PASTEUR PH.D PARTNERSHIP (P3) INITIATIVE

JOHN P. COULTER

SENIOR ASSOCIATE DEAN FOR RESEARCH

P.C. ROSSIN COLLEGE OF ENGINEERING AND APPLIED SCIENCE

LEHIGH UNIVERSITY, BETHLEHEM, PA 18015, U.S.A.

LEHIGH UNIVERSITY

Redesigning the STEM Doctorate Training to Align with Career Expectations

Lehigh's Pasteur PhD Partners (P3) Program

NSF - Innovations in Graduate Education Grant: Partnership with Researchers in Industry for Doctoral Education

Principal Investigator

Himanshu Jain, Professor of Materials Science and Engineering

Co Principal Investigators

Anand Jagota, Professor of Bioengineering

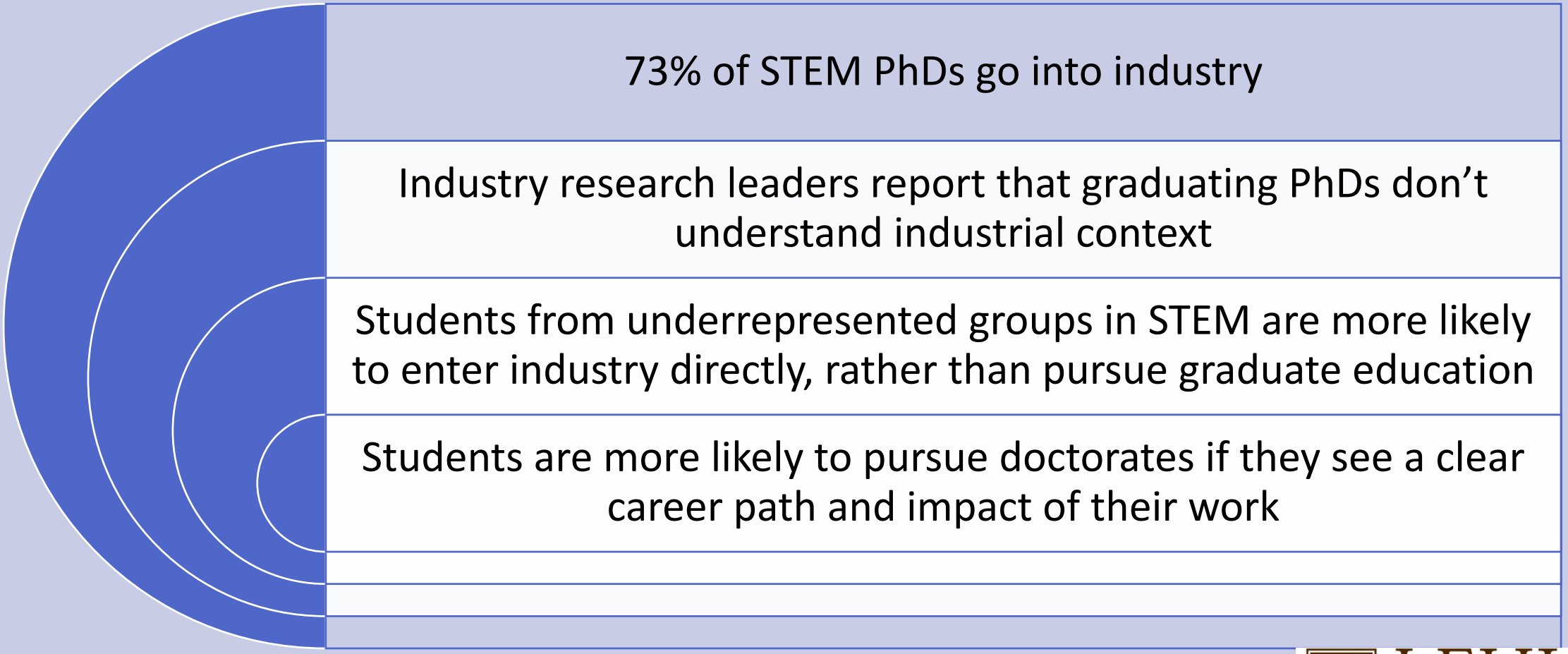
Volkmar Dierolf, Distinguished Professor of Physics

H. Lynn Columba, Associate Professor of Instructional Tech and Teacher Ed

Daniel J Vaughn, Corning Glass and Incubator Works

LEHIGH UNIVERSITY

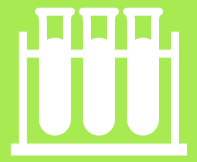
Motivating Factors



LEHIGH UNIVERSITY

Key Elements of the Pasteur PhD Partners Program

4 years fully funded



Pre-program summer internship

Co-advisors—Lehigh professor and industry researcher

Modular professional development courses

Industry Residency (as in medical school)

Funding

Industry Partners / GOALI / Donors contribute $50,000/year for four years for each student ($200K total) + support during Residency

Lehigh University contributes IC, and reduces tuition rate by 50%

Modular Courses

Team and Project-Based Learning

Intellectual Property Constraints

Economic Considerations and the Global Marketplace

Ethical Considerations

Diversity and Cultural Competence

Creativity and Innovation Techniques

**1-2 credit hours each, students take 6 credit hours total, Available to ALL science and engineering students at Lehigh

National Workshop on the Role of Industry-University Partnerships in Graduate Education

Goals

- To assess the gap in the training of STEM doctoral workforce and the expectations of industry that employs them predominantly
- Promote innovation in industry-university partnership around advanced graduate training as well as research

Participants

High-level stakeholders in U.S. technological advancement from across industry, government, and academia
Leaders (CEO/CTO) of key industries (manufacturing, chemical, IT, healthcare).

- Representatives of British/French/ German, agencies that oversee successful industry-university partnership will share insight from experience in their countries
- **Academic leaders in graduate education. YOU!**

July 9-10, 2020, Washington DC

https://wordpress.lehigh.edu/inphd/workshop

Benefits to Student

1) **Actively involved in defining the scope of his/her dissertation** vs. traditional modus operandi where faculty and funding agency decide. for identifying research topics is flipped. The PDF starts with a pre-program summer internship at a company to get the 'big picture' of the problem of interest through discussions with industry researchers.
2) Each Fellow's program is **personalized with co-advisers from both the university and a partner company**.
3) A **one to two semester company Residency** is required to ensure use-inspired, industrial perspective as well as the rigor of a conventional doctoral degree.
4) The Fellow receives **exclusive training to become a professional researcher** through modular, graduate-level courses, co-taught by faculty and industry researchers. The topics may include:
   a) *Team and Project Based Learning*
   b) *Intellectual Property (IP) Constraints* – how IP factors into long-range industrial decision-making
   c) *Economic Considerations and the Global Marketplace*
   d) *Ethical Considerations*
   e) *Diversity and Cultural Sensitivity*
   f) *Technical Oral and Written Communication Skills*
   g) *Creativity and Innovation Techniques*

Benefits to Company Partner

- **Have a dedicated student conduct doctoral level research and engage LU faculty expert on a topic of direct interest to the company at a fraction of normal cost**
- Advanced graduate level R&D and training of a doctoral Fellow on a topic of direct interest to the company's business.
- Exploring new processing methods, devices, products and technologies related to company's business through in-depth understanding of critical issues.
- **Access to recruiting, presumably the best trained employee the company can hope to have.**
- Graduate summer intern ready to undertake in-depth, high-level evaluation of a technical issue of direct interest to the company.
- **Graduate Resident for 1-2 semesters, similar to medical residents in hospitals, working on site at company premises, effectively functioning as an R&D employee**
- **Access to advanced, cutting-edge research facilities on Lehigh campus, as well as national laboratories.**
- Active partnership with expert faculty not only on the topic of the Fellow's dissertation topic, but also access to the latest developments in related topics.