Integration of Toxicology Education

Post-Graduate

Graduate

Undergraduate

High School

https://pharm.rutgers.edu/content/summer_research_fellowship_program
Program Leadership

Debra Laskin
Lauren Aleksunes
Laura Liang
Ragena Riley & Kimi Nakata

Stephanie Marco
Diana You
Program Objectives

• **Objective 1.** Provide interested undergraduate students with intensive, summer research training experiences in NIH-funded laboratories focused on toxicology and environmental health sciences.

• **Objective 2.** Increase literacy and awareness of undergraduate students to the fields of toxicology and environmental health sciences.

• **Objective 3.** Create an enriching career development experience for a diverse student population.

• **Objective 4.** Support and encourage students to pursue graduate studies.

• **Objective 5.** Disseminate student accomplishments and assessment metrics with other universities and biomedical researchers.
Program Support

Institutional

- Department Support
- Dean of School of Pharmacy
- Graduate School

Societies

- American Society for Pharmacology and Experimental Therapeutics (ASPET)
- Society of Toxicology (SOT)

Extramural

- NIH R25 Summer Training Grant
- NIEHS Center Community Outreach and Education Core (COEC)

11/19/17
Team-Based Research Plan

• “Science in the News” reports by students
  – Discuss the study design, strengths & weaknesses
• Environmental sampling group project and discuss of risk assessment

The New York Times

Environmental Factors Like Pollution Cause a Quarter of Deaths, W.H.O. Says

By SABRINA TAVERNISE  MARCH 15, 2016
Career Development Activities

- Linked In Profiles
- Interviewing Skills Workshop
- Toxicology Career Panel:
  - Kary Thompson, Bristol-Myers Squibb
  - Kristian Fried, Colgate-Palmolive
  - Kim Pendino, Amicus Therapeutics
  - Alan Stern, Dept. of Environmental Protection
Program Partners & Retention

• Research in Science and Education (RiSE)
  – STEM program for underrepresented minority, first-in-college, and economically disadvantaged students
  – On-campus housing
  – GRE prep course
• SUPER-Grad Pipeline Fellowship
  – Retention of students for graduate studies
Field Trip to Bristol-Myers Squibb

- Understand roles of scientists in preclinical safety
- Discuss educational requirements and training needed for various positions
- Tour facilities
- Meet with scientists
Outcomes

- Graduate school, papers and presentations!

Hepatic and renal Bcrp transporter expression in mice treated with perfluorooctanoic acid
Lobna M. Eldawsher*, Xia Wen*, Michael S. Little*, Kristin M. Bircak*, Lindsay L. Yacovino*, Lauren M. Alekaunes*

Oxygen-Linked S-Nitrosation in Fish Myoglobins: A Cysteine-Specific Tertiary Allosteric Effect
Signe Halbo, Andrew J. Gow, Amna Jamil, Barry D. Howes, Giulietta Smulevich, Angela Fago

Pharmacodynamics of Ginsenosides: Antioxidant Activities, Activation of Nrf2, and Potential Synergistic Effects of Combinations
Constance Lay Lay Saw†, Anne Yuqing Yang†, David C. Cheng†, Sarandeep S.-S. Boyanapalli†, Zheng-Yuan Su†, Tin Oo Khor†, Song Gao, Jingrong Wang†, Zhi-Hong Jiang†, and Ah-Ng Tony Kong†§
† Department of Pharmaceutics, Ernest Mario School of Pharmacy, Rutgers, The State University of New Jersey, Piscataway, New Jersey 08854, United States

Nanostructured lipid carriers as multifunctional nanomedicine platform for pulmonary co-delivery of anticancer drugs and siRNA
Oleh Taratula*, Andriy Kuzmov*, Milin Shah*, Olga B. Garbuzenko*, Tamara Minko*
Evaluation

• Customized self-assessment mechanism
• Three time points (week 1, 5, and 10), 7-point Likert scale
• Use unique digit code for each student to look at individual changes
• Paper evaluation with > 90% response rates
• IRB exempt approval from university
Evaluation

- Pre-Program
- Mid-Program
- Post-Program

Score

- Analyzing data for patterns
- Figuring out the next step in a research project
- Problem-solving in general
- Formulating a research question that could be answered with data
- Identifying limitations of research methods and designs
- Understanding the theory and concepts guiding a research project
- Understanding the connections among scientific disciplines
- Understanding the relevance of research to my coursework

11/19/17
2015 Rutgers SURF Program
2015 Rutgers ASPET SURF Students