Lance N. Benson, PhD

WHAT ARE YOU CURRENTLY DOING?

I am currently entering my second year as a postdoc working in the laboratory of Jennifer Pollock PhD at the University of Alabama at Birmingham (UAB). Current interests include exploring how circadian-mediated metabolic differences in T cells contributes to their recruitment and participation in the pathogenesis of hypertension.

HOW DID THE PTET TRACK PREPARE YOU FOR YOUR CAREER?

I completed my PhD in the PTET track and was funded by the T32 T-SPaT mechanism for 2 years. In the PTET track and under the excellent mentorship of Dr. Shengyu Mu, I was trained to consider each biological mechanism and response in the context of the entire system. This "big picture" approach to understanding the minute details has proven to be critical in properly planning each experiment for maximal scientific rigor and has greatly improved my scientific writing capabilities. Dr. Mu's superb training extended far beyond the theory and the writing; the training he provided me in various techniques continues to provide me a competitive edge as a postdoc. I found the Mu laboratory and the entire PTET track to be incredibly supportive during my dissertation work characterizing a mechanism mediating the role of CD8+ T cells in the pathogenesis of hypertension, and comments/suggestions during the many cardiovascular group meetings (especially by Dr. Nancy Rusch) helped streamline my research. The monthly whiteboard meetings for T-SPaT trainees proved beneficial in ensuring I properly understood my own project and provided novel ideas and insights through learning about the ongoing work from other trainees. In short, I would recommend the PTET track to anyone.

UAMS
University of Arkansas for Medical Sciences

CONTACT US

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Pharmacology, Toxicology and Experimental Therapeutics (PTET) Graduate PhD Program

Katie M. McGraw

UAMS
University of Arkansas for Medical Sciences

WHAT IS OUR PROGRAM ABOUT?

Do you know that the pharmaceutical industry is one of the largest and most important industries in the world? Our research-intensive program focuses on understanding how Pharmaceutical agents or drugs (pharmacology) and harmful substances (toxicology) interact with living organisms. Imagine being a scientific detective, investigating how medications work and how toxins affect our bodies.

WHAT IS THE DIFFERENCE BETWEEN PHARMACOLOGY AND TOXICOLOGY?

Pharmacology: Dives into drug mechanisms—how they work at the molecular level. Explore drug development, from lab bench to patient.

Toxicology: Uncovers the secrets of harmful substances. Learn about their effects on cells, tissues, and whole organisms. Imagine decoding the mysteries of poisons!

GOALS AND TRAINING OF THE PTET TRACK PhD PROGRAMS:

Our program aims to produce research experts in pharmacology and toxicology. You'll learn to design experiments, analyze data, and contribute new knowledge to the field. Our faculty work closely with UAMS clinics and BioVentures director Dr. Eric Peterson to make sure their discoveries are translational and patentable. You may stumble upon a great discovery or get a patent on your novel compound. Think of it as becoming a superhero for drug discovery! Upon graduation, you will have a solid foundation that will prepare you for various roles, like research, teaching or working in the pharmaceutical industry. It's like getting your toolkit ready for the science adventure.

ON THE COVER

Katie M. McGraw

WHAT ARE YOU CURRENTLY DOING?

I am currently a third-year graduate student working in the lab of Dr. Nirmala Parajuli. I study the complement system and its effect on mitochondria during kidney transplantation by utilizing animal models of transplant plus cold storage.

HOW DID THE PTET TRACK PREPARE YOU FOR YOUR CAREER?

I am currently doing my PhD in the PTET track and I was also fortunate to be given the opportunity to train as a T-SPaT fellow. Throughout my training, I have learned cutting-edge scientific techniques, microsurgical skills for animal models, and how to think critically about data analysis. I am also grateful in my program to have faculty who are always willing to take time and offer their expertise. I feel the PTET track and T-SPaT fellowship are preparing me excellently for a future career in science.

Joel Vazquez, PhD

WHAT ARE YOU CURRENTLY DOING?

I am currently a research toxicologist providing toxicology support for spaceflight missions at NASA, supporting both official NASA activities as well as third-party spaceflight missions.

HOW DID THE PTET TRACK PREPARE YOU FOR YOUR CAREER?

The PTET track prepared me to perform toxicology risk assessments by providing me a foundational framework in determining the appropriateness of toxicology research methods, data generated, and translational value to human toxicology endpoints. The T-SPaT program specifically aided me in the translational aspect of research, helping to ensure that animal models used for research are adequately posed to answer questions investigated by these studies. Additionally, as my work currently involves determination of safe dose thresholds/limits, a deep understanding of statistics has been necessary, and our statistics course has helped me immensely in ensuring that my determined limits were derived from statistically sound research methods, especially when deriving limits from statistical modeling methods such as the Benchmark Dose method.

Dr. Brian Parks (on the right) speaking with two nursing students

ARE YOU LOOKING FOR MUCH MORE INTENSIVE TRAINING?

Get into our T-SPAT program which provides additional training and funding for one more year.

WHAT ARE CAREER PATHS AFTER GRADUATION?

Possibilities are endless but just to name a few:

Academia: Run a lab in a research institute and train future scientists.

Industry: Work with pharmaceutical companies. Help create life-changing medicines.

Government: Investigate drug safety. Ensure drugs are safe for all.

Other jobs include: Toxicology consulting, regulatory agencies, medical science liaison, teaching, science writing and others

PROGRAM FACULTY

PTET faculty

T-SPaT faculty

NEXT STEPS

Ready to make a difference in human health? We invite you to explore the world of Pharmacology & Toxicology! Visit our website for detailed program information, application requirements, and deadlines. We look forward to receiving your application!

Brian J Parks, PhD

WHAT ARE YOU CURRENTLY DOING?

As a Clinical Instructor in the UAMS College of Nursing, I have the privilege of teaching courses in pharmacology, pathophysiology, research methods, and scientific foundations in the Doctor of Nursing Practice programs. My role extends beyond traditional teaching, as I am actively involved in research that evaluates the use of AI and virtual patient simulation in graduate nursing education. This innovative approach aims to enhance the learning experience and outcomes for nursing students.

HOW DID THE PTET TRACK PREPARE YOU FOR YOUR CAREER?

During my PTET training, I had the distinct advantage of being mentored by two experts (Dr. Brents and Dr. Berquist) from diverse backgrounds in basic science research. Their complementary expertise provided a comprehensive and high-quality training experience, significantly enhancing my knowledge and skill set. This mentorship was a pivotal factor in preparing me for a successful career, equipping me with the tools to excel in both teaching and research.

The PTET track was instrumental in providing the education necessary for me to successfully help graduate nursing students understand the scientific principles that guide the best clinical decisions for their patients' well-being. This education allows me to bring a unique perspective and approach to clinical education within the College of Nursing. Additionally, the PTET track offered extensive research training in basic science, which I have seamlessly integrated into my nursing education research. This dual expertise in both teaching and research enriches my contributions to the academic community.