



Genomics of Human Disease

Representative Case Study — Understanding the genetic etiology of mental disorders.

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Clinical and Market Need

Mental disorders are significantly heritable, common and across the lifespan make a disproportionate contribution to societal disease burden. Conditions like autism or schizophrenia are diagnosed based on clinical symptoms and the range of effective treatments is limited. Recent advances in genetics offer new approaches to understanding the biology involved to improve diagnostics and identify novel therapeutic approaches.

Partnership

Profs. Aiden Corvin & Michael Gill were founder members of the Psychiatric Genomics Consortium (PGC) and have worked with international academic partners to understand the genetic basis of these disorders.

Approach

Using methods based on genome-wide association study (GWAS) arrays we have identified common and rare genetic variants that contribute to schizophrenia risk in the Irish population. We have also made a substantial contribution to international efforts which have now identified more than 150 common risk loci for these conditions. Applying pathway-based analytic methods we have shown the important role of neuronal cell adhesion, membrane scaffolding and chromatin remodeling in schizophrenia, and possibly more widely in other disorders. We are currently leading an international family-based genome sequencing study funded by NIH/SFI and working with academic partners on other large-scale studies in schizophrenia and bipolar disorder. This experience and our recent successful SFI-Research Infrastructure award will be important in developing a flexible core facility to support genomics research across human diseases.



Collaborator/Funding Agencies