

SYLLABUS

CAMB 534 Spring 2010

Seminar on Current Genetic Research: *Modeling Human Disease in Diverse Genetic Systems.*

Instructors: Aaron Gitler, Todd Lamitina, Tom Jongens, Doug Epstein, Zhaolan (Joe) Zhou, David Raizen, Michael Pack, Sara Cherry

In the last decade it has become clear that many of the genes responsible for human diseases have orthologues in the genomes of a wide range of species. In this same period it has also become clear that the functions of genes are highly conserved across evolution. These facts have lead scientists to take advantage of the experimental prowess of organisms, such as the mouse, zebrafish, *Drosophila*, *C. elegans*, and yeast, to model human disease and to study human disease genes. In this course we will focus on examples of human disease gene models and examine how these genetic model systems can be used to learn more about how and why a disease occurs and how it might be better diagnosed or treated. The course will meet once a week for 1.5-2.0 hours. Prior to each class, the student discussion leader for the week is expected to meet at least once with the assigned faculty preceptor to discuss their presentation. An organizational meeting will take place Wednesday January 13th at 2pm in room 1101 BRB II/III. The course will meet on Wednesdays from 2-4 pm in 1101 BRB II/III.

During each class, the presenting student will give an introduction on the particular disease being discussed that week. This introduction usually contains some basic information about the disease, e.g. symptoms, incidence rate, diagnosis and prognosis as well as the known and unknown aspects of what causes the disease. The scope of information to be included in the introduction will be determined in meetings with the assigned preceptor for the week. Once the introduction is complete, the entire class will participate in discussing the assigned papers on the disease topic. This is done best by taking turns presenting individual figures from the assigned papers. The presenting student will guide the discussion during the presentation of the data and will also provide a wrap-up discussion that should include potential future directions. Following each class, the course director and/or faculty preceptor will meet with the presenting student to provide immediate feedback on their presentation and suggest areas for improvement. In addition to the presentation of a disease topic and participation in the course during each class, as a final assignment, pairs of students will be asked to write a "News and Views" type article on a recent or in-press article related to human disease modeling. As an optional bonus, these short preview articles can be revised under the supervision of the course directors and then submitted for publication to an appropriate journal, such as *Disease Models and Mechanisms* or the *Journal of Neuroscience*. Specific guidelines for this assignment will be provided during the semester and examples of preview articles published by previous students will be posted on the Blackboard website.

Instructors email addresses/phone number/offices:

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- Class 1:** Wed Jan 13 2010 2:00PM-4:00PM 1101 BRB II/III
Class Orientation/Selection of Topics by Students (**A. Gitler / T. Lamitina**)
- Class 2:** Wed Jan 20 2010 2:00PM-4:00PM 1101 BRB II/III
Parkinson's Disease (**A. Gitler**)
- Class 3:** Wed Jan 27 2010 2:00PM-4:00PM 1101 BRB II/III
Polyglutamine Diseases (**T. Lamitina**)
- Class 4:** Wed Feb 3 2010 2:00PM-4:00PM 1101 BRB II/III
Cystic Fibrosis (**T. Lamitina**)
- Class 5:** Wed Feb 10 2010 2:00PM-4:00PM 1101 BRB II/III
Fragile X (**T. Jongens**)
- Class 6:** Wed Feb 17 2010 2:00PM-4:00PM 1101 BRB II/III
Rett Syndrome (**Z. Zhou**)
- Class 7:** Wed Feb 24 2010 2:00PM-4:00PM 1101 BRB II/III
Deafness (**D. Epstein**)
- Class 8:** Wed Mar 3 2010 2:00PM-4:00PM 1101 BRB II/III
Type 1 Neurofibromatosis (NF1) (**A. Gitler**)
- Class 9:** Wed Mar 10 2010 2:00PM-4:00PM 1101 BRB II/III
**** *No Class* *** *Spring Break* ****
- Class 10:** Wed Mar 17 2010 2:00PM-4:00PM 1101 BRB II/III
Host / pathogen interactions (**S. Cherry**)
- Class 11:** Wed Mar 24 2010 2:00PM-4:00PM 1101 BRB II/III
Muscular Dystrophy (**T. Lamitina**)
- Class 12:** Wed Mar 31 2010 2:00PM-4:00PM 1101 BRB II/III

Sleep Disorders (**David Raizen**)

Class 13: Wed April 7 2010 2:00PM-4:00PM 1101 BRB II/III
Amyotrophic Lateral Sclerosis (ALS) (**A. Gitler**)

Class 14: Wed April 14 2010 2:00PM-4:00PM 1101 BRB II/III
DiGeorge Syndrome (**A. Gitler**)

Class 15: Wed Apr 21 2010 2:00PM-4:00PM 1101 BRB II/III
Digestive Diseases / Diabetes (**M. Pack**)