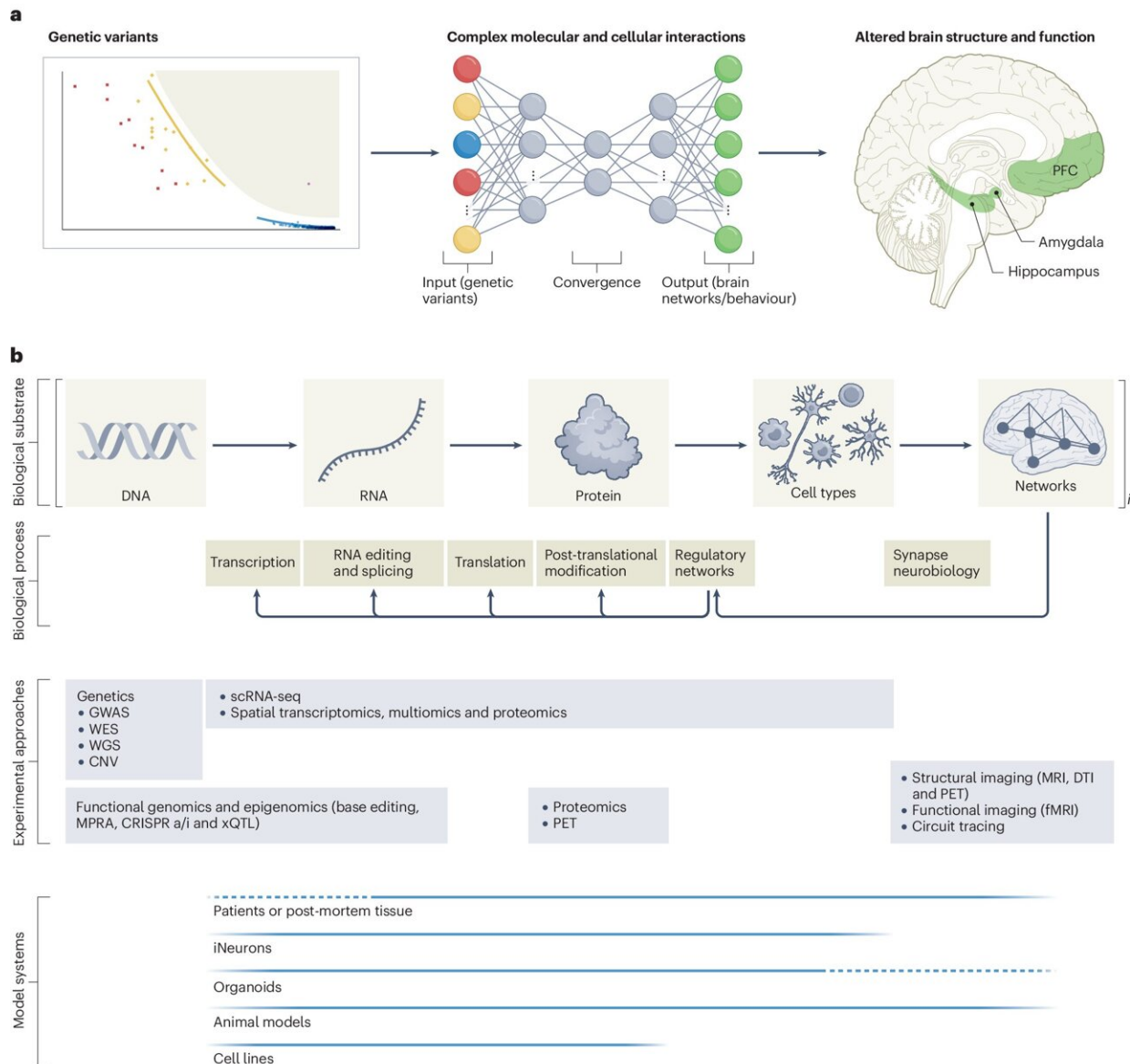


Researchers highlight the genetic complexity of schizophrenia

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A pathway from genomics to an etiological theory of schizophrenia. Credit:

Patrick Sullivan, MD, FRANZCP, the Yeargan Distinguished Professor of Psychiatry and Genetics at the UNC School of Medicine, and researchers at the Karolinska Institutet in Stockholm, Sweden, have developed a comprehensive outline of the genetics of schizophrenia. Their review is [published](#) in *Nature Reviews Neuroscience*.

Schizophrenia is a [neuropsychiatric disorder](#) featuring recurrent episodes of psychosis—such as hallucinations, delusions, and disorganized thinking—with many patients developing apathy, social withdrawal, and poor emotional control as a result.

Because [schizophrenia](#) has been known to run in families for centuries, researchers have turned to [genetic testing](#) and analyses to identify risk factors for the condition. Recent genomic research on schizophrenia has identified nearly 300 [common genetic variants](#) and more than 20 rare variants as significant risk factors for the disorder.

These discoveries have emerged from extensive genome-wide association studies, whole-exome sequencing, and other analyses. Simultaneously, studies of the functional organization of the brain have shed light on the intricate cellular composition and interconnections of the brain in both neurotypical individuals and those with schizophrenia.

These findings reveal a surprising complexity in the mechanisms underlying schizophrenia, emphasizing the role of multiple genes rather than single-gene causation. This "polygenicity" highlights a mechanism that remains challenging to fully understand due to the lack of robust theoretical frameworks and experimental tools. Sullivan and colleagues reviewed these issues and provided ideas for a path forward in the

Nature Reviews Neuroscience article.

However, Sullivan and colleagues stress that [environmental factors](#) (including lifestyle, [drug use](#), poverty, stress, and complications at birth) are also relevant in addition to genomic risk. Although these factors are more difficult to study compared to the genome, this genetic information is important for researchers to consider because some environmental factors are modifiable.

"The findings to date resoundingly indicate complexity," wrote Sullivan, who is also director of the UNC Center for Psychiatric Genomics and the UNC Suicide Prevention Institute. "Rather than being a deterrent to future research, this knowledge underscores the importance of accepting schizophrenia as a genetic and environmental enigma and scaling our research accordingly in our efforts improve the lives of those impacted by schizophrenia."

More information: Patrick F. Sullivan et al, Schizophrenia genomics: genetic complexity and functional insights, *Nature Reviews Neuroscience* (2024). [DOI: 10.1038/s41583-024-00837-7](https://doi.org/10.1038/s41583-024-00837-7)

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