

## ***PATH 822 Fall 2009***

### ***Detailed Course Description:***

This course is intended for graduate students, clinical fellows, and postdoctoral fellows who are engaged or interested in pre-clinical cancer research. It will provide students with an introduction in the fundamentals of molecular pathways involved in tumourigenesis and the challenges with existing cancer therapeutics, as a guide to development of better therapeutic approaches to treat cancer. It purposely is designed for both medical and basic science trainees, as both backgrounds are important for a firm grounding in the field.

The course will begin with an overview of the processes involved in new drug development, followed by molecular and signaling pathways that contribute to tumourigenesis. Challenges with current cancer therapeutics, including cancer pharmacology and drug resistance, and molecular approaches to profiling human cancers, as tools for both identifying biochemical and genetic abnormalities, and developing criteria for reliable prognostic tests will also be discussed. Rationale and strategies for identifying and delivering small and non-small molecule drugs, as well as novel targets, will be explored. Advances in imaging during preclinical testing and for the identification of responsive patients will be presented, along with insights into preclinical *in vitro*, and *in vivo* xenograft and transgenic models used for testing experimental drug efficacy and validation of candidate drug targets. Clinical drug development and clinical trial results will also be discussed. Molecular approaches to understanding the variability in tumour responses will be provided.

### ***Format:***

The course will be composed of a series of lectures and student discussion periods. The session leader will give an overview lecture for approximately 45 min. One or two papers (depending on the number of students presenting) plus a pertinent review will be assigned one week ahead of time for student presentations, as appropriate. Student presentations will be approximately 25 min long, and must include a brief background, statement of questions being asked, summary of conclusions and impact of the paper on the field. Students are expected to initiate discussion issues about the paper. The discussion of each paper will then be open to the rest of the class.

### ***Written Research Proposal:***

A written research proposal in the form of a CIHR or NCIC grant application will be submitted, addressing a question in one of the key areas of the course. The proposal should include a lay abstract, scientific summary, detailed experimental proposal (10 double spaced pages excluding references or figures), budget and references (including titles). The subject of the proposal should be discussed with, and approved, by one of the session leaders.

### ***Class participation:***

All students are required to read the papers before class, prepare questions and comments about the significance of the paper to be used as discussion points during class.

***Oral Research Proposal Defense:***

All students will be asked to orally defend their written research proposal before a panel of session leaders.

***Evaluation:***

Student presentation	30%
Written Research proposal	40%
Student participation	10%
Oral Defense of Research Proposal	20%