PHM 980 / Section 737
Pharmacogenomics

Course Overview

Pharmacogenomics is one of the most rapidly growing areas of pharmacology. The promise of individualized (personalized) health care and treatment strategies warrants understanding of common and rare genetic mutations that impact disease risk and stratify treatment options.

In this course we will dissect the basics of genomics and its interplay with traits, efficacy, toxicity, kinetics and dosage involving drugs and drug pathways. The course will cover the background of pharmacogenomics through lectures and literature discussions, with hands-on learning through pharmacogenomic database searches and a related student project.

Textbook (recommended)

Concepts in Pharmacogenomics
2nd edition
Martin M Zdanowicz
American Society of Health-System Pharmacists, 2017

Course Topics

- Genomics basics: inheritance, linkage disequilibrium, genome browser extraction, gene annotation, gene regulation
- expression Quantitative Trait Loci (eQTLs)
- Genome-Wide Associate Studies (GWAS)
- Population genomics
- Pharmacogenomic variants in public databases (pharmGKB)
- Pharmacology systems mapping and extraction of human variants

Pre-requisites

Knowledge of general principles of pharmacology, physiology, and genetics

Course Information

Course Number: PHM 980 (online)
Sections Available: 737
Semester: Fall 2019
Credits: 2 credits

Successful completion of this course will count as 2 credits of science elective toward the MS degree.

Course Instructors

Jeremy Prokop, PhD
Received his PhD in Integrated Biosciences from the U of Akron and was a Postdoctoral Fellow in Molecular Genetics at the Medical College of Wisconsin. His research focuses on the genetic mechanisms of disease. The lab utilizes computational tools for examining the roles of genomic variants on protein function and extends this research into in vitro models to gain insight to predict disease causation and treatment.