PHARMACEUTICAL SCIENCES, PHD

The Division of Pharmaceutical Sciences (https://pharmacy.wisc.edu/psd/) at the School of Pharmacy offers the doctor of philosophy (PhD) degree in pharmaceutical sciences. The program provides a rigorous background in a range of scientific disciplines that are critical to the success of the next generation of pharmaceutical scientists. The program's interdisciplinary training combines pharmaceutically relevant aspects of classical disciplines such as chemistry, biology, and engineering. Students earn a PhD in Pharmaceutical Sciences, concentrating in one of three research cores: Drug Discovery, Drug Action, or Drug Delivery. Extensive communication and collaboration occur between these cores, mirroring the importance of interdisciplinary research teams in the pharmaceutical field. See our webpage (https://pharmacy.wisc.edu/about-us/divisions/pharmaceutical-sciences/faculty-research/) for more detailed information regarding current faculty research directions.

Research in Drug Discovery (https://pharmacy.wisc.edu/psd/drug-discovery-core/) focuses on areas related to medicinal chemistry, such as small molecule development, natural products isolation and characterization, organic synthesis, chemical biology, and rational drug design.

Drug Action (https://pharmacy.wisc.edu/psd/drug-action-core/) focuses on areas related to pharmacology, toxicology, cellular differentiation, development, and disease. Interests include the impact of drugs and toxins on biological systems, mechanisms of normal biology, and mechanisms of disease. These are studied at the cellular, genetic, molecular, and biochemical levels using diverse model systems.

Drug Delivery (https://pharmacy.wisc.edu/psd/drug-delivery-core/) (pharmaceutics) emphasizes principles in physical chemistry and drug transport, aiming for advances in formulation, drug targeting, and multi-modal therapy. Delivery research includes the solid-state chemistry of drugs, nano-pharmacy, biocompatibility, molecular recognition, computational chemistry, pharmacokinetics, and molecular imaging.

The UW–Madison Pharmaceutical Sciences Division has been recognized for its research productivity, extramural funding support, publication record and teaching.

UW–Madison (https://www.youtube.com/watch/?v=XTJA5alrisQ&feature=youtu.be) is one of the nation's most prolific research universities, located on the shore of Lake Mendota in the state's vibrant capital city. The city of Madison (https://madison.wisc.edu/) is consistently recognized as one of the best cities in the nation in multiple categories for quality of life. Visit grad.wisc.edu (http://grad.wisc.edu/) to learn more about the many reasons to choose UW–Madison for graduate study.

POSTGRADUATE INFORMATION

Our students are provided many opportunities to explore different careers paths and to hone their skills in areas such as communication and leadership. Recent program graduates have found employment in a variety of settings including industry, academia, science writing, and patent law. We engage our many alumni to participate in career chats and other networking opportunities with our students. For more information on student outcomes, please visit our webpage (https://pharmacy.wisc.edu/programs/pharmsci/student-outcomes/). The School's Graduate Program Manager can be consulted for specific career information (both initial placement and longer-term employment information regarding PhD alumni).

FACILITIES

The Pharmaceutical Sciences Division is housed in Rennebohm Hall (http://www.pharmacy.wisc.edu/about-school/rennebohm-hall/), a seven-story, state-of-the-art facility that comprises both research and teaching space. Affiliate Pharmaceutical Sciences graduate faculty and their labs are housed in other nearby campus buildings. Located on the northwest edge of campus, Rennebohm Hall is in close proximity to the Health Sciences Learning Center (home of the UW School of Medicine and Public Health, or SMPH), UW Hospital and Clinics, the UW Institute for Clinical and Translational Research (ICTR), the Waisman Center, the Wisconsin Institutes for Medical Research (WIMR), SMPH's Center for Human Genomics and Precision Medicine, the School of Veterinary Medicine, the School of Nursing, and Ebling Library for the Health Sciences.

Exceptional research facilities and equipment are available in Rennebohm Hall as highlighted by the Lachman Institute for Pharmaceutical Development (https://pharmacy.wisc.edu/centers/lachman-institute/). The Lachman Institute houses multiple research centers including the Analytical Instrumentation Center (AIC) (http://www.pharmacy.wisc.edu/aic/) which provides mass spectrometry, nuclear magnetic resonance, spectroscopy, and spectrophotometry services. Also within the Lachman Institute is the Medicinal Chemistry Center (MCC) (https://pharmacy.wisc.edu/centers/medicinal-chemistry-center/), whose mission is to provide drug discovery expertise to the UW medical community and drive translational research at UW–Madison through designing and synthesizing novel small molecule-based therapeutics. Pharmaceutical Sciences faculty direct the MCC. A Nanotechnology Center for Drug Delivery (https://pharmacy.wisc.edu/centers/wiscnano/) began in 2018, aiming to improve the efficacy of new drug leads.

The School of Pharmacy's Lenor Zeeh Pharmaceutical Experiment Station (http://www.pharmacy.wisc.edu/zstation/) is a not-for-profit, self-sustaining center of expertise serving faculty researchers across the UW–Madison campus as well as private-sector drug product development. The station provides laboratory services related to compound physical/chemical characterization and basic formulation development to support preclinical development of promising drug candidates and other unmet pharmaceutical-related needs. Pharmaceutical Sciences graduate students are eligible to participate in summer project assistantships at the station. The division also offers houses a wide array of equipment for computer-aided drug and catalyst design, real-time PCR, gas chromatographs, high-pressure liquid chromatographs, cell culture, ultra-centrifuges, scintillation counters, and animal care. Additionally, many researchers leverage equipment and services available through the Carbone Comprehensive Cancer Center, Biotechnology Center, and other campus core facilities.