



Evolutionary Genetics and Genomics

There are three major research topics in my lab. (1) Origin of new genes with novel functions. We are using the vertebrate RNase A gene superfamily as a model system to study how and why functional divergence occurred after gene duplication. We test various evolutionary models by statistical analysis of DNA sequences, site-directed mutagenesis, and functional assay of recombinant proteins. (2) Genetic basis of primate diversity and human origins. We use bioinformatic as well as experimental approaches to identify human-specific genetic changes that are of fundamental importance to the origin of our species. We are also studying the evolution of sensory genes (pheromone and taste receptors) in primates and other mammals. (3) Genomic features of molecular evolution. We use available genome sequences and functional genomic data to test hypotheses on duplicate gene evolution, natural selection, gene expression, etc. I also encourage students and postdoctoral fellows to develop their own projects in the general area of evolutionary genetics and genomics.

