BIOC 751 - Advanced Topics in Molecular and Cell Biology:

Elective Module

Syllabus for Spring 2019

Course Coordinator: David Smith, Ph.D.
Office Phone#: 293-9521
Office: HSC-N 3130F
Email: dmsmith@hsc.wvu.edu

When: Monday/Wednesday/Friday – 03:00 – 04:00 p.m.
Where: 3050 HSC-N

Date	Topic	Textbook	Faculty
Jan 7, 9, 11, 14, 16, 19, (21-Holiday), **23-exam**	**General Principles of Molecular Machines:** 1) Building Blocks of Molecular Machines 2) Macromolecular Assembly 3) Realities of a molecular environment 4) How machines actually do work. 5) Single molecule techniques used to investigate molecular machines 6) Examples: Protein Translocases used in protein degradation.	Alberts: P158,159 P161-164 P357-362 p513,514 MAM: ch1(1.3,-1.7, 1.9) ch7(all)	David Smith
Jan 25, 28, 30, Feb 1, 4, 6, **8-quiz**	**Molecular Machines:** 1. Cilium and Flagellum 2. Microbial Rhodopsins 3. Heat Shock Proteins	MAM: 14.11 Alberts: 10 MAM: 6.3 MAM:10.7	Max Sokolov
Feb 11, 13, 15, 18, 20, 22 **25-quiz**	**Transport machinery in cells:** 1. Transport vesicles: formation, budding and fusion 2. Nuclear transport 3. Bacterial invasion	MAM: CH 10	Andrey Bobko
Feb 27, March 1, 4, 6, 8, (*Spring break March 11, 13, 15*) 18,**20-quiz**	**Post-translational modification (PTM) mechanisms:** 1. Function, recognition, and mechanisms of PTM of proteins (phosphorylation, acetylation, methylation, ribosylation, ubiquitin & ubiquitin-like conjugation) 2. PTM's of Histones and DNA and roles in epigenetics 3. Role of PTM's in the regulation of repetitive/transposable elements (TEs) in the human genome	Alberts: 4 & 15 MAM: 2 & 12	Alexey Ivanov
Mar 21-22	***NO CLASS Van Liere Research Days***	-	-
Mar 25, 27, 29, Apr 1, 3, 5, **8-quiz**	**Molecular Machines:** 1. Transporters (structure and function) 2. Techniques to study transporters 3. Mitochondrial transporters and metabolism	MAM: 10,15,16 Alberts: 11, 13, 14	Jianhai Du
Apr 10, 12, 15, 17, (19-Holiday), 22, 24, **26-quiz**	**Molecular Machines:** 1. DNA Recombinases (MAM 4.5) 2. CRISPR/Cas9 Nucleases (review articles) 3. DNA Base Editing (MAM 4.1-4.3 & a review later)	MAM: 4.5 & 4.1-4.3	Pete Mathers
April 29	**Optional Make-up Exam**	-	-
May 29	**Course/faculty evaluation by students is due**	SOLE	-
May 6th	**Final grades released**	SOLE	-