

## **PHC 7650 Minicourses**

The Department of Pharmacology is offering four mini-courses this winter. Each will be about four weeks long. The organizational meeting for these courses will be on January 10 in the Pharmacology library (6364 Scott) at 1 PM.

First Session: Jan 17 – Feb. 11

Second Session: Feb. 14 – March 11

Third Session: March 21 – April 15

### **Session 1**

#### **Epigenetics: Principles and Pharmacological Impact (cross listed with EHS)**

Xiangyi Lu, Douglas Ruden and Alice Hudder

Topics that will be covered are: Epigenetic principles and epigenetic phenomena as seen in daily life, laboratory methodology for epigenetic investigations, roles of epigenetics in development, non-coding RNA and epigenetic modifications, and dietary/pharmacological agents that lead to epigenetic changes. Grades will be assigned based on participation in class discussion and a short in-class exam that will be administered in the last hour of the course.

#### **Fluorescence Techniques: theory and practice**

David Kessel and Kamiar Moin

Fluorescence detection is one of the major techniques used in biological studies. This course is designed to provide a background in the proper use of fluorescence. The first portion covers the physics of fluorescence, pointing out assorted problems that can arise if the proper procedures are not followed. The mechanism of current fluorescence techniques will be discussed. During the second portion of the course, students will be instructed in the use of assorted fluorescence microscopy systems in the Imaging Center.

### **Session 2**

#### **Redox Regulation of Cell Signaling (cross listed with EHS)**

Ye-Shih Ho

Reactive oxygen species (ROS) are known to participate in the pathogenesis of many human diseases. However, a growing body of evidence has shown that

ROS are also involved in the control of signaling and gene regulation in cells under normal physiological conditions. This mini-course will discuss the cellular and molecular mechanisms by which ROS modulate cell physiology.

### **Methods in Cancer Research**

Julie Boerner and Karin List

The goal of this minicourse is to introduce the students to common techniques used in the field of cancer research. This course will apply to pharmacology as techniques that will be used to test pharmaceutical agents for efficacy in cancer cells will be the focus of the material presented. We will cover the principles behind the techniques as well as the methodology. Both in vitro and in vivo methods will be covered.

### **Session 3**

#### **DNA Damage Response and Human Diseases (cross listed with EHS)**

Gan Wang

This minicourse will explore recent research progress in DNA repair and the role of DNA repair deficiency in human disease development. Individual DNA repair pathways, DNA damage-mediated cell cycle checkpoint regulation, and the consequences of DNA repair defects will be discussed. The minicourse will consist of eight sessions, with each session consisting of an introductory lecture followed by the discussion of a specific assigned paper.

#### **The Role of Rab proteins in Disease and Cancer**

Ellen Tisdale

The dysregulation of Rab proteins and their associated regulatory proteins and effectors has been implicated in multiple human diseases including cancer. A better understanding of the molecular basis that underlies all of these diseases will lead to possible therapeutic intervention and better treatments. For this mini course, students are expected to directly participate in presenting and critiquing journal articles relevant to the topic. There will be no exam and the grade will be based on their presentation and participation in oral discussion of each article. A minimum enrollment of 4 students is required in order to have a critical mass for discussion.

