Syllabus: GCB/CAMB 752 Seminar in Genomics

Spring 2019
Monday 3 PM to 6 PM
Location: BRB 252
Prerequisite: GCB 531/534 Intro to Genomics or equivalent, or permission of instructor.

Course Director:
Sharon J. Diskin, PhD
3026 Colket Translational Research Building (CTRB)
diskin@email.chop.edu

Grading:

Writing Assignment: 50%
Paper Presentations: 25%
Class Participation: 25%

Class Format:
The class will meet once a week for a (maximum) 3-hour period. Each session will include an introduction by an instructor who is an expert in the field followed by two student presentations centered on current or seminal papers. The presenting student will give a brief introduction to the paper and will share Powerpoint slides of the data in the paper as well.

All students are expected to have read and to be prepared to discuss the papers presented. For example, following the introduction, non-presenting students will be called upon to explain a particular table or figure, or to discuss a point raised in the paper.

The course will be divided into two major segments:

Segment 1: Core 'omics (weeks 1-9)
Segment 2: Genomics and Genetic Models of Complex Diseases (weeks 10-16)

During the first half of the course, recent papers from the primary genomics literature will form the core material for the course. During the second half, we will focus on human disease genomics and model organisms used to study these diseases. Current literature pertaining to genomics and disease models for three complex human diseases will be discussed. Each disease will be discussed for two classes. At the beginning of the first class, an instructor will present an overview of the disease (e.g. symptoms, incidence rate, diagnosis, prognosis, and known/unknown aspects of what causes the disease), this will be followed by presentations of two recent genomics papers in the disease area. The second class will include discussion of two papers focused on genetic disease models and model organisms.

Class Participation: Students not presenting must actively participate in paper discussions; class participation will account for 25% of the grade.

Writing Assignment:
There will be one major writing assignment in the format of a Review Article or News and Views. Early in the course, students will propose a topic and set of recent papers on a particular area of genomics. They will be asked to write a review article synthesizing the key ideas in the papers and explaining their significance. Proposed topics will be due on February 4th. Proposed topics will be reviewed and approved by the course Director. Additional details will be provided in class. **NOTE**: It is highly recommended that BGS students preparing for the preliminary exam utilize this as an opportunity to review the literature pertinent to their exam proposal topic.

Week	Date	Instructor	Topic for Paper Presentations
1	Jan 16	Sharon Diskin	Introduction; brief organizational meeting.
2	**Jan 21**	**NO CLASS**	**MLK Day**
3	Jan 28	Sharon Diskin	Genomics (General)
4	Feb 4	Roberto Bonasio	Epigenomics *Writing Topic Proposals Due*
5	Feb 11	Yoseph Barash Pablo Camara	Transcriptomics - RNA Binding and Single Cell RNA Sequencing (scRNA-Seq)
6	Feb 18	Rick Bushman	Microbiome
7	Feb 25	John Murray	Model Organisms – scRNA-Seq
8	**Mar 4**	**NO CLASS**	**SPRING BREAK**
9	Mar 11	Benjamin Garcia	Proteomics and Posttranslational Modification
10	Mar 18	Kristopher Bosse Sharon Diskin	Cancer Genomics *Midterm Writing Assignments Due*
11	Mar 25	Kristopher Bosse Sharon Diskin	Cancer Models
12	Apr 1	Maja Bucan Tom Jongens	Neurodevelopmental Disorder Genomics
13	Apr 8	Tom Bucan Maja Bucan	Neurodevelopmental Disorder Models
14	Apr 15	Maja Bucan Tom Jongens	Disease Genomics (TBD)
15	Apr 22	Tom Bucan Maja Bucan	Disease Models (TBD)
16	Apr 29	Sharon Diskin	Wrap up *Review of Prelim Proposals for those taking prelim

* Participation is optional

GCB/CAMB 752 Writing Assignment

You will write a Review Article on the topic of your choice.

First, identify your topic and select a set of papers under a common theme.

Your task is to read the papers and any other supporting literature as needed, develop a view of the topic and then analyze the papers from that viewpoint (or summarize what is known and suggest one or more areas where more work is needed). What direction(s) do you think the field may take in the future?

Your topic can be related to your research area (as long as it pertains to genomics), but you are expected to work independently to develop your own viewpoint and summary. You should address your review to a broad scientific audience, not just those with subject expertise.

A good template for your review can be found in the journal BioEssays* under the section "Review Articles". These papers illustrate a representative model for your paper to follow. BioEssays also has articles under the sections "Problems and paradigms", and "Hypothesis". These articles contain more speculative ideas and analysis of key problems in an emerging area. It is a bit more challenging to write articles of this type but I would gladly accept your following these two styles as well.

Deliverables: (Please email diskin@email.chop.edu).

Monday, Feb 4. Topic Proposal due. This should include a proposed title, brief summary of the topic area and why selected (limit 1 page) and a set of papers that you will use as the primary starting point for the review.

Monday, March 18. Review article due. Please submit (email) a double-spaced, 11 pt, Arial, 10-15 page document before class (before 3pm). Figures or tables, if used, should be placed at the end of the document and do not count toward the page limit.

*examples are also available in Box.