

Study reveals molecular networks of mental health disorders

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(Medical Xpress)—Early diagnosis and intervention disorders for ADHD, autism and schizophrenia could be made possible after Australian scientists discovered the molecular networks in the brain showing psychiatric and developmental disorders.

Scientists at The University of Queensland's (UQ) Queensland Brain Institute (QBI) said their discovery of the molecular networks of the disorders was a step up from existing behavioural testing used to diagnosis ADHD, autism, schizophrenia and X-linked intellectual disability - a mental retardation affecting men who have a single [X chromosome](#).

QBI's Associate Professor Charles Claudianos said the discovery would allow for a hypothetical 'gene network model' that could be used to analyse the many [candidate genes](#) and predict the association of genetic screening data with autism, ADHD and schizophrenia.

"For example, early diagnosis and clinical intervention will hopefully lead to better cognitive and psychosocial outcomes for an individual with autism, and associated benefits for family members and public health spending," Associate Professor Claudianos said.

He said many studies had identified candidate gene associations for these [mental health disorders](#), but previous studies had been conducted in a piecemeal fashion with little regard to the molecular complexity or genetic links between disorders.

"We undertook a global and systematic approach to build and integrate all the available genetic data linked to autism, X-linked [intellectual disability](#), ADHD and schizophrenia," he said.

"The discovery of a large gene network comprised of 4000 genes represents a significant advance in understanding the basis of mental health

"This gene network was successfully validated using cohort data from six recent disorder studies.

"Although our analysis show that the many genetic variations with the four disorders can affect the same [molecular pathways](#) and biological functions, including how nerve cells connect (synapses), there are patterns of variation that define significant differences between disorders."

Associate Professor Claudianos said this demonstrated that no two disorders were likely to be the same.

"Pinpointing the biological structure of an individual disorder will potentially allow for accurate application of therapeutic agents," he said.

The paper, "Molecular networks of mental health disorders," will be published in *Molecular Psychiatry* on Tuesday February 26, 2013.

Provided by University of Queensland

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