# IB 404 - Comparative Genomics of Eukaryotes

Instructor - Hugh Robertson (Entomology, CDB, and IGB)

Spring 2008; MW; 1:00 PM; two hours; 0.5 units

Prerequisites: MCB 150; IB 204 or MCB 250; or consent of instructor
IB 302 and MBC 405 recommended

## Wondering what all the buzz is about genomics? Want to explore the diversity of genomes among the eukaryotes? Here's one way to get your feet wet.

The past ten years have seen the completion of genome sequences for the major model eukaryotes, including *Saccharomyces cerevisiae*, *Caenorhabditis elegans*, *Drosophila melanogaster*, *Arabidopsis thaliana*, *Mus musculus*, and *Homo sapiens*. These remarkable achievements opened the way to comparison of genomes across kingdoms and animal phyla. Genome sequences are also available for several protists, e.g. the malaria *Falciparum* parasite, *Dictyostelium*, *Giardia*, and two ciliates, additional animal phyla, e.g. a sea squirt, a sea urchin, and a flatworm, and additional plants, e.g. rice and poplar. Meanwhile closer comparisons are being made with the sequencing of multiple genomes from vertebrates, insects, and many fungi, and even multiple closely-related yeast, nematode, and Drosophila genomes. Comparisons at all levels from cross-kingdom to congeneric provide insights into genome organization, gene structure and regulation, and evolution of all aspects of genes and genomes barely possible before the advent of genomics, and on a scale almost unimaginable a decade ago. We will cover the model eukaryotic genomes, followed by comparative studies across all these scales of organismal diversity.

This course was first offered as an experimental IB396 course in Spring 2004, and will next be offered in Spring 2010. It is designed for upper level SIB and MCB undergraduates and interested graduate students.