

Pharmacogenetics of Drug Metabolism and Transport

PHA 6427

Department of Pharmacotherapy and Translational Research

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Course Syllabus – Fall 2012

COURSE DESCRIPTION: Pharmacogenetics/pharmacogenomics is the study of how an individual's genetic inheritance affects the body's response to drugs. This course will examine factors that affect drug response including genetics, as well as, additional factors such as environment, diet, age, and concurrent drug therapy and health status. Methods important to pharmacogenomics research will be presented. The course will use a combination of lectures, assignments (including discussion board activities) and student-led discussion of recent papers from the primary literature. The goal of this course is to provide students an understanding of pharmacogenetics/pharmacogenomics in the context of variability in drug response and the application of pharmacogenetics to drug development and drug treatment.

Course Learning Objectives

Upon completion of this course, the student will be able to:

1. Discuss basic principles of genetic medicine and personalized medicine
2. Describe the mechanisms by which genetic variation impacts drug metabolism and transport. Also, describe how this may impact clinical response and outcomes.
3. Describe the methodology used for standard genotyping assays
4. Discuss the evolving role of pharmacogenomics in drug discovery and development

Course Structure

1. This is primarily a lecture-based course wherein lectures will be pre-recorded each week and made available for viewing and listening by all students enrolled in the course.
2. Discussion board assignments and activities will occur on most weeks during the lecture portion of the course duration of the semester for the purpose of reviewing and applying course concepts.
3. Student Paper: Each student will independently research and write a term paper on a self-selected issue related to pharmacogenetics of drug metabolism or transport.
4. Student Presentations: Each student will independently develop a PowerPoint presentation based on the Student Paper, and deliver the presentation in one of the final sessions of the semester.
5. Reading Assignments: Supplemental reading assignments may be required to increase the comprehensiveness and clarity of course topics. These assignments are chosen in consideration of their concision and clarity. Material from required reading assignments will be material for exams. There may also be recommended supplemental reading assignments that will not be required for exams.

TEXT: There is no required text. The instructor will provide any required readings.

GRADING AND EXAMS: An exam will be given following completion of the lectures. The exam will be given as a take home exam and will account for 40% of the final grade. The assignments and participation in the discussion board and the paper and presentation will each account for 30% of the final grade.

ACCOMMODATIONS FOR STUDENTS WITH DISABILITIES: Students requesting classroom accommodation must first register with the Dean of Students Office. This office will provide documentation to the student who must then provide this documentation to the Instructor when requesting accommodation.

ACADEMIC HONESTY: As a result of completing the registration form at the University of Florida, every student has signed the following statement: "I understand that the University of Florida expects its students to be honest in all their academic work. I agree to adhere to this commitment to academic honesty and understand that my failure to comply with this commitment may result in disciplinary action up to and including expulsion from the University."

STUDENT PAPER AND PRESENTATION REQUIREMENTS

Topics: Students will write a paper and prepare a PowerPoint presentation on a self-chosen topic in pharmacogenetics/ pharmacogenomics (pre-approval of topic is required). Examples of topics include (but are not limited to):

- Effect of genetic variation on pharmacokinetics and pharmacodynamics
- Effect of genetic variation on drug therapy/toxicity
- Potential for clinical applications of pharmacogenetics
- Application of pharmacogenetics in drug discovery and development

If the topic is covered in lecture, then the material should be covered in more detail (typically more depth on a specific topic is preferable to a broad topic with shallow coverage).

Presentations: The presentations should be approximately 15 minutes long, with 5 additional minutes for discussion. Students must use PowerPoint. Please provide me with a paper or electronic copy of your presentation. Also, prepare a short (no more than 1 page) abstract, including title, your name, several key references and key figures/tables. Provide copies to other students on day of talk.

Deadlines: Topic selection -October 30 Talks will be scheduled during last 3 weeks of the semester (individual dates to be assigned).

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Course Schedule – Fall 2012

Week	Topic	Instructor
9/3	Introduction to Genetic Medicine 1 & 2	McDonough
9/10	Introduction to Pharmacogenetics	Frye
9/17	Applications of pharmacogenetics/ pharmacogenomics to drug discovery and development	Frye
9/24	Methods in Pharmacogenomics 1 & 2	Langaee
10/1	Pharmacogenetics of Drug Metabolism – 1	Frye
10/8	Pharmacogenetics of Drug Metabolism – 2	Frye
10/15	Pharmacogenetics of Drug Metabolism – 3	Frye
10/22	Pharmacogenetics of Drug Transporters	Zhu
10/29	Pharmacogenetics of Carboxylesterases	Zhu
11/5	Take-home exam (dates to be announced)	
11/12 to 12/5	Student presentations (schedule to be determined)	