

Principal Investigator

Associate Professor Pim van der Harst

Address

University Medical Center Groningen, Cardiology, Genetics, Hanzeplein 1,
Groningen, 9700RB, Netherlands

Summary of research

Key words: Heart Rate, GWAS, Multi-institutional 1000G

1a: Resting heart rate is associated with increased incidence of cardiovascular disease as well as with other cardiovascular all-cause mortality. The aim of this study is to explore new insights into the mechanisms regulating heart rate and identify new therapeutic targets.

1b: The purpose of UK Biobank is to build a major resource that can support a diverse range of research intended to improve the prevention, diagnosis and treatment of illness and the promotion of health throughout society. To gain more insight into the genetic regulation of heart rate, we are now performing a GWAS meta-analysis with imputation on the 1000G (March 2012) reference panel. The goal is to get fresh insights into the mechanisms regulating heart rate, its relevance for clinical outcomes, and identify new therapeutic targets.

1c: We will perform a genome-wide association study meta-analysis on the phenotype heart rate. We will combine GWAS data from different cohorts to find significant single nucleotide polymorphism (SNPS). From the loci

associated with heart rate we will then create a genetic predisposition score (GPS). Additionally we will test whether the meta-analysis identified loci show evidence of association with heart conditions registered via hospital in-patient data (including atrial fibrillation, conduction-related disorders, myocardial infarction and heart failure) and mortality via death-register. We will also test candidate genes in silico and in vitro follow-up.

1d: Major GWAS meta-analysis consortium, aimed at including >200,000 subjects from >100 sites.