-related work.

B. Positions and Honors

Positions

2000-2005 Graduate Researcher, Laboratory of Dr. M.D. Toney, University of California-Davis
2005-2007 Postdoctoral Fellow, Laboratory of Dr. P.G. Schultz, The Scripps Research Institute
2007-2014 Assistant Professor of Chemistry, Texas A&M University
2014-present Associate Professor of Chemistry, Texas A&M University

Honors

1996-2000 G. Zen Fellowship
1997-1998 Huikai Fellowship
1998-1999 Canon Fellowship
2000-2004 UC Systemwide Biotechnology Research Training Fellow
2004 UC-Davis Summer Research Award
2012-2017 NSF Career Award

C. Selected Publications (with names as W. Liu and W.R. Liu)
incorporation of an aliphatic keto-containing amino acid into proteins for their site-specific modifications, *Bioorganic & medicinal chemistry letters* 20:878-880.


### D. Current Research Support

**Welch Research Grant A-1715** (Liu, PI) $150,000 06/01/2012-05/30/2014

“Biosensors for Small Molecules and Enzymes”

**NIH-1R01CA161158-01** (Liu, PI) $1,483,085 07/01/2011-04/30/2016

“Phage display with two genetically incorporated noncanonical amino acids”

**NSF CAREER Award CHE-1148684** (Liu, PI) $575,000 04/01/2012-03/31/2017

Site-specific dual-labeling of a protein through two genetically incorporated noncanonical amino acids
BIOGRAPHICAL SKETCH
Provide the following information for the key personnel and other significant contributors in the order listed on Form Page 2. Follow this format for each person. DO NOT EXCEED FOUR PAGES.

NAME
Loopstra, Carol A.

POSITION TITLE
Associate Professor

eRA COMMONS USER NAME

EDUCATION/TRAINING (Begin with baccalaureate or other initial professional education, such as nursing, and include postdoctoral training.)

<table>
<thead>
<tr>
<th>INSTITUTION AND LOCATION</th>
<th>DEGREE (if applicable)</th>
<th>YEAR(s)</th>
<th>FIELD OF STUDY</th>
</tr>
</thead>
<tbody>
<tr>
<td>Oregon State University</td>
<td>B.Sc.</td>
<td>1979</td>
<td>Forest Management</td>
</tr>
<tr>
<td>Oregon State University</td>
<td>M.Sc.</td>
<td>1984</td>
<td>Forest Science</td>
</tr>
<tr>
<td>North Carolina State University</td>
<td>Ph.D</td>
<td>1992</td>
<td>Genetics and Forestry</td>
</tr>
</tbody>
</table>

A. Positions and Honors.

2001-present Associate Professor, Dept. of Ecosystem Science and Management, Texas A&M University, College Station, TX, USA
2002-2006 Associate Department Head for Graduate Programs, Dept. of Forest Science, Texas A&M University
1995-2001 Assistant Professor, Dept. of Forest Science, Texas A&M University
1995-present Member of the Faculty of Molecular and Plant Sciences, Texas A&M University
1995-present Member of the Faculty of Genetics, Texas A&M University
2000-present Member of the Faculty of Biotechnology, Texas A&M University
1993 - 1994 Research Officer, The University of Queensland, Brisbane, Australia*
1992 - 1993 Research Fellow, Griffith University, Brisbane, Australia*

*These were the same postdoctoral position. Our university affiliation changed.

B. Selected peer-reviewed publications (in chronological order).


BIOGRAPHICAL SKETCH

Provide the following information for the key personnel and other significant contributors in the order listed on Form Page 2. Follow this format for each person. DO NOT EXCEED FOUR PAGES.

<table>
<thead>
<tr>
<th>NAME</th>
<th>POSITION TITLE</th>
</tr>
</thead>
<tbody>
<tr>
<td>Magill, Clint</td>
<td>Professor</td>
</tr>
</tbody>
</table>

EDUCATION/TRAINING (Begin with baccalaureate or other initial professional education, such as nursing, and include postdoctoral training.)

<table>
<thead>
<tr>
<th>INSTITUTION AND LOCATION</th>
<th>DEGREE (if applicable)</th>
<th>YEAR(s)</th>
<th>FIELD OF STUDY</th>
</tr>
</thead>
<tbody>
<tr>
<td>University of Illinois</td>
<td>B.Sc.</td>
<td>1963</td>
<td>Agricultural Science</td>
</tr>
<tr>
<td>Cornell University</td>
<td>Ph.D.</td>
<td>1968</td>
<td>Genetics</td>
</tr>
<tr>
<td>University of Minnesota</td>
<td>Postdoctoral Training</td>
<td>1967-69</td>
<td>Genetics</td>
</tr>
</tbody>
</table>

A. Positions and Honors

Employment

1969-75 Assistant Professor, Dept. of Plant Sciences, Texas A&M University
1975-1989 Associate Professor, Dept. of Plant Sciences became Plant Pathology & Microbiology, TAMU
1989- Professor, Department of Plant Pathology & Microbiology
1969- Member, Faculty of Genetics
1994- Member, Molecular and Environmental Plant Sciences (MEPS)
2005- Faculty, Masters in Biotechnology Program

Other Experience and Professional Memberships

Classroom Teaching (Current on an annual basis): Genetics 310, Principles of Heredity; Genetics 603 Introductory Graduate Genetics; BESC 481 and GENE 482, Undergraduate Seminars, Plant Pathology 610, Host Resistance
Member, American Association for the Advancement of Science & American Phytoathology Society
Editorial Advisory Board, Physiological and Molecular Plant Pathology

Honors

1986: TAMU-COALS Award for Excellence for Undergraduate Teaching
2008-2009 Speaker, TAMU Faculty Senate
2009: Named a Fellow of the American Association for the Advancement of Science

B. Selected peer-reviewed publications (Postdocs and Graduate Students as shown)


CURRICULUM VITA

NAME AND TITLE: JULIAN CREIGHTON MILLER, JR.
Professor of Horticulture, of Genetics, and of Biotechnology
Department of Horticultural Sciences
Texas A&M University, College Station, Texas 77843-2133
(979) 845-3828; FAX (979) 845-0627;
E-Mail: jcmillerjr@tamu.edu Website: potato.tamu.edu

EDUCATION:
Ph.D. (Horticulture, Breeding-Genetics), Michigan State University, 1972
M.S. (Horticulture), Louisiana State University, 1967
B.S. (General Studies), Louisiana State University, 1965

PROFESSIONAL SUMMARY:
Dr. Miller is Professor in the Department of Horticultural Sciences at Texas A&M University, College Station. He is Director of the Texas Potato and Legume Improvement Programs and has developed or co-developed 19 new potato and legume varieties. He has authored/co-authored more than 400 scientific publications. Dr. Miller has taught six different undergraduate and graduate courses. He was the 1992 recipient of the prestigious L.M. Ware Distinguished Teaching Award from the Southern Region American Society for Horticultural Science. In 2005, he received the Distinguished Achievement Award in Teaching from the Association of Former Students of Texas A&M University. He is a Past President of the American Society for Horticultural Science – Southern Region and of The Potato Association of America, and an Honorary Life Member (Fellow) of the latter organization. He is also a Fellow of the American Society for Horticultural Science and former Vice-President for Research. He is the 2009 recipient of the Outstanding Researcher Award presented by the American Society for Horticultural Science and of the Outstanding Paper Award, 2010, Potato Association of America.

PROFESSIONAL AND ACADEMIC EXPERIENCE:

Graduate Faculty of Biotechnology, 2010 -
Graduate Faculty of Molecular and Environmental Plant Sciences, 1984-2008
Professor, Texas A&M University, 1982-
Graduate Faculty of Genetics, 1981-
Unit Head, Montague Fruit Demonstration Center, 1980-83
Interim Head, Horticultural Sciences Department, 1980-83
Associate Professor, Texas A&M University, 1977-82
Assistant Professor, Texas A&M University, 1975-77
Assistant Professor, Texas Agricultural Experiment Station, Lubbock, 1972-75
Research Assistant, Michigan State University, 1968-72
Research Assistant, University of Wisconsin, 1967-68
Research Assistant, Louisiana State University, 1965-67
TEACHING (COURSES TAUGHT) AND RELATED ACTIVITIES:

Concepts of Horticultural Science, Commercial Vegetable Production, Plant Breeding 404/Genetics 404, Postharvest Physiology of Horticulture Crops, Senior Seminar, Problems in Horticulture (undergraduate & graduate), Problems in Genetics (undergraduate & graduate), Professional Internship, Special Topics in Vegetable Breeding & Genetics, and Theory of Research; Founder and Advisor, Horticultural Sciences Graduate Student Organization, TAMU, 1975-85; TAMU University Mentor (Undergraduate Counselor) 1987-

GRANTS RECEIVED (2010-2013)


8. USPB Grant for National Chip Breeders Trial – Texas. 2012. $10,000.


10. USPB Grant for National Chip Breeders Trial – Texas. 2013. $10,000.
PUBLICATION TOTAL:

Total 417: 68 refereed journal articles, 6 book chapters, 27 proceedings, 13 referred variety release articles, 2 theses, 140 technical articles, 128 abstracts, 2 websites, and 31 national and international invited papers.

SELECTED PUBLICATIONS (2010-2014):

Refereed


Abstracts


Miscellaneous Publications


**NAME**
Rajesh C. Miranda, Ph.D.

**POSITION TITLE**
Professor

**eRA COMMONS USER NAME**
rmiranda

**EDUCATION/TRAINING**
*(Begin with baccalaureate or other initial professional education, such as nursing, and include postdoctoral training.)*

<table>
<thead>
<tr>
<th>INSTITUTION AND LOCATION</th>
<th>DEGREE (if applicable)</th>
<th>YEAR(s)</th>
<th>FIELD OF STUDY</th>
</tr>
</thead>
<tbody>
<tr>
<td>St. Xavier’s College, Bombay, India</td>
<td>B.A.</td>
<td>1982</td>
<td>Psychology</td>
</tr>
<tr>
<td>Bombay University, Bombay, India</td>
<td>M.A.</td>
<td>1984</td>
<td>Clinical Psychology</td>
</tr>
<tr>
<td>University of Rochester, Rochester, N.Y.</td>
<td>M.A.</td>
<td>1987</td>
<td>Biopsychology</td>
</tr>
<tr>
<td>University of Rochester, Rochester, N.Y.</td>
<td>M.S.</td>
<td>1988</td>
<td>Neurobiology</td>
</tr>
</tbody>
</table>

**A. Personal Statement:**
My primary research interest is in maternal-fetal health, with a focus on fetal brain development, stem cell programming and the biology of microRNAs. In 2007, we were the first research group to identify microRNAs as a target for teratogens and drugs of abuse like alcohol (PMCID: 2915840). Since then, we have focused on identifying additional teratogen-sensitive miRNAs associated with the maturation of fetal neural stem cells, as well as miRNAs associated with neural adaptation to degeneration. My laboratory is also currently using a variety of high-throughput screening approaches to identify vascular circulating microRNA biomarkers for ethanol consumption and for fetal ethanol exposure (as part of a consortium, U24 AA014811). I expect that our research on microRNAs and their mRNA targets will uncover novel mechanisms of fetal brain adaptation and plasticity that are amenable to therapeutic intervention.

**B. Positions and Honors**
1983-1984 St. Xavier’s College, Bombay India, University Grants Commission teaching assistant
1983 Psychaid, Bombay, India, Clinical assistant, psychological testing
1984-1989 University of Rochester, Depts. of Psychology and Neuroscience; Teaching assistant.
1990-1994 Columbia University College of Physicians and Surgeons, Instructor, Medical Neuroanatomy
1995-2000 Texas A&M University, Dept. Human Anatomy and Medical Neurobiology, Assistant Professor.
2000-2009 Texas A&M, Health Science Center, Dept. Neurosci & Expt. Therapeutics, Associate Professor
2009- Texas A&M Health Science Center, Professor
2005- Texas A&M University, Department of Psychology, Adjunct Professor
1995-present Member of the Faculties of Neuroscience, Reproductive Biology and Toxicology at TAMU
1999-present Member, Center for Environmental and Rural Health, Texas A&M University
2002-2003 Ad-hoc reviewer, NIH, ALTX-3 and NAL study section
2004-2007 Member, NIH, NAL (Neurotoxicology and Alcohol) study section
2006-2009 Ad. Hoc. Member, NIH AA-1, ZAA1-BB98, NCF, MNG & AA-4 study sections
2009-2012 Member, NIH AA-4 study section.
2012-2015 Chair, AA-4 study section
2009-2011 Treasurer, vice president Fetal Alcohol Spectrum Disorders Study Group (FASDSG)
2011-2012 President, Fetal Alcohol Spectrum Disorders Study Group
2012- Member of the Steering Committee on FASD prevention at the Texas PHS Office for Prevention of Developmental Disabilities
Relevant Publications:

D. Other Support:
AA13440  (P.I.: Rajesh C. Miranda)  03/01/2002-08/31/2014
NIAAA
Fetal Alcohol exposure and neurodevelopment
I serve as PI for this project. AA13440 investigates (1) the role of alcohol exposure on the control of receptor-neural stem cell maturation. (2) The involvement of miRNAs as critical mediators of ethanol’s effects on stem cell maturation.

1R01NS074895  (Sohrabji, PI)  9/01/2011- 05/30/2016
NIH
Neuroprotection in the Aging Female Brain
I serve as a co-investigator on this project. The overall goal of this application is determine the interaction of estrogen and IGF-1 in the context of stroke and neuroprotection in middle age females, using an animal model

U01 AA014835-09  (Chambers, PI)  2012-2017
NIH
Early Identification of Affected Children and Risk Factors for FASD in Ukraine
I serve as a co-investigator on this proposal. My role will be to screen for plasma miRNA biomarkers for alcohol exposure in mothers and children in an FASD cohort in the Ukraine. This proposal will correlate the expression of miRNA biomarkers with other epigenetic markers and anatomical markers of fetal alcohol exposure.
BIOGRAPHICAL SKETCH

Provide the following information for the key personnel and other significant contributors in the order listed on Form Page 2. Follow this format for each person. DO NOT EXCEED FOUR PAGES.

NAME
Mullet, John E.

POSITION TITLE
Professor

eRA COMMONS USER NAME
RLINTS

EDUCATION/TRAINING (Begin with baccalaureate or other initial professional education, such as nursing, and include postdoctoral training.)

<table>
<thead>
<tr>
<th>INSTITUTION AND LOCATION</th>
<th>DEGREE (if applicable)</th>
<th>YEAR(s)</th>
<th>FIELD OF STUDY</th>
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<tbody>
<tr>
<td>Colgate University, Hampton, New York</td>
<td>B.Sc.</td>
<td>1972-1976</td>
<td>Biology</td>
</tr>
<tr>
<td>University of Illinois, Champaign</td>
<td>Ph.D.</td>
<td>1976-1980</td>
<td>Cell Biology</td>
</tr>
</tbody>
</table>

A. Positions and Honors.

Positions and Employment
1999-2005 Director, Institute for Plant Genomics and Biotechnology, Texas A&M University
1993-1999 Director, Crop Biotechnology Center, Texas A&M University
1991-present Professor, Department of Biochemistry and Biophysics, Texas A&M University
1986-1991 Associate Professor, Department of Biochemistry and Biophysics, Texas A&M University
1983-1986 Assistant Professor, Department of Biochemistry & Biophysics, Texas A&M University
1980-1983 NIH Postdoctoral Fellow, Rockefeller University
1978-1980 NATO research at the CNRS, France, 1980; Japan, 1978

B. Selected peer-reviewed publications (in chronological order).

PUBLICATIONS (Total 180):


Curriculum Vitae

Present Position and Address
Waithaka Mwangi, Ph.D.,
Associate Professor, Vaccine Development
Office: Rm. 179 VMR-Annex Building; Mail Stop: VTPB
Department of Veterinary Pathobiology (VTPB),
College of Veterinary Medical and Biomedical Sciences (CVM&BIMS),
Texas A&M University
College Station, TX 77843-4467
Phone : 979-845-4615
Fax : 979-862-1088
Email : wmwangi@cvm.tamu.edu

Education:

<table>
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<tr>
<th>Degree</th>
<th>Conferring Institution</th>
<th>Field</th>
<th>Year</th>
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</thead>
<tbody>
<tr>
<td>B.S.</td>
<td>University of Nairobi, Kenya</td>
<td>Biochemistry/Parasitology</td>
<td>1990</td>
</tr>
<tr>
<td>Ph.D.</td>
<td>Washington State University</td>
<td>Immunology</td>
<td>2002</td>
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<tr>
<td>Post-doc</td>
<td>Washington State University</td>
<td>Immunology</td>
<td>2002 - 2004</td>
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</table>

Personal Statement:
I am an enthusiastic immunologist and I enjoy teaching, both in class and on the bench, and I believe that motivating students to be engaged and to love learning is the catalyst that is transforming lives and making the world better. For me, there is no better source of joy and gratification in life than imparting knowledge to students to enable them realize their dreams. My research is focused on developing novel strategies for optimizing vaccine efficacy in outbred species. Studies are primarily directed at enhancing in vivo antigen presentation by dendritic cells following immunization. In addition, I am evaluating defined dendritic cell activation factors for their potency in enhancing vaccine immunogenicity in livestock for adjuvant development. Major on-going efforts are directed at generating efficacious vaccines for induction of protection against Bovine Viral Diarrhea Virus (BVDV) in neonates and African Swine Fever Virus.

Professional Experience and Academic Appointments:
2014-Present: Associate Professor and Graduate Faculty, Department of Veterinary Pathobiology, Texas A&M University.
2012-Present: Graduate Faculty, Texas A&M University Professional Program in Biotechnology
2011-Present: Faculty, Texas A&M University Health Science Center School of Graduate Studies.
2005-2014: Assistant Professor (tenure-track) and Graduate Faculty, Department of Veterinary Pathobiology, Texas A&M University.
2004 - 2005: Assistant Professor (non-tenure track) and Graduate Faculty, Department of Veterinary Microbiology and Pathology, Washington State University.
2002 - 2004: Post-Doctoral Research Fellow, Department of Veterinary Microbiology and Pathology, Washington State University.

1997 - 2002: Graduate Research Assistant, Department of Veterinary Microbiology and Pathology, Washington State University.


**Awards and Honors:**

- College of Veterinary Medicine & Biomedical Sciences Outstanding Scientific Research Achievement Award, 2014
- Texas A&M University Montague-Center for Teaching Excellence Scholar Award, 2013
- College of Veterinary Medicine & Biomedical Sciences Faculty International Travel Award, 2012
- American Association of Immunologists Travel Award for the Annual Meeting in Miami, FL, 2007
- American Association of Immunologists (AAI)-Federation of American Societies for Experimental Biology (FASEB) Travel Award for the Annual Meeting in Boston, MA, 2006
- American Association of Veterinary Immunologists (AAVI) Travel Award for the 7th International Veterinary Immunology Symposium in Quebec, Canada, 2004
- NIH Immunology Training Grant (Ruth L. Kirschstein National Research Service Award), 2003-2004
- Phi Kappa Phi Honor Society, 1998 - Present

**Professional Organizations:**

1. American Association of Veterinary Immunologists (AAVI), 2010-Present.

**Editorial Board**

*Austin Virology and Retro Virology Journal*

**Manuscript Review for Journals:**

1. Reviewer *Journal of Veterinary Medicine and Animal Health* (JVMAH).
2. Reviewer *Clinical and Vaccine Immunology* (CVI).
3. Reviewer *Vaccine*.

**Grant Review Committees:**

5. NIFA: US Veterinary Immune Reagent Network’s renewal proposal Ad hoc reviewer, November 19th, 2009

**Patents:**

2. TAMUS 3792: Antibody-guided vaccine targeting chicken generates fast mucosal IgA responses in the chicken. Co-Inventor
3. TAMUS 3617: Priming rapid and robust IgG responses with a single subcutaneous immunization in the chicken and potentially other vertebrate species. Co-inventor

**Teaching Activities:**

I teach one undergraduate and one graduate immunology course in alternate years. In spring of odd years, I teach ‘Introduction to Immunology’ (VTPB409, with honors option; 3 credit course) to undergraduate students. This is a first level immunology course designed for undergraduate students with no previous exposure to the subject. This course is mostly taken by biomedical science students and the goal of this course is to familiarize the students with the basic features of the immune system and how it functions. The demand for this course is increasing as more students are taking it in preparation for attending higher institutes of allied health professions. The course is also taken by some graduate students as well.

In spring of even years, I teach ‘Immunology’ (VTMI 649; 3 credit course) to graduate students. This is a first level graduate course whose goal is to familiarize students with the features of the immune system and nomenclature. I also participate in teaching ‘Advanced Immunologic Concepts’ (VTMI 662) to graduate students. This course is offered in the fall of alternate years. In addition, I have offered directed studies to undergraduate and graduate students (VTMI 485, BIMS 491, VTMI 685, and BIOT 685). Furthermore, I train undergraduate students and visiting scholar trainees in my laboratory. I have mentored undergraduate honors research student, Masters and PhD students, Postdocs, and visiting scholars. Currently, I have one MS and two PhD students and I have served in 21 graduate student committees.

**Teaching Award:**

Montague-Center for Teaching Excellence Scholar award, Texas A&M University (2013)

**Recent Publications:**

CURRICULUM VITAE

I. PERSONAL INFORMATION

Name: Desmond W. Ng
Current Position: Assistant Professor in Strategic Management and Agribusiness Management
349 B Blocker Building
Department of Agricultural Economics
Texas A&M University
College Station, TX, USA
Telephone: (979) 845-1192
Email: dng@ag.tamu.edu

Date of Appointment: June, 2004.

II. EDUCATION

Ph.D. University of Illinois at Urbana-Champaign, Urbana, Illinois
Fields: Strategic Management (Business Administration) and Agricultural Economics
Degree Date: May 2001

M.Sc. McGill University, Montréal, Quebec, Canada
Major: Agricultural Economics and Management
Degree Date: April, 1997
Thesis Title: “Micro-Economic Evolution of Firm Behavior”

B.Sc. University of British Columbia, Vancouver, BC, Canada
Major: Agricultural Economics (Honors)
Degree Date: April, 1994

III. EXPERIENCE

A. Professional Experience

02/2010 Promotion to Associate with Tenure recommended by Dept. Head, Dean of College of Agriculture and Life Science, and Dean of Faculties. University president and chancellor’s decisions pending.
D.W. Ng

06/2004 – Present  Assistant Professor, Department of Agricultural Economics, Texas A&M University.
05/2009 – Present  Visiting Assistant Professor at the Universidad del Valle de Guatemala.
06/2004 – Present  Full Member of Intercollegiate Faculty of Agribusiness (IFA), Texas A&M University.
06/2006 – Present  Full member of the Graduate Interdisciplinary Faculty of Biotechnology in the PPIB (Professional Program in Biotechnology), Texas A&M University.
06/2004 – 2008  Adjunct Professor in the Department of Rural Economy, University of Alberta, Edmonton, Alberta, Canada.
10/2000 – 05/2004  Assistant Professor of Strategic Management and Agribusiness, Department of Rural Economy, University of Alberta, Edmonton, Alberta, Canada.
2002- 2003  Executive Committee Member for the Value Chain Action Team of the Agriculture and Food Council of Alberta.

B. Accomplishments: Professional Honors and Awards
   c. Outstanding Research Paper Award for the 2005 International Academy of Business Economics Annual Conference, Las Vegas for a paper titled: “Strategic Change through a Competition of Realities”
   d. Best paper for the 2004 Academy of Management Annual Meetings, New Orleans for the Management and Organization Division (MOC) and Nominee for the William H. Newman Award for a paper titled “The Enactment of Competitive Markets and Organizational Performance”.

C. Other Awards and Distinctions

IV. PUBLICATIONS
   A. Refereed Publications


ZIVKO L. NIKOLOV  
Dow Professor

EDUCATION:  
Dipl. Eng. Food Engineering  University of Novi Sad, Serbia  1977  
M.S. Chemical Engineering  Iowa State University  1983  
Ph.D. Chemical Engineering  Iowa State University  1986

TEXAS A&M UNIVERSITY EMPLOYMENT:  
Dow Professor, Biological and Agricultural Engineering, 2002-present

OTHER PROFESSIONAL EMPLOYMENT:  
Vice President  2001 - 2002  ProdiGene Inc., College Station, TX  
Director  1999 - 2001  ProdiGene Inc., College Station, TX  
Professor  1998 - 1999  Food Sci. (75%) and Ag & Biosystems Eng. (25%)  Iowa State University, Ames, IA  
Assoc. Professor  1993 - 1998  Food Sci. (75%) and Ag & Biosystems Eng. (25%)  Iowa State University, Ames, IA  
Assist. Professor  1987 - 1993  Food Sci. & Human Nutr.  Iowa State University, Ames, IA  
Senior Scientist  1986 - 1987  Michigan Biotechnology Institute, Lansing, MI

PROFESSIONAL REGISTRATION  
Registered Professional Engineer, State of Texas, No. 95216

CONSULTING and PATENTS (last 5 years)  
Syngenta Biotechnology Inc., Evaluation of process options for extraction and recovery of cellulases expressed in transgenic plants, 2010.  
ERA Biotech, Barcelona, Spain, Process design and simulation for producing therapeutics in transgenic tobacco, 2005-2010

PRINCIPAL PUBLICATIONS (last 5 years)  


SCIENTIFIC AND PROFESSIONAL SOCIETIES OF WHICH MEMBER:
American Society of Agricultural Engineers (ASABE)
Institute for Biological Engineering (IBE)
American Chemical Society (ACS)
International Society for Pharmaceutical Engineering (ISPE)

HONORS AND AWARDS:
Scientific Advisory Board, Infinite Enzymes, 2007 – present
Scientific Advisory Board, ERA Biotech, Spain, 2006-2010
Who’s Who in Science and Engineering
BAEN Research Award 2010
ADM Award for Best Publication in Engineering & Technology, American Oil Chemists Society, 1996
Visiting Professor, School of Chemical Engineering, State University of Campinas, Brazil, 1997 and 2005.
Academic Research Fellow, Kraft Foods, Inc., 1995
Visiting Professor, Department of Chemical Engineering, Federal University of Rio Grande do Sul, Brazil, 1992.

INSTITUTIONAL AND PROFESSIONAL SERVICE (5 yrs)
Editorial Board Member, Journal of Biotechnology and Bioengineering, 2014-present
Advisory Board, The National Center for Therapeutic Manufacturing, Texas A&M, 2012 - present
NSF/SBIR Panel, Biomedical Devices, 2014
Scientific Board Member of the 6th Central European Congress on Food, Serbia 2012
NSF-CBET Panel, Metabolic Engineering and Biofuels, 2010
Editorial Board Member, Brazilian Journal of Chemical Engineering 2003-2008
Editorial Board Member, Journal of Biological Engineering 2007 – present
Editorial Board Member: Acta Periodica Technologica, Serbia, 2003 – present
BIOGRAPHICAL SKETCH

Provide the following information for the key personnel and other significant contributors in the order listed on Form Page 2. Follow this format for each person. **DO NOT EXCEED FOUR PAGES.**

**NAME**
Park, William D.

**POSITION TITLE**
Professor

**eRA COMMONS USER NAME**

**EDUCATION/TRAINING** *(Begin with baccalaureate or other initial professional education, such as nursing, and include postdoctoral training.)*

<table>
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<tr>
<th>INSTITUTION AND LOCATION</th>
<th>DEGREE (if applicable)</th>
<th>YEAR(s)</th>
<th>FIELD OF STUDY</th>
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<tbody>
<tr>
<td>University of South Carolina</td>
<td>B.Sc.</td>
<td>1973</td>
<td>Chemistry</td>
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<tr>
<td>University of Florida</td>
<td>Ph.D.</td>
<td>1977</td>
<td>Biochemistry</td>
</tr>
<tr>
<td>University of Minnesota</td>
<td>Postdoc.</td>
<td>1978-1980</td>
<td>Genetics and Cell Biology</td>
</tr>
</tbody>
</table>

A. **Positions and Honors.**

**Positions and Employment**
1980 - 1983  Assistant Professor, Horticulture, Purdue University
1984 - 1990  Associate Professor, Biochemistry and Biophysics, TAMU
1991- Present  Professor, Biochemistry and Biophysics, TAMU

**Honors**
2014: Invited to participate in the symposium “Dietary fiber: Optimizing accuracy of data for Labeling, Databases and Research” to be held at the Institute for Food Technologist annual meeting in June 2014.
2012: Our work on deficiencies in the CODEX compliant total dietary fiber assay AOAC 2009.01/AACCI 3245.01 was cited by the originator of the assay, Barry McCleary, in a formal request to both AOAC and AACCI to revise the official assay protocols for dietary fiber that are used when making nutrient composition claims on food products.
2011: Based on the success of our long term collaboration, MARS Inc. donated an additional $45,000 to upgrade starch analytical capabilities of the Department of Biochemistry and Biophysics.
2010: Faculty Recognition Award from the Biochemistry Graduate Association.
2010: Based on the success of our long term collaboration, MARS Inc. donated $94,000 to upgrade starch analytical capability of the Department of Biochemistry and Biophysics.
2009: Our lab was officially recognized as a key component of the MARS Global Food Platform.
2007: MARS Inc. recognized our “outstanding research and significant contributions on rice knowledge”. This award was presented in person jointly by the Vice President of Research and Development for MARS FOOD USA, and his counterparts from Europe and Australia.
2007: Faculty Recognition Award from the Biochemistry Graduate Association
2007: Invited to speak at MARS’ Science Advisory Council Meeting in Amsterdam and to attend the Executive Session to set directions for the use of molecular methods to enhance nutrition in MARS human and pet food programs
2006: Invited to speak at MARS’ Plant Breeding Multidisciplinary Research Unit meeting at MARS corporate headquarters and to attend the “closed” Executive Session to set directions for the MARS’ cocoa program
B. Selected peer-reviewed publications (in chronological order).


Curriculum Vitae

C. O. Patterson
Professor Emeritus of Biology
Professor Emeritus of Biotechnology, Professor Emeritus of Molecular & Environmental Plant Sciences
Department of Biology, Texas A&M University
College Station, Texas 77843-3258
phone (979) 845-2187 e-mail: cop@mail.bio.tamu.edu FAX: (979) 845-2891

EDUCATION:
Postdoctorate Indiana University at Bloomington (1972-77), Microbiology
Ph.D. University of Texas at Austin (1971), Zoology
B.A. University of Texas at Austin (1964), Honors

ACADEMIC EXPERIENCE:
2011 - present Professor Emeritus, Department of Biology, Texas A&M University
2006 - present Professor, Department of Biology, Texas A&M University
1984 - 2006 Associate Professor, Department of Biology, Texas A&M University.
1983 - 1984 Associate Professor, Department of Biology, Texas A&M University. Director of Freshman Biology Programs
1980 - 1983 Assistant Professor, Department of Biology, Texas A&M University. Director of Freshman Biology Programs.
1977 - 1980 Assistant Professor, Division of Biological Sciences, University of Missouri. Director of Introductory Biology
1975 - 1977 Research Associate (Post-Doctoral), Department of Microbiology, Indiana University
1972 - 1975 Visiting Assistant Professor, Division of Biological Sciences, Indiana University
1971 - 1972 Instructor, Department of Zoology, University of Texas.
1970 - 1971 Teaching Assistant, Department of Zoology, University of Texas
1967 - 1970 National Science Foundation Graduate Fellow, Dept of Zoology, Univ of Texas
1966 - 1967 Teaching Assistant, Department of Zoology, University of Texas.

AREAS OF EXPERTISE AND RESEARCH EMPHASIS:
Physiology and systems biology of photosynthetic microbes, including algae and cyanobacteria, photosynthetic metabolism, nutrient uptake and utilization, techniques of mass culture and cultivation.

SOCIETY MEMBERSHIPS:
Phi Beta Kappa, Sigma Xi, American Society of Plant Biologists, Phycological Society of America, American Association for the Advancement of Science, National Association of Biology Teachers, Texas Academy of Science

SELECTED RECENT PUBLICATIONS AND PRESENTATIONS:


C.O. Patterson: "Development and Implementation of the Texas College Readiness Standards" keynote address at Austin Community College's Conference on College Readiness Standards. Austin, Texas, 1 August 2008.

C.O. Patterson: "How to Do Inquiry-Based Exercises and Activities in the Large Lecture Classroom." TAMU Center for Teaching Excellence. 15 October 2008

C.O. Patterson & Wendy Keeney-Kennicut: Writing in the Science Curriculum: Using the Calibrated Peer Review System for Writing Assignments in Science Classes. 2-day workshop for faculty at University of Kentucky (Lexington), 20-21 February 2009

C.O. Patterson: Overview of College Readiness Standards in Science (keynote address) at College & Career Readiness Initiative Faculty Collaborative Science Symposium. sponsored by Texas Higher Education Coordinating Board, held at Texas A&M University - Corpus Christi, 28 February 2009

C.O. Patterson & Linda Gann: College Readiness Standards in Science & Math: Implementation & Assessment. one-day workshop for science & math faculty from Texas State University (San Marcos) and from Alamo Community College District (Bexar County) part of the "Puentes" project of TSU. 3 April 2009

C.O. Patterson: Development & Use of College Readiness Standards in Science (keynote address) at Community College Symposium for Mathematics and Science Faculty. sponsored by Texas Higher Education Coordinating Board, held at Austin Community College, 24-25 September 2009

C.O. Patterson: College Readiness Activities - Development of Pilot Activities, Kick-off meeting, sponsored by Texas Higher Education Coordinating Board, held in Austin, 13 October, 2009. I prepared and led the working group (about 40 educators) through an example exercise to show what a "College-Readiness Activity" would look like.

Timothy P. Scott, C.O. Patterson, and Adrienne Bentz: Incorporating College and Career Readiness Standards into Capstone Science and Mathematics Methods Courses. poster presentation at CCRI Symposium sponsored by Texas Higher Education Coordinating Board and Texas State University, San Antonio 26 February 2010


RECENT GRANTS & FUNDING RECEIVED:
“Texas Collaborative for Excellence in Teacher Preparation (TxCETP)” NSF, $5,207,500. 2000-2006. Co-PIs are Mauro Castro (TAMU-Kingsville), Pam Littleton (TAMU-Tarleton), and Kit Price (TAMU-Corpus Christi). I served on the steering committee for the project, and was team leader for the College Station campus.

“Writing for Assessment and Learning in Science (WALS) -- Application of the Calibrated Peer Review System for Biology, Mathematics, and Physics.” NSF-DUE, $481,850, 2003-2007. Dr. Nancy Simpson (Math), Dr. Michael Stecher (Math), Dr. Lewis Ford (Physics), and I are Co-PIs on this project.


"Bioreactor Design and Testing for Biofuel Production by Photosynthetic Microbes" Harizan Venture Capital Investments. $35,000, 2006 - present
BIOGRAPHICAL SKETCH

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<table>
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<tr>
<th>NAME</th>
<th>POSITION TITLE</th>
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<tbody>
<tr>
<td>Suresh D. Pillai</td>
<td>Director and Professor</td>
</tr>
</tbody>
</table>

<table>
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<tr>
<th>eRA COMMONS USER NAME</th>
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**EDUCATION/TRAINING** *(Begin with baccalaureate or other initial professional education, such as nursing, and include postdoctoral training.)*

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<tr>
<th>INSTITUTION AND LOCATION</th>
<th>DEGREE (if applicable)</th>
<th>YEAR(s)</th>
<th>FIELD OF STUDY</th>
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<tbody>
<tr>
<td>Loyola College, Madras</td>
<td>B.Sc.</td>
<td>1983</td>
<td>Botany</td>
</tr>
<tr>
<td>University of Madras</td>
<td>M.Sc.</td>
<td>1985</td>
<td>Industrial Microbiology</td>
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<tr>
<td>University of Arizona</td>
<td>Ph.D.</td>
<td>1989</td>
<td>Microbiology &amp; Immunology</td>
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</table>

**A. Personal Statement**

My research program is focused on the molecular ecology of microbial pathogens in natural and man-made ecosystems. We are specifically focused on those pathogens that are of relevance to the human GI tract and are transmitted by the food and water routes. As part of these activities, we have been focused on improving our understanding of cell-cell signaling, microbial inactivation processes, microbial detection and characterization technologies. My research has impacted the field of bioaerosols (sewage sludge land application programs), microbial cell-cell signaling on foods, and how food irradiation technologies can address emerging pathogen issues. My lab’s current focus is on developing novel therapeutic products that can be used as prophylactics against food and water-borne infectious diseases, modulating gut colonization in ovo or post therapeutic perturbations. My lab has strong interactions with the International Atomic Energy Agency (IAEA) in the use of electron beam technologies for developing novel therapeutics, environmental remediation, global food safety and global food security.

**B. Positions and Honors**

**Positions and Employment**

- 2004-present Professor and Texas A&M AgriLife Faculty Fellow, Food Safety & Environmental Microbiology Program, Poultry Science & Nutrition & Food Science Departments, Texas A&M University
- 2003-present Director, National Center for Electron Beam Research, Texas A&M University
- 2003-2010 Chair, Graduate Faculty of Biotechnology, Texas A&M University
- 2000-2005 Associate Director, Institute of Food Science & Engineering, Texas A&M University
- 2000-2004 Associate Professor & TAES Faculty Fellow -Food Safety and Environmental Microbiology Program, Poultry Science Dept. Texas A&M University
- 2000-present Member of TAMU Graduate Faculties: Poultry Science, Food Science & Technology, Biotechnology, Veterinary Pathobiology, Toxicology, Soil & Crop Sciences, and Water Program
- 1998-1999 Associate Professor, Texas A&M Univ. Research Center, El Paso, and Soil and Crop Sciences, Texas A&M University, College Station, Texas.
- 1992-1998 Assistant Professor, Texas A&M Univ. Research Center, El Paso, and Soil and Crop Sciences, Texas A&M University, College Station, Texas.

**Other Appointments**

- 2013-present FDA Science Advisory Board, National Center for Toxicological Research, Jefferson, AK
- 2006-2011 Member, External Advisory Board, Dept. of Homeland Security, Center of Advancing Microbial Risk Assessment, Michigan State University.
- 2006-2013 Member, US Government Accountability Office (GAO) expert panel on risks posed by BSL-3/BSL-4 laboratories in the United States
2013  Member, Microbiology Review Team, FDA-National Center for Toxicological Research
1991-1992  Research Assistant Professor of Medicine, Department of Medicine, Uniformed Services University of the Health Sciences, National Naval Medical Center, Bethesda, MD.

Memberships and Honors
2011  Elected Fellow, International Forum on Industrial Bioprocesses
2010-present  Member, Committee on Environmental Microbiology, American Society for Microbiology
2010-present  Member, Science Advisory Board, BCR Environmental, Inc. Florida
2008-2011  Member, International Review Committee, Obihiro University of Agriculture and Veterinary Medicine, Obihiro, Japan
2008  President’s Travel Fund Award- Society for Applied Microbiology (SFAM)
2007-2008  Member International Advisory Committee, Kalasalingam University, India
2007-2010  Institute of Food Technologists (IFT)- Distinguished Lecturer
2007  State of Texas Environmental Excellence Award (Team-member)
2004-2010  Elected Member, Council of Principal Investigators, Texas A&M University

C. Selected peer-reviewed publications

D. On-Going Research Support
State of Texas  Pillai (PI)  2/2014-1/2016
This project is focused on exploiting eBeam technologies to inactivate infectious pathogens and organic contaminants in wastewater effluents in water reuse facilities to enhance water availability in the State of Texas.

United States Dept. of Agriculture  Pillai (PI)  10/2013-9/2016
This project is focused on understanding the metabolic activity and metabolome of key enteric pathogens after exposure to variety of chemical and non-thermal stressors. Aim is to exploit this understanding to develop enhanced vaccines

Corporate Sponsor  Staack (PI)  9/2014-3/2015
This project is focused on exploiting electron beam technology (eBeam) technology for environmental remediation
Name: Keerti S. Rathore
Title: Professor
Address: Institute for Plant Genomics and Biotechnology and Dept. of Soil & Crop Sciences, Texas A&M University, College Station, TX 77843-2123
Telephone: (979) 862-4795 Fax: (979) 862-3414
E-mail: rathore@tamu.edu

M.Sc. (1976) Gujarat University, India (Plant Sciences)
B.Sc. (1973) Rajasthan University, India (Zoology, Botany, Chemistry)

Positions and Employment:

12- Professor and Director, Laboratory for Crop Transformation, Institute for Plant Genomics & Biotechnology and Dept. of Soil & Crop Sciences, Texas A&M University, College Station, TX. A member of the Faculty of Molecular & Environmental Plant Sciences.
03-12 Associate Professor and Director, Laboratory for Crop Transformation, Institute for Plant Genomics & Biotechnology and Dept. of Soil & Crop Sciences, Texas A&M University, College Station, TX. A member of the Faculty of Molecular & Environmental Plant Sciences.
97-03 Assistant Professor and Director, Laboratory for Crop Transformation, Institute for Plant Genomics & Biotechnology and Dept. of Soil & Crop Sciences, Texas A&M University, College Station, TX. A member of the Faculty of MEPS.
95-97 Asst. Research Scientist and Director, Laboratory for Crop Transformation, Crop Biotechnology Center, Texas A&M University, College Station, TX.
91-95 Research Scientist, Dept. of Botany and Plant Pathology, Purdue University, W. Lafayette, IN.
85-90 Postdoctoral Research Associate, Dept. of Biological Sciences, Purdue University, W. Lafayette, IN.
82-84 Postdoctoral Research Associate, Dept. of Pure & Applied Biology, Imperial College, London, U.K.

Professional Society Membership:
- American Association for the Advancement of Science
- American Society of Plant Physiologists

Awards and Honors:
- 2011 Cotton Genetics Research Award

Publications:
2. RATHORE, K.S. & GOLDSWORTHY, A. 1985
3. RATHORE, K.S. & GOLDSWORTHY, A. 1985
4. GOLDSWORTHY, A. & RATHORE, K.S. 1985


David H. Russell, Ph.D.
AB/MDS Sciex Professor of Mass Spectrometry

Department of Chemistry
Texas A&M University
3255 TAMU
College Station, TX 77843
Tel: 979-845-3345; Fax: 979-845-7561
Email: russell@chem.tamu.edu
http://www.chem.tamu.edu/rgroup/russell

Education and Training

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<th>Year</th>
<th>Degree</th>
<th>Field</th>
<th>Institution</th>
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<td>1974</td>
<td>B.S.</td>
<td>Chemistry</td>
<td>University of Arkansas-Little Rock</td>
</tr>
<tr>
<td>1978</td>
<td>Ph.D.</td>
<td>Chemistry</td>
<td>University of Nebraska-Lincoln</td>
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</table>

Research and Professional Experience

- **Oct 2006 – Sep 2014** Head, Department of Chemistry, Texas A&M University
- **2013-present** Associate Editor, Journal of the American Society for Mass Spectrometry
- **2002-present** AB/MDS Sciex Professor of Mass Spectrometry
- **2001-present** Co-Director, Center for Structural Biology
- **1994-present** Director, Laboratory for Biological Mass Spectrometry, Texas A&M University
- **1989-present** Professor, Department of Chemistry, Texas A&M University
- **1980-1989** Assistant and Associate Professor, Texas A&M University
- **1987-1990** Chairman, Analytical Chemistry Division, Texas A&M University
- **1978-1980** Research Scientist, Oak Ridge Nat’l Laboratory, Division of Analytical Chemistry

Professional Awards and Honors

- **2013** Frank H. Field and Joe L. Franklin Award for Outstanding Achievement in Mass Spectrometry (ACS national award; sponsored by The Waters Corp.)
- **2004** Distinguished Achievement Award for Research

Fellow of the American Association for the Advancement of Science
TL Minnesota Chromatography Forum, Special Recognition
National Science Foundation/Am. Society of National Science Foundation, Two Year Extension for Special Creativity
Mass Spectrometry Foreign Travel Award

Teaching Experience

35 years of teaching experience (since 1980) at TAMU

Courses taught:
- CHEM 315 (Quantitative Analysis)
- CHEM 316 (Quantitative Analysis)
- CHEM 317 (Quantitative Analysis)
- CHEM 318 (Quantitative Analysis Laboratory)
- CHEM 415 (Analytical Chemistry)
- CHEM 491 (Research)
- CHEM 601 (Analytical Chemistry I)
- CHEM 602 (Analytical Chemistry II)
- CHEM 681 (Seminar)
- CHEM 689 (Special Topics in mass spectrometry)
- CHEM 689 (Spec Topics in bioanalytical separations and mass spectrometry (joint with Prof. G. Vigh).
Selected Publications:


James Sacchettini
Professor
Wolfe-Welch Chair in Sciences
Department of Biochemistry and Biophysics

EDUCATION:
B.A.: Biology; St. Louis University, St. Louis, Missouri, 1980
Ph.D.: Molecular Biology; Washington University, St. Louis, Missouri, 1987

PROFESSIONAL APPOINTMENTS:
1980-1981  Research Technologist, Department of Dermatology, Washington University School of Medicine, St. Louis, MO
1981-1983  Research Technologist, Dept. of Biological Chemistry, Washington University School of Medicine, St. Louis, MO
1981-1983  Research Associate, Department of Biological Chemistry, Washington University School of Medicine, St. Louis, MO
1989  Research Assistant Professor, Dept. of Biochemistry and Molecular Biophysics, Washington University School of Medicine, St. Louis, MO
1990-1996  Assistant Professor, Department of Biochemistry, Albert Einstein College of Medicine, Bronx, NY
1996-Present  Professor, Department of Biochemistry and Biophysics, Texas A&M University, College Station, TX
1996-Present  Wolfe-Welch Chair in Sciences, Texas A&M University, College Station, TX
1997-Present  Professor, Department of Chemistry, Texas A&M University, College Station, TX
1997-2001  Member, Biochemistry Study Section, NIH
1998-Present  Chair, Texas A&M Life Sciences Task Force
1998-Present  Professor, Albert B. Alkek Institute of Biosciences & Technology, Texas A&M University, Houston, TX
2001-Present  Director, Center for Structural Biology, Texas A&M University
2004-2005  Chair, Texas A&M Council of Principle Investigators
2004-Present  Director, TB Structural Genomics Consortium
2005  Chair, Tuberculosis Drug Discovery, Gordon Research Conference

PEER-REVIEWED PUBLICATIONS: (From 250 peer reviewed publications)


BIOGRAPHICAL SKETCH

Provide the following information for all key personnel and other significant contributors in the order listed on Form Page 2. Follow this format for each person. DO NOT EXCEED FOUR PAGES.

SAFE, Stephen H.

POSITION TITLE
Distinguished Professor

eRA COMMONS USER NAME
ssafe1

EDUCATION (Begin with baccalareate or other initial professional education, such as nursing, and include postdoctoral training.)

<table>
<thead>
<tr>
<th>INSTITUTION AND LOCATION</th>
<th>DEGREE</th>
<th>YEAR(s)</th>
<th>FIELD OF STUDY</th>
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<tbody>
<tr>
<td>Queen's University - Canada</td>
<td>B.S.</td>
<td>1962</td>
<td>Chemistry</td>
</tr>
<tr>
<td>Queen's University - Canada</td>
<td>M.S.</td>
<td>1963</td>
<td>Chemistry</td>
</tr>
<tr>
<td>Oxford University - Great Britain</td>
<td>D.Phil.</td>
<td>1965</td>
<td>Bioorganic Chemistry</td>
</tr>
<tr>
<td>Oxford University - Great Britain</td>
<td>Res. Asst.</td>
<td>1966</td>
<td>Bioorganic Chemistry</td>
</tr>
<tr>
<td>Harvard University - USA</td>
<td>Res. Assoc.</td>
<td>1967</td>
<td>Biochemistry</td>
</tr>
</tbody>
</table>

A. POSITIONS AND HONORS

Professional Experience
1968-1973 Research Officer, National Research Council of Canada
1973-1981 Associate to Full Professor, Department of Chemistry, University of Guelph
1981-1984 Professor, Department of Veterinary Physiology & Pharmacology, Texas A&M University
1984- Distinguished Prof., Dept. of Veterinary Physiology & Pharmacology, Texas A&M University
2001- Director, Center for Environmental & Genetic Medicine, Institute of Biosciences & Technology, Texas A&M Health Science Center

Honors and Awards
1976 - Sigma Xi Award for Excellence in Research, University of Guelph; 1978 - Queen's Silver Jubilee Medal; 1984 - Royal Society of Chemistry Award for Safety, Health or Environmental Chemistry; 1988 - Distinguished Achievement Award in Research, Texas A&M University; 1989-1994 - Burroughs Wellcome Toxicology Scholar Award; 1991 - Sid Kyle Chair in Toxicology, Texas A&M University; 1991-1992 - University Lecturer, Texas A&M University; 1995 - Distinguished Achievement Award in Research, Sigma XI; 1995 - Eli Lilly Science and Society Lecturer, Indiana State University; 1996 - Samuel Kuna Distinguished Lecturer, Rutgers University - UMDNJ; 1996 - Honorary Doctorate in Science, University of Guelph; 1998 - McEwen Lecturer, Queen's University; 2002 - ISI, Most Highly Cited Research in Pharmacology and in Ecology/Environment; 2003 - Spirit of Innovation Award, Technology Licensing Office, Texas A&M University; 2004 - Jo Ann Treat Award for Excellence in Research, Texas A&M Research Foundation; 2005 - Texas A&M University Former Students Association Distinguished Achievement Award for Research; 2006 - Regents Professor, Texas A&M University System; 2007 - Distinguished Lifetime Toxicology Scholar Award, Society of Toxicology; 2014 - Excellence in Innovation Award, Texas A&M Technology and Commercialization

B. SELECTED REPRESENTATIVE PUBLICATIONS (Referred - >700; Books - 5)


D. ONGOING RESEARCH PROJECTS

**R01-CA142697 (Role: PI) 07/01/10 – 06/30/15 1.2 calendar**

National Cancer Institute

*Molecular Mechanisms and Application of Ah Receptor-MicroRNA Interactions*

These studies will characterize the molecular mechanisms of AhR-miR interactions and development of SAhRMs for clinical applications in the treatment of ER-negative breast cancer.

**W81XWH-11-1-0211 (Role: Co-PI) 04/01/11 – 03/31/15 0.6 calendar**

DOD – Partnership Training Award

*The Role of Novel Substituted Diindolylmethane Analogs in the Treatment of Triple Negative Breast Cancer*

This project will involve mentoring and research on development of new mechanism-based anticancer drugs. (PI: M. Sancheva, FAMU)

**P30-ES023512 (PI: C. Walker) 02/01/14 - 01/31/17 1.2 calendar**

NIEHS $0 ($600,000/yr)

*Center for Translational Environmental Health Research*

The objectives are to: 1) Build programmatic and scientific capacity for environmental health science research through member participation; 2) Integrate investigators with different expertise, support acquisition of new expertise by Center members and the development of promising new investigators; 3) Enhance the capabilities of existing programs in environmental health sciences; 4) Serve as a resource for information and expertise to surrounding communities, stakeholders, and Center members.
NAME: Siegele, Deborah A.

POSITION TITLE: Associate Professor

EDUCATION/TRAINING: (Begin with baccalaureate or other initial professional education, such as nursing, and include postdoctoral training.)

<table>
<thead>
<tr>
<th>INSTITUTION AND LOCATION</th>
<th>DEGREE (if applicable)</th>
<th>YEAR(s)</th>
<th>FIELD OF STUDY</th>
</tr>
</thead>
<tbody>
<tr>
<td>Northwestern University, Evanston, IL</td>
<td>B.A.</td>
<td>1976</td>
<td>Biochemistry</td>
</tr>
<tr>
<td>University of Wisconsin, Madison, WI</td>
<td>Ph.D.</td>
<td>1989</td>
<td>Molecular &amp; Cell Biology</td>
</tr>
<tr>
<td>Harvard Medical School, Boston, MA</td>
<td>Post-doc.</td>
<td>1989-92</td>
<td>E. coli mol. genetics</td>
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A. POSITIONS AND HONORS.

Employment

<table>
<thead>
<tr>
<th>Year(s)</th>
<th>Positions and Honors</th>
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<tbody>
<tr>
<td>1992-1997</td>
<td>Assistant Professor, Dept. of Biology, Texas A&amp;M University, College Station, TX</td>
</tr>
<tr>
<td>9/2003-8/2006</td>
<td>Graduate Advisor, Dept. of Biology, Texas A&amp;M University, College Station, TX</td>
</tr>
<tr>
<td>1996-present</td>
<td>Member, Graduate Faculty of Genetics, Texas A&amp;M University, College Station, TX</td>
</tr>
<tr>
<td>2002-present</td>
<td>Member, Professional Program in Biotechnology, Texas A&amp;M University</td>
</tr>
<tr>
<td>1997-present</td>
<td>Associate Professor, Dept. of Biology, Texas A&amp;M University, College Station, TX</td>
</tr>
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</table>

Other Experience and Professional Memberships

EcoliHub Steering Committee, 2006-2009
Member, Genetics Society of America Board of Directors, 2013-2015
American Society for Microbiology
Genetics Society of America

Honors

Support on NIH Cell and Molecular Biology Training Grant, University of Wisconsin 1983-85
NIH Postdoctoral Fellowship, 1990-1992

B. SELECTED PEER-REVIEWED PUBLICATIONS (Graduate students and undergraduates as shown.)


**A. Personal Statement**
I am a Professor in the Department of Veterinary Integrative Biosciences and a member of the Interdisciplinary Graduate Faculty of Genetics. My research is focused on comparative organization and expression of the mammalian genome with special emphasis on genes involved in host resistance to disease. A primary goal is to determine the genomic sequences of the bovine and equine major histocompatibility complexes and understand how genetic differences in these genomic regions translate into functional differences in the immune response directed against intracellular and extracellular pathogens. Specific attention is focused on individual animal variation in the genes encoding class I and class II receptors for antigen presentation and exploitation of this variation to develop more effective immune therapies. I was one of the principal authors of the NIH White Paper that initiated the bovine genome sequencing project and have served as chair of the Texas A&M Graduate Faculty of Genetics.

**B. Positions and Honors**

**Professional Employment:**

<table>
<thead>
<tr>
<th>Year</th>
<th>Position and Institution</th>
<th>Location</th>
</tr>
</thead>
<tbody>
<tr>
<td>1970</td>
<td>Graduate Instructor in Biology, Abilene Christian University, Abilene, Tx.</td>
<td></td>
</tr>
<tr>
<td>1971</td>
<td>Research Assistant in Fisheries Science, Texas A&amp;M University, College Station, Tx.</td>
<td></td>
</tr>
<tr>
<td>1972</td>
<td>Rotary International Graduate Fellow in Biology, University of Queensland, Australia.</td>
<td></td>
</tr>
<tr>
<td>1973-76</td>
<td>Research Assistant in Fisheries Science, Texas A&amp;M University, College Station, Tx.</td>
<td></td>
</tr>
<tr>
<td>1976-78</td>
<td>NIH Postdoctoral Trainee Biomedical Genetics, The Jackson Laboratory, Bar Harbor, Me</td>
<td></td>
</tr>
<tr>
<td>1978-79</td>
<td>Research Associate, Univ. of Tennessee Graduate School of Biomedical Science, Oak Ridge, Tn.</td>
<td></td>
</tr>
<tr>
<td>1979-81</td>
<td>Research Scientist, Biology Division, Oak Ridge National Laboratory, Oak Ridge, Tn.</td>
<td></td>
</tr>
<tr>
<td>1981-85</td>
<td>Senior Staff Fellow, Eukaryotic Gene Structure Section, Laboratory of Genetics, National Institute of Environmental Health Sciences, Research Triangle Park, NC.</td>
<td></td>
</tr>
<tr>
<td>1985-1993</td>
<td>Associate Professor, Department of Veterinary Anatomy, College of Veterinary Medicine, Texas A&amp;M University, College Station, Tx.</td>
<td></td>
</tr>
<tr>
<td>1993-current</td>
<td>Professor, Department of Veterinary Integrative Biosciences, College of Veterinary Medicine and Biomedical Sciences, Texas A&amp;M University, College Station, Tx</td>
<td></td>
</tr>
</tbody>
</table>

**C. Selected Peer Reviewed Publications.** (last five years, from total of 95):


D. Research Support

Current Funding:

**BIOGRAPHICAL SKETCH**

Provide the following information for the key personnel and other significant contributors in the order listed on Form Page 2. Follow this format for each person. **DO NOT EXCEED FOUR PAGES.**

---

**NAME**
Stelly, David M.

**POSITION TITLE**
Associate Professor of Soil & Crop Science at Texas A&M University (TAMU)

---

**EDUCATION/TRAINING** *(Begin with baccalaureate or other initial professional education, such as nursing, and include postdoctoral training.)*

<table>
<thead>
<tr>
<th>INSTITUTION AND LOCATION</th>
<th>DEGREE (if applicable)</th>
<th>YEAR(s)</th>
<th>FIELD OF STUDY</th>
</tr>
</thead>
<tbody>
<tr>
<td>University of Wisconsin</td>
<td>B.Sc.</td>
<td>1975</td>
<td>Genetics</td>
</tr>
<tr>
<td>Iowa State University</td>
<td>M.Sc.</td>
<td>1979</td>
<td>Plant Breeding &amp; Cyto.</td>
</tr>
<tr>
<td>University of Wisconsin</td>
<td>Ph.D</td>
<td>1983</td>
<td>Plant Breeding &amp; Plant Gene.</td>
</tr>
</tbody>
</table>

---

**A. Positions and Honors.**

**Positions and Employment**

- 2000-present: Professor, Faculty of Molecular & Environmental Plant Sciences (MEPS)
- 1997-2000: Professor, Dept. Forest Sciences FRSC: (joint appt.)
- 1993-present: Professor, Dept. Soil & Crop Sciences (SCSC), and Faculty of Genetics (GENE)
- 1996-2006: Director, Laboratory for Plant Molecular Cytogenetics (LPMC)
- 1989-1993: Associate Professor, SCSC, and GENE
- 1983-1989: Assistant Professor, SCSC, and GENE

**HONORS, AWARDS AND MEMBERSHIPS**

- 1995: Cotton Genetics Award
- 2008: Cotton Genetics Award (member of 3-person team)
- 2002: International Cotton Genome Initiative (ICGI) - First elected Chair
- 2009: Chair, P&T Committee, Dept. Soil & Crop Sciences, TAMU
- 2013: Research Award for 2012, Dept. Soil & Crop Sciences, TAMU

**Memberships:** AAAS, Crop Science Society of America, National Association of Plant Breeders, Int'l Cotton Genome Initiative, Sigma Xi

**B. Selected peer-reviewed publications** *(in chronological order.)*

**ILLUSTRATIVE RECENT PUBLICATIONS OF LAB RESEARCH** *(†postdoc & †student)*


CURRICULUM VITA

Terry L. Thomas

Department of Biology
Texas A&M University
College Station, TX 77843
Phone: (979) 845-0184
FAX: (979) 847-8805
tlthomas@tamu.edu

EDUCATION

University of Georgia  B.S. Chemistry, Zoology  1972
University of Georgia  Ph.D. Molecular Genetics (Zoology)  1975
California Institute of Technology  Postdoctoral Biology  1975-1980

HONORS

Merck Chemistry Prize, Department of Chemistry, University of Georgia, 1972; Phi Beta Kappa, University of Georgia, 1972; summa cum laude, University of Georgia, 1972; Graduate Research Fellow, University of Georgia, 1972-1975; NIH/NRSA Fellowship, 1975-1978; American Cancer Society Lieverer Fellowship, 1978-1980.

RESEARCH AND PROFESSIONAL EXPERIENCE

Graduate Research Fellow, University of Georgia, 1972-1975; Research Fellow, Division of Biology, California Institute of Technology, 1976-1980; Senior Research Fellow, Division of Biology, California Institute of Technology, 1980-1982; Assistant Professor, Biology Department, Texas A&M University, 1983-1988; Associate Professor, Biology Department, Texas A&M University, 1988-1992; Professor, Biology Department, Texas A&M University, 1992-present; Professor and Interim Head, Biology Department, Texas A&M University, 1992-1994; Professor and Head, Biology Department, Texas A&M University, 1994-2002; Member, NIH Study Section, 1992-1996; DOE Energy Biosciences Review Panel, 1997. Director, Laboratory for Functional Genomics, 1999-present; Consultant and Scientific Advisor for Bayer Crop Science (formerly Aventis Crop Science) and RhoBio/Biogemma, 1999-2010; USDA Plant Genetic Mechanisms Review Panel, 2002-2004. Editorial Review Board, Environmental Health Perspectives: Toxicogenomics, 2002-2005; Consultant and Scientific Advisor for Alpha Biolaboratory, Inc. 2005-present.

PUBLICATIONS


BIOGRAPHICAL SKETCH
Provide the following information for the key personnel and other significant contributors. 
Follow this format for each person.  DO NOT EXCEED FOUR PAGES.

NAME
Evelyn Tiffany-Castiglioni

POSITION TITLE
Assoc. Dean for Undergraduate Education

eRA COMMONS USER NAME
ecastiglioni

EDUCATION/TRAINING  (Begin with baccalaureate or other initial professional education, such as nursing, and include postdoctoral training.)

<table>
<thead>
<tr>
<th>INSTITUTION AND LOCATION</th>
<th>DEGREE (if applicable)</th>
<th>YEAR(s)</th>
<th>FIELD OF STUDY</th>
</tr>
</thead>
<tbody>
<tr>
<td>University of Texas-El Paso</td>
<td>B.S.</td>
<td>1975</td>
<td>Biology</td>
</tr>
</tbody>
</table>

**Personal Statement.** My laboratory carries out research on mechanisms of neurotoxicity of environmental contaminants, including metals and pesticides. I am the editor and co-author of *In Vitro Toxicology: Principles and Challenges* (Humana Press, 2004), which is being revised and updated currently for release in 2016 (Springer). I have served as major professor for 18 graduate students in toxicology and neuroscience, most of whom are now productive scientists in academia, government, or industry.

**A. Positions and Honors**

**Positions and Employment:**
1982-1987  Assistant Professor, Texas A&M University
1987-1994  Associate Professor, Texas A&M University
1989-1990  Visiting Associate, Professor University of Texas Health Science Center, San Antonio
1990-present  Faculty of Neuroscience and Faculty of Toxicology, Texas A&M University
1994-present  Professor, Texas A&M University
1996-1998  Asst. Dean for Undergraduate Education, Texas A&M University
1998-present  Assoc. Dean for Undergraduate Education, Texas A&M University
1998-1999  Interim Department Head, Texas A&M University, Vet. Anatomy & Public Health
1999-present  Department Head, Texas A&M University, Vet. Integrative Biosciences (dept. renamed 2004)

**Other Experience and Professional Service (last 6 years):**
Editorial Board of International Journal of Developmental Neuroscience, 2000-present
Associate Editor, Neurotoxicology, 2004-present
External Advisory Committee for NIH Superfund Program application entitled “Superfund Metal Mixtures, Biomarkers and Neurodevelopment,” Harvard School of Public Health, 2008-present.
National Science Foundation review panel for Graduate Research Fellowships Program, 2009, 2014
NIOSH SOH Study Section ad hoc member, February 21-23, 2012; February 19-21, 2013, October 2013, February 2015; NIOSH SOH Member Conflict Reviewer, October 28, 2014
NORA Study Section ad hoc member, February 21, 2013, February 20, 2015
NIOSH WTC Study Section ad hoc member, February 21-22, 2013, March 31- April 2, 2014

**B. 15 Selected peer-reviewed publications** (from 84 peer-reviewed publications and 15 book chapters)


C. Research Support and External Grants (Completed last 10 years)
Rising to the Challenge Scholarship Program 07/01/08-06/30/09
Greater Texas Foundation
This grant provided scholarships for underrepresented 2+2 transfer students matriculating into the Biomedical Sciences program at Texas A&M University
Role: PI

T32-ES07273 Safe (PI) 07/01/02-06/30/07
NIEHS
Toxicology of Environmental Contaminants
This was a toxicology training grant supporting six graduate research assistants and one postdoctoral fellow.
Role: Co-Investigator and seminar coordinator

P30 ES09106-01 Safe (PI) 05/01/01-04/31/07
NIEHS
Center for Environmental and Rural Health (CERH)
The overall goal of the CERH was to foster and promote basic and applied science programs focusing on the impact of environmental factors on human health, particularly as it relates to rural communities.
Role: Investigator

P42 ES049171 Safe (PI) 04/01/00 - 03/31/05
NIEHS
Procedures to Assess the Hazards of a Superfund Site
Project 3: Stress Gene Induction in Mammalian Cells (Kenneth Ramos, PI)
The goal of this project was to assess the toxicity of metals on chaperone function.
Role: Co-Investigator
Victor M. Ugaz

Professional Preparation

Degrees held
University of Texas (Austin, TX)   Aerospace Engineering   B.S., 1991
University of Texas (Austin, TX)   Aerospace Engineering   M.S., 1994
Northwestern University (Evanston, IL)  Chemical Engineering    Ph.D., 1999

Postdoctoral research
University of Michigan (Ann Arbor, MI), Microfabricated DNA analysis systems, 1999-2002.

Appointments

Professor, Dept. of Chemical Engineering, Texas A&M University, 2014-present.
Associate Professor, Dept. of Chemical Engineering, Texas A&M University, 2008-present.
Assistant Professor, Dept. of Chemical Engineering, Texas A&M University, 2003-2008.

Products

Most closely related to project:

Other significant publications:

Synergistic Activities

1. Professional Service:

2. Departmental/University Service:
   Undergraduate Program Director and Associate Head, Dept. of Chemical Engineering 2013-2016, 2007-2009; Chair, TAMU Professional Program in Biotechnology, 2010-present; Co-advisor for Undergraduate Chem-E Car Team, 2006-2008.

3. Innovations in Teaching and Training:
   - Chemical Engineering Screencast *YouTube* channel: [http://www.youtube.com/user/vmugaz](http://www.youtube.com/user/vmugaz).

4. Courses Taught:
   - *Fluid Mechanics* (CHEN 304; undergrad), Sp. 08, 09, 12, 13, Fa. 13, Sp. 14, 15, 16, Fa. 15,16.

5. Teaching Accomplishments:
BIOGRAPHICAL SKETCH

Provide the following information for the Senior/key personnel and other significant contributors.
Follow this format for each person.  DO NOT EXCEED FOUR PAGES.

NAME
Welsh, C. Jane

POSITION TITLE
Professor, Veterinary Integrative Biosciences and Neuroscience
Assistant Dean for Graduate Studies

eRA COMMONS USER NAME (credential, e.g., agency login)
CJWelsh

EDUCATION/TRAINING  (Begin with baccalaureate or other initial professional education, such as nursing, include postdoctoral training and residency training if applicable.)

<table>
<thead>
<tr>
<th>INSTITUTION AND LOCATION</th>
<th>DEGREE</th>
<th>MM/YY</th>
<th>FIELD OF STUDY</th>
</tr>
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<tbody>
<tr>
<td>University of London, U.K.</td>
<td>B.Sc. (Hons)</td>
<td>06/76</td>
<td>Microbiology</td>
</tr>
<tr>
<td>University of London, U.K.</td>
<td>Ph.D.</td>
<td>10/81</td>
<td>Immunology/Biochem.</td>
</tr>
<tr>
<td>King’s College Hospital, U.K.</td>
<td>Postdoc</td>
<td>1979-1981</td>
<td>Autoimmune liver</td>
</tr>
<tr>
<td>Dept. of Pathology, Cambridge, U.K.</td>
<td>Postdoc</td>
<td>1982-1985</td>
<td>Rheumatoid arthritis</td>
</tr>
<tr>
<td>Dept. of Pathology, Cambridge, U.K.</td>
<td>Postdoc</td>
<td>1985-1989</td>
<td>Multiple sclerosis</td>
</tr>
</tbody>
</table>

B. Positions and Honors

POSITIONS
1988-1989  Special Supervisor in Pathology, Newnham College, Cambridge University
1989-      Visiting Assistant Professor (1989-1991), Assistant Professor (1991-2000); Associate Professor (2000-2006), Professor (2006-present) Dept. of Veterinary Integrative Biosciences and Dept. of Veterinary Pathobiology, College of Veterinary Medicine and Biomedical Sciences, Texas A&M University
1991-      Member of the Faculty of Neuroscience and Graduate Faculty, Texas A&M University
1998-      Member of the Genetics Faculty, Biotechnology Faculty and Executive Committee of the Faculty of Virology, Texas A&M University
2002-      Departmental Graduate Advisor
2006-      Associate Department Head, Dept. Veterinary Integrative Biosciences
2007-      Joint appointments in the Dept. Neuroscience and Experimental Therapeutics, College of Medicine, Texas A&M Health Science Center and Dept. Psychology, Texas A&M University
2011-      Chair of the Texas A&M Institute for Neuroscience
2011-      Assistant Dean for Graduate Studies, College of Veterinary Medicine

HONORS AND ACTIVITIES
2001      Alzheimer’s Association Grant Reviewer
2003      Biotechnology and Biological Sciences Research Council, UK
          NIH Brain Disorders and Clinical Neuroscience Special Emphasis Panel (ZRG1-NMB)
2004      NSF Fellowship Review Panel, NMSS Pilot Grant Reviewer
2005      2008 & 2009 NSF Graduate Fellowship Review Panel
2006      NIH Brain Disorders and Clinical Neuroscience Special Emphasis Panel
2007      2008 2009 American Heart Association Grant Review Panel
2009      NIH Clinical Neuroimmunology and Brain Tumor Grant Review Panel
2010      NSF Grant Reviewer
2010      Texas A&M University’s (TAMU) Women’s Progress Award for faculty
2011      NIH P50 Reviewer
2011      TAMU Women’s Faculty Outstanding Mentoring Award
2012      TAMU Association of Former Students Distinguished Achievement Award for Graduate Mentoring
2013      Fast Forward MS Grant reviewer & 2013 Italian Multiple Sclerosis Society

Editorial Board: Brain, Behavior and Immunity

Ad hoc reviewer for:  J. Infectious Diseases, Infection and Immunity, J. Virology, American Journal of Physiology: Heart and Circulation, Clinical and Diagnostic Laboratory Immunology, J. Neuroimmunology, Neuroimmunomodulation,
Brain Behavior and Immunity, PNAS, Neurotoxicology, Developmental Neuroscience, Neuropathology and Applied Neurobiology, Toxicology in Vitro, J. Neuroscience, Plos One

C. Publications relevant to the current application


Vichaya EG, Young EE, Reusser NM, Cook JL, Steelman AJ, Welsh CJR, & Meagher MW (2011) Social Disruption Induced Priming of CNS Inflammatory Response to Theiler’s Virus is Dependent upon Stress Induced IL-6 Release. J Neuroimmunology, 239: 44-52. PMID 2200153


D. Research Support

Ongoing Research Support

NIH/NINDS R01 NS060822 12/01/2007-3/30/14 (includes two year no-cost extension)

Mary Meagher (PI)

Impact of stress-induced cytokines on an animal model of MS

Goals: This grant examines the role of cytokines in mediating the adverse effects of social stress on Theiler’s virus infection. Role Co-PI
BIOGRAPHICAL SKETCH

Provide the following information for the key personnel and other significant contributors in the order listed on Form Page 2. Follow this format for each person. **DO NOT EXCEED FOUR PAGES.**

**NAME**
Westhusin, Mark E.

**POSITION TITLE**
Professor

**eRA COMMONS USER NAME**
mwesthusin

**EDUCATION/TRAINING** *(Begin with baccalaureate or other initial professional education, such as nursing, and include postdoctoral training.)*

<table>
<thead>
<tr>
<th>INSTITUTION AND LOCATION</th>
<th>DEGREE (if applicable)</th>
<th>YEAR(s)</th>
<th>FIELD OF STUDY</th>
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<tbody>
<tr>
<td>Kansas State University</td>
<td>B.S.</td>
<td>1980</td>
<td>Animal Science</td>
</tr>
<tr>
<td>Texas A&amp;M University</td>
<td>M.S.</td>
<td>1983</td>
<td>Veterinary Physiology</td>
</tr>
<tr>
<td>Texas A&amp;M University</td>
<td>Ph.D</td>
<td>1986</td>
<td>Veterinary Physiology</td>
</tr>
</tbody>
</table>

**A. Personal Statement.**

I have been involved with the development and application of animal biotechnology and Assisted Reproductive Technologies (ARTs) for the past 30 years, and provided leadership for numerous research projects. My laboratory is best known for research involving animal cloning which resulted in our group cloning more different animal species than any other institution in the world, including the world’s first cat and first white-tailed deer. More recently my research focus has switched to improving the technology for producing transgenic livestock in which specific genes have been targeted for silencing by RNA interference. My laboratory group has already produced genetically modified offspring expressing transgenes encoding various shRNAs in sheep, pigs, goats and cattle. We have also successfully utilized RNAi to silence the expression of various genes involved with epigenetic reprogramming during preimplantation development in cattle, then determine the effects on development. More recently we have utilized TALENs and the CRISPR/Cas system to induce targeted mutations in genes critical for normal development. Over the course of my career I have served as chair or co-chair for 14 PhD students and 5 MS students. I have also served on the committees of numerous additional graduate students, mentored 5 postdoctoral fellows, and served as advisor for numerous undergraduate students conducting research in my lab. Given these and other experiences I am ideally suited to participate in the proposed project.

**B. Positions and Honors.**

**Positions and Employment**


July 1989 - April 1, 1992. *Adjunct Professor*, Department of Veterinary Physiology and Pharmacology, Texas A&M University, College Station, TX.

April 1, 1992 – August 31, 1998. *Assistant Professor*, Department of Veterinary Physiology and Pharmacology, Texas A&M University, College Station, TX.

September 1, 1998 – April 2007. *Associate Professor*, Department of Veterinary Physiology and Pharmacology, Texas A&M University, College Station, TX.

April 2007 – Present. *Professor*, Department of Veterinary Physiology and Pharmacology, Texas A&M University, College Station, TX.

**C. Selected peer-reviewed publications (selected from > 70 peer-reviewed publications).**

**Most relevant to the current application**


Additional recent publications of importance to the field


D. Research Support. (last 3 years)

Ongoing Research Support

1R24RR032683-01 Long (PI) 9/10/2011-7/31/2015 NIH- NCRR Inducible Tissue Specific Transgene Expression in Large Animal Biomedical Models The goal of this project is to produce a porcine model of human disease via tissue specific inducible expression of transgenes. Role: Co-PI

1RO1HD058969 NIH-NIHCD Westhusin (PI) 04/15/2010 - 02/28/2015 Functional Analysis of the Embryonic Epigenome in a Non-Rodent Model The major goals of this project are to characterize the expression and function of genes and proteins during early embryonic development in bovine embryos which are responsible for nuclear reprogramming and establishment of the epigenome e.g. DNA methyltransferases, Histone deacetylases and related proteins. Role: PI
KAREN L. WOOLEY
W. T. Doherty-Welch Chair in Chemistry
University Distinguished Professor
Texas A&M University, Department of Chemistry
3255 TAMU, P. O. Box 30012, College Station, Texas 77842-3012
Tel. (979) 845-4077, Fax (979) 862-1137, e-mail: wooley@mail.chem.tamu.edu
www.chem.tamu.edu/faculty/wooley

Education:
Ph. D., Cornell University, Polymer/Organic Chemistry, August 1993
B. S., Oregon State University, Chemistry, May 1988

Professional History:
Professor of Materials Science & Engineering, Texas A&M University, 2014 – present
University Distinguished Professor, Texas A&M University, 2011 – present
W. T. Doherty-Welch Chair in Chemistry; Professor of Chemistry; Professor of Chemical Engineering, Texas A&M University, 2009 – present; Professor of Biotechnology Program, 2014 – present
James S. McDonnell Distinguished University Professor of Arts & Sciences, Washington University, 2006 – 2009
Professor, Washington University, School of Arts & Sciences, Department of Chemistry, 1999 – 2009
Professor, Washington University, School of Medicine, Department of Radiology, 2007 – 2009
Faculty member in the Division of Biological and Biomedical Sciences, Chemical Biology Program, Washington University, 1996 – 2005
Faculty member in the Center for Materials Innovation, Washington University, 2003 – 2009
Assistant Professor, Washington University, Department of Chemistry, August 1993 – 1999

Teaching:
Texas A&M University. Chem466 Polymer Chemistry; Chem689 Special Topics: Nanomedicine
Washington University. CH251 and CH252 Organic Chemistry; CH257 Organic Chemistry Laboratory;
CH358 Advanced Organic Chemistry Laboratory; CH452 Synthetic Polymer Chemistry; CH555 Special Topics in Organic Chemistry: Nanomedicine; Educ6009 Matter and Energy, an Outreach Course for K-8 Grade Teachers
Cornell University. Teaching Assistant for Organic Chemistry Laboratory
Oregon State University. Teaching Assistant for General Chemistry Laboratory and Recitation

Honors/Awards:
Distinguished Achievement College-Level Teaching Award, Texas A&M University Association of Former Students, 2016
Peter Timms Lectureship, University of Bristol, 2016
National Science Foundation Distinguished Lecture in Mathematical and Physical Sciences, 2016
Melville Lectureship, University of Cambridge, 2016
Distinguished Research Achievement Award, Texas A&M University Association of Former Students, 2016
Dow Lecturer on Sustainable Chemistry, Colorado State University, 2016
Inaugural Aldrich Lecture, Tulane University, 2016
American Academy of Arts & Sciences Fellow, 2015 – present
Oesper Award, University of Cincinnati, 2015
Ethel Ashworth-Tsutsui Memorial Lecture, Texas A&M University, 2015
College of Science Distinguished Lecture Series, Oregon State University, 2015

Reilly Lectureship, University of Notre Dame, 2015
Molecular Science Forum, Institute of Chemistry, the Chinese Academy of Sciences, Beijing, China, 2015
Honorary Fellow of the Chinese Chemical Society, 2014 – present
Fellow of the Royal Society of Chemistry, 2014 – present
Royal Society of Chemistry Centenary Prize, 2014
Texas A&M System Technology Commercialization Innovation Award, 2014
American Chemical Society Award in Polymer Chemistry, 2014
Oakridge High School Hall of Fame, 2013
National Institutes of Health NANO Study Section Chair, 2012-2014
Inaugural Featured Alumnus, Oregon State University, Department of Chemistry, Spring 2012
Milkovich Lecture Series, University of Akron, 2012
Lilly-Brown Lecture, Purdue University, 2011
Texas A&M University Distinguished Professor, 2011 – present
Butler Lectureship Series, Center for Macromolecular Science & Engineering, University of Florida, 2010
Cheetham Lecture, Materials Research Outreach Symposium, University of California, Santa Barbara, 2010
Chevron-Phillips Lecture, Macromolecular Interfaces Institute, Virginia Tech, 2010
American Chemical Society, Polymer Chemistry Division, Founding POLY Fellow, 2010
W. T. Doherty-Welch Chair in Chemistry at Texas A&M University, 2009 – present
American Chemical Society, Polymer Chemistry Division, Herman F. Mark Scholar Award, 2009
NSF Division of Materials Research, American Competitiveness and Innovation (ACI) Fellow, 2008 – 2010
NSF Division of Materials Research, Special Creativity Extension, 2008 – 2010
Frontiers in Chemical Research Distinguished Lecturer, Texas A&M University, 2007
Bayer Distinguished Lecturer, University of Pittsburgh, 2007
Dow Lecturer in Organic Chemistry, Massachusetts Institute of Technology, 2007
Outstanding Faculty Mentor Award, Washington University, 2007
Margaret C. Etter Memorial Lecturer, University of Minnesota, 2007
Phi Lambda Upsilon Lecturer, Kansas State University, Department of Chemistry, 2007
William H. Rauscher Lecturer, Rensselaer Polytechnic Institute, Department of Chemistry, 2006
James S. McDonnell Distinguished University Professor of Arts & Sciences, Washington University, 2006 – 2009
Distinguished Faculty Award, Washington University, 2005
NSF Division of Materials Research, Special Creativity Extension, 2002 – 2004
Arthur C. Cope Scholar Award in Organic Chemistry, 2002
Academy of Science of Saint Louis Innovation Award, 2002
Office of Naval Research Young Investigator Award, 1998 – 2001
Eastman Chemical Company Lecturer, University of Akron, Department of Polymer Science, 2000
Raychem Lecturer, University of California, Berkeley, Department of Chemistry, 1997
Army Research Office Young Investigator Award, 1996 – 1999
DuPont Young Professor Grant, 1996 – 1999
National Science Foundation National Young Investigator Award, 1994 – 1999
Robert W. Work Award for Excellence in Polymer Chemistry, Cornell University, 1992
ACS Sherwin Williams Student Award Finalist, ACS Division of Polymer Chemistry, 1992
Department of Education Fellowship, Cornell University, 1991 – 1993
S. C. Johnson & Sons Fellowship, Cornell University, 1990 – 1991
Phi Lambda Upsilon Member, Oregon State University

Professional Societies:
American Academy of Arts and Sciences; Royal Society of Chemistry; American Association for the Advancement of Science; American Chemical Society (ACS); Division of Polymer Chemistry of the ACS (Publications Chair, 1999 – 2003, and Alternate Councilor, 2000 – 2005); Division of Polymeric Materials:

Science and Engineering of the ACS; President of the Student Affiliates of the American Chemical Society at Oregon State University, 1986

Professional Activities:

Advisory Board, Oregon State University, Department of Chemistry (2017 – 2020)
Organizing Committee, National Science Foundation Nanoscale Science and Engineering Grantees Conference, December 12-13, 2016
Executive Scientific Advisory Board Member, NANO / Molecular Medicine and Engineering Conference, (NANOMED 2018) in Houston (2016 – 2018)
External Member, University of Texas, San Antonio (UTSA) Welch Chair Committee (2015 – 2016)
External Reviewer, Johns Hopkins University, Department of Chemistry (2015)
Technical Advisory Board, Organics, Polymers, and Organometallics (OPO TAB), Dow Chemical Company (2014 – present)
Associate Editor, J. Am. Chem. Soc. (2014 – present)
Editorial Advisory Board, Polymers for Advanced Technologies (2014 – present)
Selection Committee for the chair on polymer chemistry in the Department of Chemical Engineering & Chemistry at Eindhoven University of Technology (2013 – 2014)
External Advisory Board, University of Minnesota Center for Sustainable Polymers, an NSF Center for Chemical Innovation (2013 – 2014)
International Scientific Advisory Board, Max Planck Institute for Polymer Research (2013 – 2018)
Chair, NIH Nanotechnology Study Section Panel (2012 – 2014)
Editorial Advisory Board, Chemistry of Materials (2011 – present)
External Advisory Committee, University of Delaware, Materials Science and Engineering Dept. (2010 – present)
Standing Member, NIH Nanotechnology Study Section Panel (2010 – 2014)
External Advisory Committee, NSF-PREM Program (2007- 2011)
External Advisory Board, University of Nebraska NIH COBRE Center (2007 – 2015)
Editorial Advisory Board, Bioconjugate Chemistry (2007 – present)
Chair, 2007 Polymers (East) Gordon Research Conference
Co-organizer, 2007 NSF Polymers Workshop
Mitsubishi Technical Advisory Board (2006)
External Advisory Board, University of California-Santa Barbara, Materials Research Laboratory (2005 – 2015)
Advisory Board, Carnegie Mellon University, Department of Chemistry (2005)
Co-organizer, 2005 USA-Japan Forum: “Advances in Polymer Chemistry and their Impacts upon Society”
U.S. Area Coordinator for Materials Science and Nanotechnology for Pacificchem 2005
Vice Chair, 2005 Polymers (East) Gordon Research Conference
Extramural Scientific Advisory Panel for the NIH Nanomedicine Development Centers (2004 – 2009)
International Advisory Board for the Royal Society of Chemistry, Materials Chemistry 7 Conference
Advisory Board for the National Nanotechnology Infrastructure Network (NNIN) (2004 – 2008)
National Science Foundation Nanomaterials Workshop Steering Committee (2003)
NSF Steering Committee for Grand Challenges for Nanomaterials (2002)
Alternate Councilor, American Chemical Society, Division of Polymer Chemistry (2001 – 2004)
Alternate Councilor, American Chemical Society, Division of Polymer Chemistry (2000 – 2005)
Publications Chair, American Chemical Society Division of Polymer Chemistry (1999 – 2003)

Professional Committee Activities within Texas A&M University:

Department of Chemistry

Member, Department of Chemistry Head Search Advisory Committee (2016)
Member, Chair/Professorship Advisory/Selection Committee (2014 & 2015)
Chair, Organic Faculty Search Committee (2014 – 2015)
Member, Academic Operations Committee (2014 – 2016)
Chair, Division of Organic Chemistry (2014 – 2016)
Member (organic), Promotion & Tenure Committee (2014 – 2016); Chair, Promotion & Tenure Committee (2016-2017)
Member, Chemistry Department Head Search Advisory Committee (2013 – 2014)
Unit Coordinator, State Employee Charitable Campaign (2012)
Member, Internal Committee to prepare for Provost’s External Review of Chemistry Dept. (2012 – 2013)
Member (at-large), Executive Committee (2009 – 2012)
Member, Faculty Search Committee, Department of Chemistry (2010 – 2012)
Chair, Chemistry Department Joint Appointments Committee (2011 – present)

Texas A&M University

Chair, Joint College of Engineering-College of Science Curriculum Committee (JC4) (2016 – present)
Member, Sponsored Research Services (SRS) Transition and Services Operations Committee (TSOC) (2015 – present)
Chair, Covestro Lectureship Committee, Department of Chemistry, w/membership also from the College of Engineering (Departments of Chemical Engineering and Mechanical Engineering) (2015 – present)
Member, Imaging Working Group (2015 – present)
Member, Research Development Fund Advisory Committee (2015 – 2016)
Member, Vice President of Research Search Committee (2012 – 2013)
Member, Texas A&M Institute for Advanced Study (TIAS) Administrative Council (2011 – 2013)
Member, ADVANCE-IT Project, Departmental Mini-Grants Subcommittee (2011 – 2015)

Member, Faculty Search Committee, Marine Sciences Department, Texas A&M University at Galveston (2011 – 2012)
Chair, Bayer Lectureship Committee, Department of Chemistry, w/membership also from the College of Engineering (Departments of Chemical Engineering and Mechanical Engineering) (2010 – 2015)
Member, Faculty Search Committee, Department of Nuclear Engineering, Life Sciences Radiochemistry (2010 – 2013)
Member, Strengthen Graduate Programs Imperative Study Team, Vision 2020 Task Force (2010 – 2012)
Member, Faculty Search Committee, Department of Nuclear Engineering, Nuclear Forensics, Nonproliferation, and/or Nuclear Security Risk Analysis (2010 – 2012)
Member, Faculty Search Committee, Department of Biochemistry and Biophysics (2010 – 2011)

Professional Committee Activities within Washington University:

Department of Chemistry
Laboratory Oversight Committee (2005 – 2009)
Chair, Chemistry Graduate Recruitment Committee (2000 – 2002)
Graduate Work Committee (2000 – 2009)
Organizer and host for Bayer Distinguished Lectureship (2000 – 2009)
Graduate Admissions and Recruitment Committees (1999 – 2007)
McMillen Laboratory Renovations Committee (1998 – 2000)
Graduate Recruitment Committee (1994 – 2007)
Safety Committee (1994 – 2009)

Washington University
Advisory Committee on the Appointment of the Dean of the Faculty of Arts & Sciences (2008)
Committee on the Appointment of the Interim Dean of Engineering (2008)
Faculty Advisory Committee (2007)
Review Committee on Faculty Personnel Procedures (2007 – 2009)
Office for Technology Management Directorship Search Committee (2006 – 2007)
McKelvey Professorship Search Committee (2006 – 2007)
Chair, School of Engineering, Faculty member tenure and promotion committee (2006 – 2007)
Siteman Cancer Center Strategic Planning Group (Spring 2006)
Joint Chemistry/Biology Faculty Search Committee (2005 – 2006)
Compton/Ferguson Lectures Committee (2003 – 2009)
Animal Studies Committee (2003 – 2006)
Steering Committee for Beckman Scholars Program (2002 – 2009)
Dean’s Advisory Committee on Tenure, Promotion and Personnel (2001 – 2004)
Division of Biology and Biomedical Sciences Internal Review Committee (2001 – 2002)
Olin Fellowship Selection Committee (2000)
Chemistry-Biology Interface Steering Committee (2000 – 2006)
Physics Biological/Biomedical Faculty Search Committee (1999)
Committee for Faculty Oversight of Technology Transfer (1999 – 2009)
Educational Policy Committee of the Board of Trustees (1999 – 2001)

Research Interests:
Organic and polymer synthesis; novel macromolecular nanostructures for biomedical and materials applications; degradable polymers; nanoscale polymer assemblies; functional polymers; polymer modification.

Publications (peer reviewed):

Submitted—


In press—

Published—


Degradation, Biofouling, Cytotoxicity and Immunotoxicity for PolypHosphoester-based Nanoparticles”, *Scientific Reports*, 2013, 3 : 3313, 1-10, DOI: 10.1038/srep03313. PMCID: PMC3837308.


EDUCATION:

<table>
<thead>
<tr>
<th>Year</th>
<th>Degree</th>
<th>Institution</th>
<th>City</th>
</tr>
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<tbody>
<tr>
<td>1968</td>
<td>A.B.</td>
<td>Biochemistry, Rice University</td>
<td>Houston, TX</td>
</tr>
<tr>
<td>1969</td>
<td></td>
<td>Massachusetts Institute of Technology</td>
<td>Boston, MA</td>
</tr>
<tr>
<td>1975</td>
<td>Ph.D.</td>
<td>Molecular Biology, University of Texas at Dallas</td>
<td>Dallas, TX</td>
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</table>

PROFESSIONAL EXPERIENCE:

<table>
<thead>
<tr>
<th>Year</th>
<th>Position</th>
<th>Institution</th>
<th>Location</th>
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<tbody>
<tr>
<td>1969-1973</td>
<td>NSF Predoctoral Fellow</td>
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<tr>
<td>1969-1971</td>
<td>Officer, U.S. Navy, combat systems, FLECOMPUTPROGCENPAC</td>
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<tr>
<td>1973-1975</td>
<td>Graduate Assistant, U.T. Dallas Program in Molecular Biology</td>
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<tr>
<td>1976-1978</td>
<td>NIH Postdoctoral Fellow</td>
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<tr>
<td>1978-1986</td>
<td>Assist./Assoc. Professor of Medical Biochemistry, Texas A&amp;M University</td>
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<tr>
<td>1987-now</td>
<td>Professor of Biochemistry and Biophysics, Texas A&amp;M University</td>
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<tr>
<td>2003-2004</td>
<td>Executive Director of Research and Development, GangaGen Inc.</td>
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<tr>
<td>2006-now</td>
<td>Sadie Hatfield Professor of Agriculture, Texas A&amp;M University</td>
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<tr>
<td>2010-now</td>
<td>Director, Center for Phage Technology, Texas AgriLife &amp; Texas A&amp;M University</td>
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</table>

TEACHING:

Courses Taught:

**BICH 431/BICH631 (GENE 431/GENE631) – Molecular Genetics** 1987-1993 The 400 level course is the Molecular Genetics course required of all Biology, Microbiology, Genetics, Molecular and Cell Biology, and Biochemistry majors and taken by nearly all life science majors on campus. In general, I shared this course with another faculty member. The 631 version had common lectures but different examinations and was supplemented by an additional lecture on the literature. The text for this course was alternately Watson's and Lewin's general texts (Molecular Biology of the Gene and Genes I-V).

**BICH 689 – Tools of molecular biology; Topics in prokaryotic gene regulation** 1987-1992 These are 1 hour modules on advanced subjects which were taught as intensive, 3 week graduate courses which met for 5 hours per week in the evenings. Enrollment was limited to graduate students who already had taken a BICH631-level course in molecular genetics. I taught these courses by myself, one per year, for several years. The concept was that a narrowly-defined specialty course was best taught in a total immersion mode. These were very popular courses and, especially in the cases of modules on gene regulation and the technology of cloning and recombinant DNA.

**BICH 411 – General biochemistry** 1994-2001 This is the second semester of General Biochemistry, required of most life science major, including the huge Biomedical Science major, which in recent years has grown from a small pre-veterinary major to the largest life science major on campus. Topics start with the Embden-Meyerhof pathway and proceed through all of intermediary metabolism, concluding with basic molecular biology. Enrollment is typically 100-120 at the start of the course.
BICH 608 – Critical reading of the literature 1992-2001; Fall 2009, 2010 This is a 2-hour course on critical reading of the literature for incoming graduate students. It meets once per week in the evenings. In our implementation of the course, we take one topic and develop it throughout the semester. Each week, all the students must come to class prepared to present any or all parts of the assigned papers and critically evaluate the data. In my opinion, this is the most important first year course, serving to shock the students out of the undergraduate frame of mind where anything in a paper or textbook is assumed correct.

BICH 489 – Special topics in phage biology 2002-3, 2005 I had planned to teach a course in bacteriophage molecular biology for more than a decade. A 1 hour trial run with 28 students was taught in spring, 2002, and a full 3 hour course, with laboratory, with 11 students was taught for the first time in spring, 2003, with 11 students enrolled. It bookends the fall 3 hour undergraduate genomics project (see below). This course covers advanced topics in bacteriophage biology, emphasizing lambda and T4, and the history of phage biology as it underpins the development of modern biological science. It is intended for advanced undergraduates, including those participating in the NSF undergraduate genomics effort, and for interested graduate students. The syllabus is attached, along with a CD-ROM with examples of the 2005 lecture material. The website for the course is on WebCT.

BICH 489 – Practical Genomics for Undergraduates Fall 2002-2006; Spring 2009-2010 This is a laboratory and lecture course was developed and is currently supported as part of an NSF/USDA-funded effort to establish an undergraduate program in genomics. The central idea is that individual bacteriophage genomes are small enough for teams of undergraduates to sequence and analyze in a single school year. Student teams of 4-5 members are provided with libraries prepared from purified DNA of a bacteriophage. Phages that infect agronomically important bacteria have been chosen as the initial area of focus. The students learn and implement high-throughput robotic sequencing and assemble the completed genomes during the fall semester. Students from each team will spend the spring semester analyzing and annotating the genome sequences. In fall-spring of 2001-2, a start-up group of five undergraduate students determined the first sequence, as well as developed robust protocols and procedures for the laboratory and computer efforts. The enrollments for fall 2002 and 2003 were ~20 students each year, and for fall 2005, because of budget considerations, we had 10 students. A total of 57 students have participated, including 37 women and 13 students from under-represented minority ethnic groups. It has been well-received by the students and has been cited by several as a determinant in their plans to pursue a career in science. One student, a Hispanic female from a small South Texas town, credits her current position in the Biology doctoral program at M.I.T. to here experiences in the program:

“This program affected my choices and opportunities for grad school more than anything else I did in undergrad. Before I joined the program, my motivation for gaining lab experience was primarily so I could have a better chance at a decent technician position after I graduated or possibly as a way to direct my interests if I applied to a masters program... “

There has been real scientific progress, too. Under the day to day supervision of Dr. Elizabeth Summer, a research scientist in my group, the “G-nome” teams (3 to 5 students) have completed the sequencing of 12 Burkholderia phages, of which 9 have been annotated completely and submitted to GenBank. This is the only undergraduate genomics project of its kind in the country. Major publications resulting from the course have appeared in J. Mol. Biol. and in the Journal of Bacteriology, and more are in the pipeline. Lectures and other materials can be found at http://dimer.tamu.edu/young/genomics/

BICH 432/GENE 432 – Molecular Genetics Laboratory Spring 2006-2007 This is a laboratory course, primarily designed for BICH and GENE majors, who are required to take it or BICH414. The course will provide the students with laboratory experience during which they will actually apply many of the principles of molecular genetics to the conduct and analysis of experiments.

BICH 689 – Phage Biology Spring 2009, Fall 2010. Spring 2010 This course is a 3-credit, graduate-level, literature-based introduction to bacteriophage biology. It is built around a series of classical and current papers which highlight concepts necessary for a broad understanding of the molecular and cellular biology of bacteriophage infection, the structure and biochemistry of the macromolecules involved in phage morphogenesis, and quantitative aspects of phage ecology, diversity and evolution. Emphasis will be placed on quantitative and physico-chemical concepts, consistent with the roots of phage biology being in physics, rather than traditional biology. In addition, significant emphasis will be placed on developing skills for the critical interpretation of scientific literature. Although most of the reading will be in designated papers from the literature, there is a reference text: The Bacteriophages, edited by R. Calendar, (Oxford Press, 2006). Although copies will be kept in a departmental office for access by students, acquisition of the text is strongly encouraged both for the course and for future professional use. Other texts include out-of-print books which will be provided by the instructor for appropriate access by students.

BICH 672 – Fall 2009 Seminar-based course examining recent discoveries in the structure, function and assembly of biological membranes; oral presentation by students on current literature in molecular biology and biochemistry.
BICH 464 – Phage Genomics Spring 2010

This course is a 3-credit lecture-laboratory course for undergraduates focused on the genomics of bacteriophages, the viruses of bacteria. It has two broad aims: to equip the students with a basic understanding of the fundamentals of bacteriophage biology and to provide a real basic research experience in modern genomics, culminating in the writing of a real scientific paper on the genomics of a novel bacteriophage. The focus on bacteriophage biology is chosen not only because of the tractable size of phage genomes but also because phage biology is an important factor in ecology, evolution, and health, as well as being the original and still powerful model system for the development of molecular biology. This course is funded by the National Science Foundation.

PUBLICATIONS:

* = as corresponding author


Park, T., Struck, D.K., Deaton, J.F., and Young, R. (2006) Topological dynamics of
holins in programmed bacterial lysis. Proc Natl Acad Sci USA 103: 19713-8. PMCID: PMC1750887


CURRICULUM VITA
JOSHUA S. YUAN
2123 TAMU
College Station, TX 77843
Cell: 510 919 7668
Office: 979 845 3016
Email: syuan@tamu.edu

Professional Experience
2013 – now  Associate Professor
Department of Plant Pathology and Microbiology
Faculty of Institute for Plant Genomics and Biotechnology
Texas A&M Energy Institute
Graduate Program in Biotechnology
Texas A&M University (TAMU), College Station, TX
2015 – now  Director
Synthetic and Systems Biology Innovation Hub (SSBiH)
Texas A&M University (TAMU), College Station, TX
2013 – now  Chief Scientific Advisor
SynShark LLC
2008 – 2013  Assistant Professor in Bioinformatics and Systems Biology
Department of Plant Pathology and Microbiology
Institute for Plant Genomics and Biotechnology
Texas A&M University, College Station, TX
2004 – 2008  Director, Institute of Agriculture (UTIA) Genomics Hub
Genomics Scientist, Department of Plant Sciences,
University of Tennessee, Knoxville, TN
2001 – 2004:  Microarray Core Manager, Ernest Gallo Clinic & Research Center
University of California, San Francisco, CA
2000 – 2001:  Senior Research Associate, BASF Plant Sciences LLC, RTP, NC
(Promotion to Full Professor Passed College and Departmental Evaluation Unanimously, and
the Package is Forwarded to the University Administration)

Education
Sungrant Fellow  National Renewable Energy Lab  2008
Ph.D. Major: Plant Functional Genomics  University of Tennessee  Dec. 2007
Minor: Statistics
M.S.  Plant Sciences  University of Arizona  Aug. 2001
B.S. Major: Biology  Fudan University  Jul. 1997
Minor: International Economics

Research Program (~$10 Million extramural competitive funding as the leading PI)

<table>
<thead>
<tr>
<th>Project Name (for representative projects only)</th>
<th>Agency</th>
<th>Amount</th>
<th>Role</th>
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<tbody>
<tr>
<td>Upgrading Lignin-cointaing Biorefinery Waste for Bioplastics</td>
<td>DOE EERE</td>
<td>$2.5 Million</td>
<td>PI</td>
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<td>Develop Synthetic Crop through Photorespiration Re-channeling and Terpenoid Biosynthesis Optimization, Phase 2</td>
<td>DOE ARPA E</td>
<td>$3 Million</td>
<td>PI</td>
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<tr>
<td>Synthetic Design of Microorganisms for Lignin Fuel</td>
<td>DOE EERE</td>
<td>$2.4 Million</td>
<td>PI</td>
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<tr>
<td>Develop Synthetic Crop through Photorespiration Re-channeling and Terpenoid Biosynthesis Optimization, Phase 1</td>
<td>DOE ARPA E</td>
<td>$1.9 Million</td>
<td>PI</td>
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</table>
Novel Strategy to Improve Plant Biomass by Manipulating PHB Gene Function

Biodesign of Lignin-Derived Terpene Biofuel

Structure Dynamics-Guided Enzyme Improvement

Manipulating Lipid Profile of Microalgae through Synergistic Chemical Treatment

National Alliance for Advanced Biofuels and Bioproducts

Pending:

Southern Institute for Bioenergy Sciences (SIBES)

Recognition

- Sigma Delta Gamma Outstanding Graduate Student, 2007
- Yuan et al., Statistical analysis of realtime PCR
- BMC Bioinformatics Most Viewed Article of the Year, in 2011 and 2012: Yuan et al., Statistical analysis of realtime PCR
- Insect Science Most Download of the Year of 2011: Shi et al., Molecular approaches to study the insect gut symbiotic microbiota at the ‘omics’ age

Teaching

BESC489/PLPA689: Genome Informatics, Fall, 2009 – 2017; Evaluation: 4.67/5.00

BESC357/PLPA657: Biotechnology for Biofuels and Bioproducts, Spring, 2009 – 2017; Evaluation: 4.34-4.90/5.00

Editorial Positions & Synergistic Activities

2016 Session Chair Two Sessions for AIChE Annual Conference


2014 Session Chair Special Session in Synthetic Biology, Society for Industrial Microbiology and Biotechnology, 36th Symposium for Biotechnology for Fuels and Chemicals

2011 – 2015 Review Panel US DOE JGI CSP and Synthetic Biology

2011 – 2013 Board of Director MidSouth Comp Biol & Bioinformatics Society

2008 – now BMC Research Notes Associate Editor

2009 US-China Bioenergy Forum Co-Chair

2010 Biofuels Guest Editor for Special Issue

Peer-Reviewed Publications (Corresponding or Co-Corresponding author marked with *)


5. Gaia Pigna, Taniya Dhillon, Elizabeth M Dlugosz, Joshua S Yuan, Connor Gorman, Piero Morandini, Scott C Lenaghan, C Neal Stewart, Methods for suspension culture, protoplast extraction, and transformation of high biomass yielding perennial grass *Arundo donax*, *Biotechnology Journal*, In press.


HONGBIN ZHANG (H.-B. ZHANG)
Professor of Plant Genomics and Systems Biology
Dept. of Soil and Crop Sciences, Texas A&M University, College Station, Texas

Education/Training
1990 PhD Genetics, University of California, Davis
1984 MS Genetics, Chinese Academy of Agricultural Sciences, Beijing, China
1982 BS Plant Genetics and Breeding, Agricultural University of Hebei, Hebei, China

Positions and Employment
2006- Professor, Dept. of Soil and Crop Sciences, Texas A&M University
2002-2005 Associate Professor, Dept. of Soil and Crop Sciences, Texas A&M University
1996-2001 Assistant Professor, Dept. of Soil and Crop Sciences, Texas A&M University
1994-1995 Assistant Research Scientist, Dept. of Soil and Crop Sciences, Texas A&M University
1992-1994 Postdoctoral Associate, Dept. of Soil and Crop Sciences, Texas A&M University
1991-1992 Postdoctoral Associate, Dept. of Agronomy, University of California, Davis
1987-1990 Research Assistant, Dept. of Agronomy, University of California, Davis

Program Overview
My research is focused on genomics and systems biology in crop plants, particularly development of genomic and systems biological knowledge and new or advanced technologies for enhanced crop research and breeding. These include re-establishing of the molecular basis and mechanisms of genetics and biology; cloning and characterization of genes and quantitative trait loci (QTLs) controlling traits of agronomic importance; deciphering of the molecular mechanisms of biological phenomena or traits of importance such as quantitative genetics, epigenetics, crop yield, crop quality, heterosis and plant polyploidization; and development of molecular toolkits and associated pipelines for next-generation enhanced crop breeding such as gene-based breeding and crop production such as molecular precision agriculture. I currently teach two graduate courses in genomics and systems biology (SCSC 654 and SCSC 655) crossed linked with three intercollege programs, GENE (Genetics), MEPS (Molecular and Environmental Plant Science) and BIOT (Professional Program in Biotechnology).

Significant 5 Year Accomplishments
Research: Acquired $4,256,621 of which $2,751,289 went to my research program. Discovered and established the DNA “Jigsaw Puzzle” Structure Model as the molecular basis of biology and genetics, thus laying the foundation of observed genetic variation, diversity, abundance and complexity of all organisms; discovered and tested four core molecular mechanisms of biology, genetics and breeding, including content variation, position and array, interaction and network, and modification/mutation (including the traditional gene mutation) of fundamental function elements constituting the genome of an organism; helped establish systems biology and systems genomics in crop plants - Development of a high-throughput gene/QTL cloning system, large-scale cloning of genes and QTLs controlling the traits important to agriculture in major U.S. crops and deciphering of the molecular mechanisms of quantitative genetics, epigenetics, heterosis, crop yield, crop quality and plant polyploidization; and developing a novel plant breeding system - the gene-based breeding system, and a novel crop production system - the molecular precision agriculture system in crops. In addition, led and helped de-novo sequence the genomes of cassava and upland cotton, sequenced and profiled the transcriptomes for 794 cotton, maize, wheat, chickpea and soybean lines, and RAD-sequenced the genomes of 749 cotton, cowpea and rice lines.
Teaching: Instructed the SCSC 655 graduate course annually; developed and taught the SCSC 654 graduate course annually; supervised 2 postdoctoral research associates, 8 graduate students, 2 research scientists and 11 visiting scientists; served in graduate committees for 23 students.

Ten Most Recent Publications (116 total and 22 in review or preparation)

**Awards and Honors**
- Tuition Fee Fellowship, University of California, Davis, 1988-1990.
- Honorary, adjunct or distinguished adjunct professorships in nine international research organizations or institutions, 1994 – present.

**Professional Experience**
- Advised/co-advised 13 postdoctoral associates, 9 PhD students, 14 MS students, 13 BS students, and 64 visiting scholars.
- Authored/co-authored 116 peer-reviewed journal articles, 4 books, 11 book chapters, 1 *Encyclopedia* section, 22 manuscripts currently in review or preparation and 190 scientific conference abstracts/presentations; 112 invited presentations at international conferences or institutions.
- Funds acquired: $23,982,442 in total, of which $9,888,656 went to my research program.
- Professional service: Editor-in-Chief for 2 international professional journals; associate editor or editorial board member for eight international professional journals; *ad hoc* reviewers for 33 international journals; proposal panel service for three national or international funding agencies and proposal *ad hoc* reviewers for USA, Sweden, Netherlands, Germany, China, Spain, France and Russia.