

ADVANCED CELL AND MOLECULAR BIOLOGY – INTD5007

SPRING 2011

**Module 1 Advanced Cell and Molecular Biology: Cell Signaling, INTD6007**

**Module 2 Advanced Cell and Molecular Biology: Mitochondria and Apoptosis, INTD6008**

**Module 3 Advanced Cell and Molecular Biology: Cell Cycle and DNA Damage Responses, INTD6009**

**Tentative lecture room: AAB 108/110/112, WITH THE EXCEPTION OF one day, Tuesday, **March 1**, where class will be held in 409L.**

Week	Day	Date	Topic	Instructor	Module
1	Tues	1/11/11	Hedgehog signaling	LuZhe Sun	1
	Thur	1/13/11	Pro-inflammatory response through inflammasome complex	Santanu Bose	1
2	Tues	1/18/11	Pro-inflammatory response through inflammasome complex	Santanu Bose	1
	Thur	1/20/11	Adipokine signaling and action	Feng Liu	1
3	Tues	1/25/11	Adipokine signaling and action	Feng Liu	1
	Thur	1/27/11	RNA processing	Luiz Penalva	1
4	Tues	2/1/11	Hormone-dependent gene regulation	Ratna Vadlamudi	1
	Thur	2/3/11	p53 and transcriptional regulation	Sudhakar Ammanamanchi	1
5	Tues	2/8/11	Signaling to the Transcription Elongation Machinery	Rong Li	1
	Thur	2/10/11	transcription regulation in cancer	Rita Ghosh	1
6	Tues	2/15/11	Signaling crosstalk of TGF $\beta$ and BMPs and their functional impact	Nandini Ghosh	1
	Thur	2/17/11	Mitochondria and Respiration	Yidong Bai/James Lechleiter	2
7	Tues	2/22/11	Mitochondria and Respiration	Yidong Bai/James Lechleiter	2
	Thur	2/24/11	Mitochondria and ROS	Holly van Remmen/James Lechleiter	2
8	Tues	3/1/11	Mitochondria and ROS	Holly van Remmen/James Lechleiter	2
	Thur	3/3/11	Mitochondria and apoptosis	Pothana Saikumar/James Lechleiter	2
9	Tues	3/8/11	Mitochondria and apoptosis	Pothana Saikumar/James Lechleiter	2
	Thur	3/10/11	Mitochondria and apoptosis	Pothana Saikumar/James Lechleiter	2
10	Tues	3/15/11	Spring Break		2
	Thur	3/17/11	Spring Break		2
11	Tues	3/22/11	Mitochondrial biogenesis	Walter Ward/James Lechleiter	2
	Thur	3/24/11	Mitochondrial biogenesis	Walter Ward/James Lechleiter	2
12	Tues	3/29/11	Mitochondria and Ca <sup>2+</sup> signaling	Greg Macleod/James Lechleiter	2

	Thur	3/31/11	Mitochondria and Ca <sup>2+</sup> signaling	Greg Macleod/James Lechleiter	2
<b>13</b>	Tues	4/5/11	Module overview Cell Cycle-Overview	P. Renee Yew	3
	Thur	4/7/11	Cell Cycle-Paper and Discussion	P. Renee Yew	3
<b>14</b>	Tues	4/12/11	Cell Cycle-Presentations and Discussion	P. Renee Yew	3
	Thur	4/14/11	Tumor Virology-Overview	Shou-Jiang Gao	3
<b>15</b>	Tues	4/19/11	Tumor Virology-Paper and Presentations	Shou-Jiang Gao	3
	Thur	4/21/11	DNA damage responses-Overview	Alex Bishop	3
<b>16</b>	Tues	4/26/11	DNA damage responses-Paper and Presentations	Alex Bishop	3
	Thur	4/28/11	c-Abl tyrosine kinase and stress response-Overview	Zhi-Min Yuan	3
<b>17</b>	Tues	5/3/11	c-Abl tyrosine kinase and stress response-Paper and Presentations	Zhi-Min Yuan	3
	Thur	5/5/11	Ubiquitylation-Overview	Hai Rao	3
<b>18</b>	Tues	5/10/11	Ubiquitylation-Paper and Presentations	Hai Rao	3

### **INTD 6007: Advanced Cell and Molecular Biology: Cell Signaling**

This is a 6-week course that represents one-third of the current course INTD 5007 Advanced Cell and Molecular Biology. This module will focus in depth on Cell Signaling. The lectures will cover signal transduction of various cytokines and growth factors via cell surface receptors and steroid hormone signaling to the nucleus. The emphasis will be on the molecular mechanisms of signaling in the regulation of cellular function. The overall format of the course is planned to be the same as INTD5007 Advanced Cell and Molecular Biology. This advanced course provides a unique learning experience that prepares the student to evaluate and design new research in the cutting-edge areas of modern cell biology and molecular biology. Instead of a didactic program of lectures, the entire course comprises a small-group format in which students interact closely with a group of faculty who have active research programs. In each module, faculty first provide students with a brief overview of the research area. Students and faculty will then jointly discuss key publications that serve to bridge the gap between the student's prior understanding of the field and the state of the art in that area.

Course Director: Peter Hornsby

Module Co-Directors: LuZhe Sun and Rong Li

### **INTD 6008: Advanced Cell and Molecular Biology: Mitochondria and Apoptosis**

This is a 6 week course that represents one-third of the current course INTD 5007 Advanced Cell and Molecular Biology. This module will focus in depth on Mitochondria and Apoptosis. Topics will include: Mitochondria and Respiration; Mitochondria and Reactive Oxygen Species; Mitochondria and apoptosis. The overall format of the course is planned to be the same as INTD 5007 Advanced Cell and Molecular Biology. This Graduate School advanced course provides a unique learning experience that prepares the student to evaluate and design new research in the cutting-edge areas of modern cell biology and molecular biology. Instead of a didactic program of lectures, the entire course comprises a small group format in which students interact closely with a group of faculty who have active research programs. In each module, faculty

first provide students with a brief overview of the research area. Students and faculty will then jointly discuss key publications that serve to bridge the gap between the student's prior understanding of the field and the state of the art in that area.

Course Director: Peter Hornsby  
Module Director: James Lechleiter

### **INTD 6009: Advanced Cell and Molecular Biology: Cell Cycle and DNA Damage Responses**

This is a 6 week course that represents one-third of the current course of INTD 5007 Advanced Cell and Molecular Biology. This module is focused on the Cell Cycle and DNA Damage Responses. Topics will include: Cell cycle regulation, checkpoint control, and responses to DNA damage. The overall format of the course is planned to be the same as INTD 5007 Advanced Cell and Molecular Biology. This advanced course provides a unique learning experience that prepares the student to evaluate and design new research in the cutting-edge areas of modern cell biology and molecular biology. Instead of a didactic program of lectures, the entire course comprises a small-group format in which students interact closely with a group of faculty who have active research programs. In each module, faculty first provide students with a brief overview of the research area. Students and faculty will then jointly discuss key publications that serve to bridge the gap between the student's prior understanding of the field and the state of the art in that area.

Course Director: Peter Hornsby  
Module Director: P. Renee Yew  
Module Co-Director: Alexander Bishop

#### **Grading Criteria:**

Participation in discussion (40%)	Clear presentation of assigned paper (20%)	Draw correct conclusions (10%)	Answered questions (10%)	Written assignment (20%)
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