PSP Education

The established Pharmacometrics and Systems Pharmacology (PSP) program at PITT focuses on applying pharmacometrics and computational systems pharmacology techniques to advance “Big Data” computing of preclinical and clinical research. PSP will facilitate the development of novel drug candidates that are less likely to fail during clinical trials and will help to provide better understanding of drug mechanisms of action and therapeutic effects at systems pharmacology levels. Individuals will:

- Acquire knowledge and gain hands-on experience of applying PSP to advance drug discovery
- Develop strong computational modeling and simulation expertise for conducting PSP research
- Receive systematic training to become a pharmaceutical professional working in either academia or pharmaceutical industry

Contact Us

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Overview PSP Program Track

PSP is an interdisciplinary science to study drug actions and rational development of new drugs through network analysis, multitype-multiscale modeling and simulations “mechanism-driven”, as well as data analysis “data-driven”. The PSP program is a leading education program of both pharmacometrics and computational systems pharmacology.

Education Goals

1. Develop broad knowledge of pharmacometrics and systems pharmacology
2. Develop strong computational modeling and simulation expertise to be able to proficiently use two mainstream software packages, NONMEM and SIMCYP to conduct both population PK/PD and PBPK modeling/simulation
3. Acquire skills to use software to conduct network analysis
4. Proficiently use R and/or Python as tools for PSP studies and research
5. Gain systematic training to become a pharmaceutical professional in either academia or industry
Curriculums
The mission of the PSP program is to train the next generation of pharmaceutical professionals dedicated to developing novel drugs and improving health outcomes through precision and personalized medicine.

PSP is an avenue to achieve precision pharmacology and personalized medicine

Courses
The students are required to take eight core courses and receive hands-on practice training, which include computational systems pharmacology and pharmacometrics, Python Programming, Statistical Methods, Foundations in Pharmaceutical Science, Pharmacology and Therapeutics. Students are encouraged to take elective courses provide by the other departments and schools.

Research Study
Our centers have developed “Big Data to Knowledge” GPU-accelerated machine-learning and deep-learning computational chemogenomics-based target identification and systems pharmacology programs for translational drug discovery research. Students will participate in research studies with the instruction of PSP faculty. He or she may apply for the Ph.D. programs upon successfully finishing the MS research studies.

Participating Faculty
The faculty members, Drs XQ (Sean) Xie, Lirong Wang, Junmei Wang, Zhiwei Feng, Richard Bertz, etc. participating in the PSP program are strong in pharmaceutical science research frontiers, including computer-aided drug design, computational medicinal chemistry, computational systems biology, computational chemical genomics, computational biophysics, population PK/PD and PBPK modeling, etc.

Why PITT
University of Pittsburgh
IS one of the world’s foremost research institutions (Ranked #48 Best Global Universities in 2017 by US News). University of Pittsburgh fosters multidisciplinary approaches and rigorous scientific training - providing an ideal environment for growth as a professional in academia or industry. Pitt attracts and retains pre-eminent researchers while maintaining a culture that promotes research in diverse areas.

The School of Pharmacy at The University of Pittsburgh has one of the best pharmacy programs (Ranked 9th in 2016 by US News). It provides versatile educational programs at both the MS and PhD/PharmD levels. The School also hosts two innovation computing centers: Computational Chemogenomics Screening Center (CCGS) and NIH National Center of Excellence for Computational Drug Abuse Research (CDAR).

School of Pharmacy
CCGS and CDAR Centers Research
We are applying sophisticated computational techniques, such as network analysis, multitype and multiscale modeling simulations, and machine-/deep-learning computing to study drug actions, and to rationally design new drugs. More details are on www.CBLigand.org/CCGS and www.CDARcenter.org/CDAR
PSP
Transforming traditional to precision pharmacology and personalized medicine.

Sean Xie

How to Apply Online

Basic Application Steps:
1. Login and submit your application online:
   - MS non-thesis track: http://www.pharmacy.pitt.edu/programs/grad/ms_nonthesis.php
2. Please be sure to indicate: “new PSP MS program” (thesis or non-thesis)
3. State that you are interested in new PSP MS program and select the faculty member(s) for whom you are interested in working in your personal essay

Questions About the PSP Program?
Please send an email to Dr. Xiang-Qun Xie, Associate Dean and Professor of School of Pharmacy, Director of CCGS and CDAR centers.

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