

Department of Anthropology
COLLEGE OF Arts and Sciences

**SUMMER RESEARCH OPPORTUNITIES
FOR UNDERGRADUATE WOMEN**

APPLICATION DEADLINE: March 1, 2011

The Department of Anthropology is pleased to offer the following research project for the summer of 2011. Interested students are urged to contact the faculty member(s) directing the project that most interests them. By contacting the faculty member, you can discover more about the project, learn what your responsibilities will be and, if possible, develop a timetable for the twelve-week research period.

PROJECT TITLE: Evolutionary history of malaria resistance haplotypes in Island Melanesia

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Project Description

Malaria is one of the strongest selective pressures affecting human populations today. Given the enormous fitness cost associated with malaria it is not surprising that multiple genetic mutations associated with resistance to infection have evolved in different populations and spread via natural selection. Populations in Island Melanesia harbor multiple mutations that confer resistance, many of which show a highly localized distribution. However, the evolutionary history of these mutations within Melanesia and their relationship to those observed elsewhere has not been well established. For example, it is unclear whether these resistance mutations all share a common origin or if instead they arose multiple times via convergent evolution within and outside of the region. Our limited understanding of these relationships stems from the fact that previous studies have focused on simply assaying for the presence or absence of a mutation without examining it within the broader context of the DNA sequence that surrounds it (the haplotype).

The goal of this summer project is to survey DNA sequence variation in and around multiple malaria-resistance loci in a sample of Island Melanesian individuals as well as from control samples from neighboring regions. Students interested in this project can expect to gain experience in basic laboratory methods of molecular anthropology (including primer design, DNA amplification, and gel electrophoresis) as well as bioinformatics/computational analyses of DNA sequence haplotypes.