THE MATHEMATICS DEPARTMENT PRESENTS

A MATHEMATICS COLLOQUIUM

THURSDAY, March 5th, 2009
BOND HALL 217
4:00 pm

Title: **Estimating Pairwise Relatedness in Structured Populations**

Speaker: **Jennifer Angelosante**, Western Washington University

Abstract:

The degree of genetic relatedness between two individuals can be described using a set of three parameters that indicated the probability that, at a random chromosomal location, the pair will share 0, 1, or 2 pairs of genetic variants (alleles) identical by descent from a common ancestor. The estimation of these parameters has a variety of applications including forensics, human disease mapping, and plant/animal breeding. In order to understand these parameters, the presentation will provide an introduction to population statistics, as well as provide a comparison of models which estimate them. Previous studies have developed relatedness estimators for populations with known allele frequencies, as well as for subpopulations which have diverged genetically from populations with known allele frequencies, assuming the degree of divergence is known. Using Bayesian statistics and a Monte Carlo sampling technique, we have developed new estimators that consider the degree of divergence to be an unknown parameter to be jointly estimated with the relatedness parameters. This talk is intended to be accessible to everyone, although some knowledge of probability and statistics will be helpful.

Refreshments will precede the talk at 3:30pm in Bond Hall 300
courtesy of Dr. Amy Anderson