The Integra\textit{}}ve Pharmacological Sciences Training Program (IPSTP) is designed to support 2nd and 3rd year Ph.D. students pursuing dissertation research projects in the pharmacological sciences. Trainees and training faculty are drawn from seven Ph.D. programs which include Biochemistry & Molecular Biology, Chemistry, Chemical Engineering & Material Sciences, Microbiology & Molecular Genetics, Neuroscience, Pharmacology & Toxicology, and Physiology. With an emphasis placed on student training in the integrative actions of drugs, trainees choose a research mentor from among 36 training faculty.

The IPSTP is designed to provide added value to the traditional Ph.D. programs in the participating departments. It brings together students from diverse scientific backgrounds and creates a cohesive cohort of students interested in drug development and \textit{in vivo} research. IPSTP activities are specific to this cohort, allowing students to build a peer network for collaboration and support.
**Application Process**

Students enrolled in the affiliated programs can apply for the IPSTP at the end of their first or second years of their Ph.D., after they have selected an eligible mentor.

The application process will include an interview with the IPSTP Executive Committee and a short scientific presentation.

**FINANCIAL AID AND BENEFITS**

IPSTP students receive stipend and tuition support for two years equivalent to the BioMolecular Science stipend rate. Students are expected to continue to participate in program activities in the years following their funded years.

IPSTP students are eligible for funding for travel and other training related expenses.

All IPSTP mentors undergo mentor training. This ensures our students have the best research experience possible.

**Hands on Learning Opportunities**

**BIG DATA BOOTCAMP**

A modern biomedical scientist should be facile with coding (e.g. R and python) and, knowledgeable about data sources. The availability of large public data sets and the ability to probe signaling mechanisms at high spatial or single-cell resolution has provided unique opportunities to quickly ask and answer challenging questions in pharmacology and other biological disciplines. IPSTP faculty who are experts in big data will present the basics of big data sources, basic concepts of coding, and a hands-on opportunity to try out these important approaches.

**DRUG DISCOVERY BOOTCAMP**

The drug discovery bootcamp introduces students to all aspects of the drug development process. Students spend much of the week in the Department of Pharmacology and Toxicology Drug Discovery Core where they learn how to use high throughput screening to identify potential therapeutic targets. The students also meet with our medicinal chemist to learn about compound synthesis and modification.

**IN VIVO BOOTCAMP**

This weeklong experience introduces students to the basics of preclinical pharmacology research. Students learn to handle small laboratory animals and are exposed to several cutting-edge in vivo techniques used to test therapeutic targets for human diseases. Students also learn about the regulatory requirements for small animal research studies, and they have the opportunity to visit the vet school and the MSU farms where larger animals are used in research.

**DIVERSITY**

The IPSTP is committed to recruiting and retaining students from groups that are historically underrepresented in science, and persons with physical, sensory, and invisible disabilities.

**Required Coursework**

- Principles of Drug-Tissue Interactions
- Cellular, Molecular, and Integrated Systems Pharmacology
- Experimental Design and Data Analysis
- One Professional Development Course

**ABOUT MICHIGAN STATE**

Michigan State University is one of the top research institutions in the country and has a population of over 50,000 diverse students.

IPSTP Faculty are located in East Lansing and Grand Rapids.

East Lansing offers affordable living with a small city atmosphere. Residents enjoy the benefits of the proximity to the main campus’s events and athletics, restaurants, museums, art festivals, and more.

Grand Rapids is one of the nation’s fastest growing cities located in western Michigan.

Both campus’s are in close proximity to Michigan’s beautiful state parks and beaches.

**Workshops and More**

- Professional Development Workshops
- Annual IPSTP Boot Camps
- Annual Retreat
- Student Led Journal Club
- Fellowship Prep Workshops
- Mock Study Section
- Annual Industry Road Trips