Establishment of a Biomedical Industry Career Pathway for Graduate Students at Washington UniversitySTL

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Background & Significance

While 30% of biomedical PhDs work in biotech and pharmaceutical industries, graduate training often does not expose students to the skills required for these careers. Industry-specific training for scientists is especially needed in an era where graduate education emphasizes innovative science and technology for translation into healthcare solutions. The Division of Biology & Biomedical Sciences (DBBS), currently offers training in 13 programs. Each program variably introduces students to careers in biotech via interactive panel discussions with speakers from pharmaceutical companies throughout the US. Approximately 20% of DBBS Alumni are currently in industry positions, and, in a recent survey, prioritized experiences in non-academic careers for curriculum reform. St. Louis, MO is one of the fastest-growing and top-ranked emerging life sciences markets in the U.S., ranking sixth in a recent CBRE Research report. To successfully compete for these jobs, we have established an Industry Career Pathway for DBBS graduate students, which provides a means to translate knowledge of academic R&D into a knowledge base more suitable to the industry setting. This pathway will include coursework, externships, industry-based training and internships, and additionally aims to infuse talent into St. Louis and support local industry.

Purpose & Objectives

- Provide opportunities for graduate students to obtain knowledge and training that prepares them for careers in industry.
- Introduce trainees to leaders in biotechnology within academia and industry to facilitate the development of their personal network.
- Allow participating companies to utilize DBBS programming for talent acquisition and training while providing learning and training opportunities in industry.

Methods/Strategy

- Create an Advisory Committee of WU faculty with interest and experience in biotechnology.
- Leverage existing biotechnology and bioentrepeneurship courses and experiences as requirements for pathway students.
- Partner with local Pharmaceutical/Biotech industry leaders to create Pathway goals and participation in development of programming..
- Develop certificate program that requires achievement of milestones throughout graduate training.
- Create portfolio of faculty projects to guide lab affiliations with participation in academic-industry collaborations.

Industry Leader Partnerships

BIOSTL DRIVING ST. LOUIS INNOVATION

Mallinckrodt Pharmaceuticals

Genentech A Member of the Roche Group

BAYER Crop Science

Pfizer

MilliporeSigma

Confluence DISCOVERY TECHNOLOGIES An Adaris Therapeutics Company

Faculty-Industry Collaborative Projects

Outcomes

Tier 1: Course work & Externships (GR1-3)

DBBS: The Science, Medicine and Business of Drugs & Vaccines, Basics of Bio-Entrepreneurship

Olin Business School: Business Planning for New Entrepreneurs, Social Entrepreneurship, and Communication that Works

Seminar Topics: Prioritizing projects, Identifying drug targets, How to move projects forward

Tier 2: Industry workshops, Bioentrepeneurship

Workshops on transferable skills:

Project Management, Development of Manufacturing Systems, Commercialization

Bioentrepeneurship Experiences:

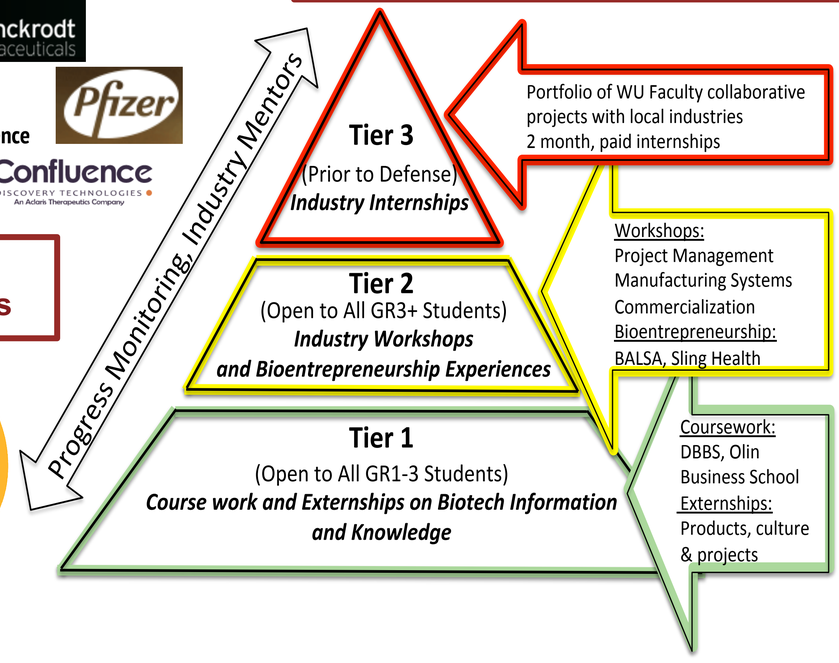
Biotechnology and Life Sciences Advising (BALSA) Group

BALSA is a student run, nonprofit organization that provides consulting services on market research, technology assessment, competitor analysis, business plan development, and consumer-facing materials.

Sling Health® With the guidance of a clinician mentor and technical advisors, teams of students learn about clinical problems and brainstorm and vet a panel of designs based on patient and physician needs, but also on the intellectual property and regulatory environments.

Tier 3: Industry Internships

Students will participate in paid internships for 2 months after submission of their thesis and prior to their defense.



Discussion

- To my knowledge, the DBBS Industry Career Pathway is the first biotechnology program that uses a three-tiered approach to build graduate student industry knowledge and skills, establish industry programming and mentoring, in addition to requiring bioentrepeneurship experiences .
- The Pathway leverages ongoing faculty-industry collaborations to guide students in their thesis lab affiliations. This will allow students to engage in science from both academic and industry perspectives.
- The Pathway is aligned with the WU Chancellor's initiative to infuse talent into St. Louis and support local industry.

Summary

- Finalized Three-Tier Pathway description now included in DBBS application materials for incoming class 2021.
- Course descriptions available in WU Course Listings, BALSA and SlingHealth on board to participate in Pathway progamming.
- Industry partners in the process of preparing descriptions of externships and workshops, assessment tools.
- Portfolio of WU Faculty-Industry collaborative projects in progress.
- Industry partners leveraging internship programs to accommodate our highly skilled

Future Plans

- Successfully compete for a T32 funded Biotechnology Program via NIH/NIGMS.
- Create a participating Consortium of Biotech and Pharmaceutical Industries within St. Louis.