Science

QT interval and sudden cardiac death

Sudden cardiac death (SCD) is a common cardiovascular disease that claims 300,000 lives annually in the US and has been shown to be influenced by genetic factors. Prolongation of the electrocardiographic QT interval is a risk factor for sudden cardiac death in the general population and is a life-threatening complication of scores of medications, some of which have had to be pulled from the market. We have identified novel genes and DNA sequence variants that contribute to variability of the QT interval. We play leadership roles, along with close collaborators, in international consortia studying blood pressure, including QTGEN (Newton-Cheh et al, Nature Genetics 2009) and the QT Interval International Consortium of Genome-wide Association Studies—QT-IGC.

Blood pressure

Increasing blood pressure has a continuous and graded contribution to the population burden of stroke, heart failure myocardial infarction, and chronic kidney disease. Elevated blood pressure (hypertension) affects an estimated 1 billion people world-wide. Blood pressure (BP) is a complex trait with multiple environmental and genetic influences. Blood pressure is highly heritable, but to date the genetic causes of variation in blood pressure in the general population have been poorly defined. We have identified blood biomarkers and common genetic variants that contribute to blood pressure and hypertension. We have assumed leadership roles, along with several close collaborators, in international consortia studying blood pressure, including Global BPgen (Newton-Cheh et al, Nature Genetics 2009) and the International Consortium of Blood Pressure Genome-wide Association Studies—ICBP-GWAS).

Collaborations

To define the role of genetic variation in the general population requires the study of tens of thousands of individuals. We enjoy close collaborations with investigators in Boston, across the US and in Finland, Germany, the Netherlands, Sweden, and the United Kingdom.