



Iron Status: A Pathway Analysis in Multiple Ethnicities Conference

May 29, 2008

*Hyatt Regency Newport Beach
University of California, Irvine*

Chair: [Dr. Christine McLaren](#)

This conference was organized to develop plans for a new research effort to benefit the public health. The study will provide new information about causes of [iron deficiency](#) due to genetic factors. Potential study results could be used to identify individuals at risk for iron deficiency and to develop innovative prevention and treatment strategies.

Specifically, the proposed research is intended to determine single nucleotide polymorphisms (SNPs) and haplotypes in key genes involved in systemic iron metabolism pathways, identify potential cases of iron deficiency and controls, and study the association between the presence of iron deficiency and haplotypes in the selected candidate genes. Iron deficiency is the most common disease in the world with an estimated 4-5 billion affected persons. We hypothesize that common variants and/or haplotypes in genes involved in iron metabolism will modulate the susceptibility or resistance to the development of iron deficiency in multiple ethnic groups. In the HEIRS Study, which is an NIH-funded study of 101,168 participants who were screened with serum biochemical tests of iron status and for common mutations of the HFE gene, approximately 50% of participants were of African, Asian, Hispanic, Native American, or Pacific Island heritage, and over 3,000 iron deficient individuals were identified. Through analysis of stored blood samples from selected HEIRS participants, we now propose to use a pathway approach to test for association between the presence of iron deficiency and haplotypes in selected candidate genes. The specific aims of the research are:

1. To identify and determine the allele frequency of common Single Nucleotide Polymorphisms (SNPs) and haplotypes in key genes involved in iron metabolism pathways in each of four ethnic groups represented in HEIRS participants.
2. To define a study group of cases of iron deficiency and controls from multi-ethnic cohort of participants screened through the HEIRS Study. We anticipate screening 923 cases and 1856 controls.
3. To study the association between the presence of iron deficiency and haplotypes in the selected candidate genes. DNA samples from the cases and controls will be genotyped for selected haplotype-tagging SNPs and statistical analyses will determine the most likely haplotypes associated with iron deficiency.