

MOLECULAR ENTOMOLOGY ENTO 8570

Fall Semester 2016

The course is designed to provide an in depth understanding of current research on fundamental questions in insect molecular biology. In the first week of classes, we will meet to determine a suitable time to meet once a week for two hours. Each weekly class will have two components – each lasting for an hour.

Introduction of a paper and relevant molecular techniques: Each student, guided by a faculty member, will select a current research paper on an important topic that has employed state-of-the art molecular techniques. The student will first present a talk covering previous relevant studies to set the work in perspective and explain the methodology used. At the end of the presentation the selected paper will be distributed to the class along with a set of questions to guide the reading.

Discussion of a paper: The following week, the same student who presented the background lecture will lead the class in an in depth discussion of the paper. Emphasis will be placed on understanding and critiquing all of the figures, and learning how the results have advanced the field, i.e. both the nitty-gritty details and the big picture. Strategies will be instituted to assure that everyone in the class participates in these discussions.

There will also be instruction and opportunities to use websites that are relevant to the material we discuss.

One or more of the papers may coincide with topics covered by guest speakers in seminars offered this fall by Entomology and other life science departments. Students will be expected to attend the seminars related to Molecular Entomology. We will devote some time during our weekly meeting to a discussion of each seminar.

Grading in this course will be based on the student's participation. Each student will be expected to present a background lecture, lead the discussion of a paper and participate fully in each discussion.

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Suggested Topics/Papers with New Molecular Techniques
14 meetings

Next-generation nucleotide sequencing

RNA interference

Phylogenetics

Role of gut microbiota

New perspectives:

- Insect development

- Chemoreception

- Engineered mosquitoes and microorganisms: Oxitech, Wolbachia, and bacteria

- Immunology

- Hormone regulation and signaling