

Nicole Leahy, Postdoctoral Candidate
Department of Epidemiology and Preventive Medicine, University of Maryland

Title: Applications of genetic algorithms and graph theory to genomic problems.

Date: Tuesday, January 30

Time: 2:00 EST

Location: Clark Hall 110

Abstract:

In the genomic era, a challenge is predicting the effect of single nucleotide polymorphisms (SNPs) without extensive wetlab testing of each new variant. The computational methods are applied to this problem to avoid expensive and time consuming wetlab experiments. Evolutionary algorithms and graph theory are sources of such methods. An evolutionary algorithm (EA) attempts to find a workable solution by successive rounds of testing and “breeding” of a population of solutions. The choice of representation of a solution depends on the nature of the problem under study. Logical trees and lookup tables provide possible representations which lend themselves to EA. Graph theory can be used to map out an evolutionary “space” which may lead to insights about patterns of deleterious mutations.