Principal Investigator: David Cohen

Institution Affiliation: Oregon

Ancillary Study Title: Polymorphisms in hyponatremia and hypernatremia in the Jackson Heart Study

Project Overview:

Systemic water balance is relevant to human health and may be perturbed by a subset of antihypertensive medications. Serum sodium concentration is the only widely used clinical index of systemic water balance; it is essentially unaffected by dietary sodium intake but – as the principal determinant of plasma osmolarity – it is tightly regulated by the hormone vasopressin via thirst (water intake) and urinary excretion of free water. We have shown that serum sodium concentration is heritable and that a non-synonymous polymorphism in a key water-regulatory gene is associated with abnormal water balance. Our **hypothesis** is that additional common polymorphisms in one or more water-regulatory genes will be similarly associated with aberrant water balance. We propose to test for association between common polymorphisms in these genes and serum sodium concentration in Jackson Heart Study enrollees. This analysis will be guided by our validated panel of exclusion criteria and by our novel transformation of serum sodium concentration such that it more accurately reflects water balance. We anticipate performing high-throughput genotyping of a total of approximately 200 SNPs (identified via the tagging function of HaploView) in six genes in all 4605 study subjects. Resultant data will enhance understanding of water balance in humans and will potentially help identify patients at increased risk for the development of dysnatremias, especially in response to medication usage.