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First results from a multivariate GWAS on different measures of income among $\approx 756,000$ individuals

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ABSTRACT:

Poverty and economic deprivation are known to be major risk factors for mental and physical diseases as well as for lower life expectancy. Thus, a precise understanding of how income inequalities are related to health inequalities is of fundamental importance for science, social policy, and public health. In 2018, the Social Science Genetic Association Consortium (SSGAC) launched a genome-wide association study (GWAS) meta-analysis on income with the purpose to generate well-powered, publicly available GWAS summary statistics that will provide researchers from various disciplines with new ways to study the causes and consequences of inequalities in wealth and health. Thirty one cohorts from Europe, the US, and Australia joined the project and provided GWAS results on personal income, household income, occupational wages, or parental income from $\approx 756,000$ individuals of European ancestries. The SNP-based narrow-sense heritability of these income measures varies between 4 and 15 percent, partly driven by differences in measurement accuracy. After rigorous quality control, a multi-trait analysis of GWAS summary statistics (MTAG) of all four income measures identified 178 independent genetic loci. The genetic correlations of income across cohorts and between men and women are imperfect (< 1). Our results are consistent with the hypothesis that substantial differences in environmental conditions influence labor market outcomes. Furthermore, we find that income is genetically correlated with educational attainment (~ 0.9), cognitive performance (~ 0.6), and a broad variety of health outcomes across different body parts and organs.

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