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

Robyn S. Klein, MD, PhD

Collaborators: Jefferey Gordon, MD, Robi Mitra, PhD, Kristina Stallings, PhD, Joshua Blodgett, PhD, Karen Selbert, PhD

Mentors: Holden Thorp, PhD, William Tate, PhD, Joseph Jez, PhD, Sharon Hull, MD, MPH, Director of Coaching

Presented at the 2020 ELAM® Leaders Forum

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 offering 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 imbue talent into St. Louis and support local industry.

Methods/Strategy

• Create an Advisory Committee of WU faculty with interest and experience in biotechnology.
• Leverage existing biotechnology and bioentrepreneurship 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.

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, Bioentrepreneurship Workshops on transferable skills:
Project Management, Development of Manufacturing Systems, Commercialization
Bioentrepreneurship Experiences:
Biotechnology and Life Sciences Advising (BALSA) Group
Sling Health: A student run, nonprofit organization that provides consulting services on market research, technology assessment, competitor analysis, business plan development, and consumer facing materials.

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 bioentrepreneurship 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 Sling Health on board to participate in Pathway programming.
• 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.