

*Health and Retirement Study: Genetic
Data Consortia Collaboration*

Documentation Report

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Genomics consortia bring together investigators and studies around the world to conduct meta-analyses of genome-wide genomic data on a range of behaviors, diseases, and traits. This model vastly increases the value of the HRS genetic resource by leveraging the increased power from larger sample sizes and producing replicable findings across a variety of harmonized phenotypes. Genetic variants that are common in populations usually have small individual effects on complex traits like behavior. The consortia model minimizes the likelihood of false-positive results in this context because they are well-powered and can apply stringent significance thresholds.

In order to conduct this work, each study that is part of a given consortium runs a genome-wide association study (GWA study, or GWAS) on the selected phenotype in their own sample using an analytic plan developed in partnership with other consortium investigators. GWAS is an examination of a genome-wide set of genetic variants in different individuals to see if any particular variant is associated with a given trait. GWAS typically focus on associations between single-nucleotide polymorphisms (SNPs) and traits. The results from the separate studies are then pooled in a meta-GWA at the consortium level.

HRS participates in a large and growing number of genomic consortia, including:

- Cohorts for Health and Aging Research in Genetic Epidemiology (CHARGE)

- Social Science Genetics Association Consortium (SSGAC)

- Genetic Investigation of Anthropometric Traits (GIANT)

- Continental Origins and Genetic Epidemiology Network (COGENT)

- Global Lipids Genetics Consortium (GLCC)

- GWAS and Sequencing Consortium of Alcohol and Nicotine Use (GSCAN)

- Meta-Analyses of Glucose and Insulin-related traits Consortium (MAGIC)

- Reproductive Genetics Consortium (ReproGen)

- Runs of Homozygosity Genetics Consortium (ROHGen)

- Stroke Genetics Network (SiGN)

- Social Science Genetics Association Consortium (SSGAC)

The published results of these collaborations to date are listed below:

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For a complete list of consortia and publications resulting from these collaborations, see the HRS webpage: <https://hrs.isr.umich.edu/about/collaborations/genetic-data-consortia>. Several projects are in progress and will be added to this page upon publication.

For a more complete list of active consortia, see the WikiGenes catalog of GWAS consortia:

<http://www.wikigenes.org/e/art/e/185.html;jsessionid=0B9FD9E23354B7ACE2D9C3ED819F10A3.jvm2>