Minster - Samoan Adiposity Study (Samoan)

Updated 01/4/2023

Introductory slides from the June 4, 2015 Steering Committee/EAP meeting (requires log-in). [1]

The parent Samoan Adiposity Study ("Samoan", formerly "SAS") is a population-based genome-wide association study (GWAS) of adiposity and cardiometabolic phenotypes among adults from the independent nation of Samoa in the South Pacific. The research goal of this study is to identify genetic variation that increases susceptibility to obesity and cardiometabolic phenotypes. Over 3,400 individuals ages 25-65 years were recruited in 2010 from 33 villages from all census regions of the nation, which is experiencing economic development and the nutrition transition. Eligibility was based on self-report of having four Samoan grandparents, not being pregnant, and not having severe physical impairment which would prohibit collection of anthropometric, biomarker and questionnaire measures, nor cognitive impairment which would not allow informed consent about the genetic purposes of the study. We collected overnight fasting blood samples and assayed glucose, insulin, leptin, adiponectin, total cholesterol, high-density and low-density lipoprotein cholesterol, and triglycerides. Anthropometric and bioelectrical impedance measurements provided measures of weight, height, body circumferences, skinfold thicknesses, BMI and other indices, as well as estimation of percent body fat and lean tissue. Questionnaires assessed socio-demographic characteristics, physical activity, dietary intake using food frequency questionnaires, medication use, history of prior diagnoses of type 2 diabetes, hypertension and cardiovascular disease, and alcohol and tobacco use. DNA was collected and the Affymetrix 6.0 chip used for SNP genotyping. After quality control checks on genotyping and excluding individuals with key missing data we have a final sample of 3,122 adults with high-quality genome-wide marker data.

Participation in the NHLBI TOPMed WGS project will enable us to more thoroughly investigate the genetic architecture of Samoan cardiometabolic conditions by establishing a Samoan-specific reference panel for imputation. Specifically, the NHLBI TOPMed WGS project will perform whole-genome sequencing in an optimally-selected subset of more than 400 individuals from our GWAS sample. After quality control work, we will use this Samoan reference panel to impute genotypes for the rest of our discovery sample. Using the imputed genotypes, we will carry out association analyses for each of our cardiometabolic traits, primarily using gene-based association tests.

Key individuals:

Ryan Minster, Principal Investigator, University of Pittsburgh

Email: rminster@pitt.edu [2]

Daniel E Weeks, University of Pittsburgh

Email: weeks@pitt.edu [3]

Ranjan Deka, University of Cincinnati

Email: dekar@ucmail.uc.edu [4]

Nicola Hawley, Yale University

Email: nicola.hawley@yale.edu [5]

Satupaitea Viali, Samoa Ministry of Health & National University of Samoa

Email: satu.viali@gmail.com [6]

Links
[1] https://topmed.nhlbi.nih.gov/system/files/meetings/mcgarvey_Samoa_Adiposity_Study_June4_2015_NHLBI_TOPMed_WGSmtg_McG_Weeks_v2.pdf [2] mailto:rminster@pitt.edu [3] mailto:weeks@pitt.edu [4] mailto:dekar@ucmail.uc.edu [5] mailto:nicola.hawley@yale.edu [6] mailto:satu.viali@gmail.com