Linking Genes and Salt-sensitivity

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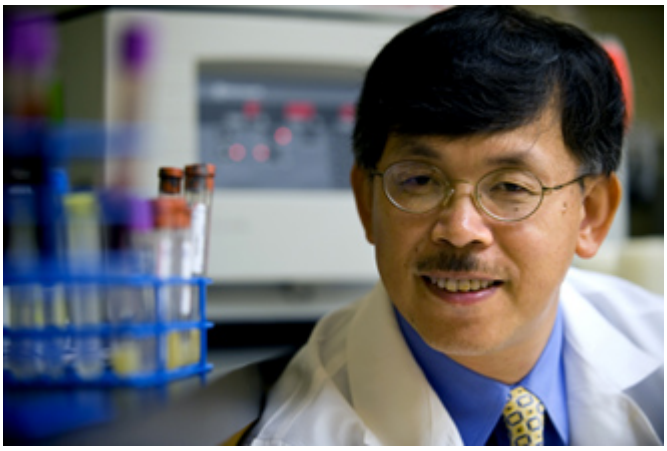
Tulane University has been awarded a $2.8 million grant from the National Heart, Lung and Blood Institute of the National Institutes of Health for a four-year study to determine the genetic basis for salt-sensitivity as a cause of high blood pressure.



Dr. Jiang He, chair of the Department of Epidemiology in the School of Public Health and Tropical Medicine, is leading a research team investigating the relationship between certain genetic variants and salt-sensitivity that may help physicians identify individuals at risk for high blood pressure. (Photo by Paula Burch-Celentano)

“This award will allow us to conduct the most cutting-edge, genome-wide association study to identify genetic variants associated with salt-sensitive high blood pressure,” says Dr. Jiang He, principal investigator of the study who holds the Joseph S. Copes, MD, Chair in Epidemiology. He also is chair of the Department of Epidemiology in the School of Public Health and Tropical Medicine.

The investigation will be based on samples and data collected during an earlier study by Tulane researchers. The Genetic Epidemiology Network of Salt-Sensitivity (GenSalt) involved 3,153 participants from 658 families living in rural areas of

northern China.

Participants were individuals who had been diagnosed as having untreated pre-hypertension or stage one hypertension.

At the beginning of the study, researchers recorded a wide variety of physiological, metabolic and biochemical information on each participant. The information was then tracked over a three-week dietary-intervention program that included a low-sodium diet during the first week, followed by one week on a high-sodium diet, and one week on a high-sodium diet with a potassium supplement.

In the new study, the DNA samples, records of blood pressure and other phenotype data collected from approximately 1,900 of the GenSalt study participants will be analyzed to discover associations between particular genes or genetic combinations and salt-induced high blood pressure.

Tulane researchers will make use of state-of-the-art genetic analysis technology to examine the participants' entire DNA genome, looking for associations between the small variants in the DNA that make each person unique and high blood pressure due to dietary sodium intake.

This study has important and wide-ranging public health and clinical implications, according to the researchers.

“Establishing a relationship between certain genetic variants and salt-sensitivity will help physicians identify individuals who are at high risk for hypertension and should receive a low-sodium dietary intervention,” says He. “In addition, identifying genes related to salt-sensitivity of blood pressure should enable the discovery of new drugs to treat hypertension. Advances in this area could significantly enhance the effectiveness of clinical patient care and enable the population-wide prevention of hypertension.”