

Molecular Genetics 711 - Winter Quarter 2004

Tentative Syllabus

Instructor: Paul Fuerst - Room 386 Aronoff Laboratory
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Time: 3:30 - 5:18 - room 104Aronoff Laboratory

Textbook:
Fundamentals of Molecular Evolution (2nd edition);
Dan Graur & Wen-Hsiung Li, Sinauer Press 1999

The following criteria will be used to assign grades:

1) Problem sets: There will be a problem set assigned each week.

The overall worth of a particular problem set will depend on the chapter being considered. Each problem set will be worth approximately 5-10% of the grade. All answers will be submitted by email attachment to me at my email address (further information will be provided with each problem set).

Students are expected to work predominantly independently on their problem sets. They can consult with one another and with Dr. Fuerst to clarify points or to obtain help with techniques.

Problem sets will have a due date. Problems handed in one session late will receive a 10% penalty (unless permission is obtained before the due date). Problems handed in more than one session late will receive a 30% penalty.

2) Final Examination: a set of questions on various topics in molecular evolution will be assigned about two weeks before final exam week, which will constitute a take-home final worth approximately 15% of the final grade.

Lecture notes will usually be posted on the day before lecture on the Fuerst web site:
<http://www.biosci.ohio-state.edu/%7Epfuerst/courses/index.html>

Tentative topic order: (will certainly change during the quarter).

- Week 1 - Dynamics of Genes in Populations
 - Evolutionary Change in Nucleotide Sequences
- Week 2 - Handling Data
 - data bases, alignment, data formats, programs
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- Week 4 - Rates and Patterns of Nucleotide Substitution
- Week 5 -Molecular Phylogenetics
- Weeks 6 - Molecular Phylogenetics
- Week 7 - Gene duplication
- Week 8 -sequences motifs
 - DNA and proteomics
- Week 9 - Genome Organization
- Week 10 - special topics

Special topics are not yet decided, but could include:

- variation within species
- positive adaptive sequence change
- identifying function
- molecular vs morphological evolution (“regulatory evolution”)
- ribosomal RNA genes