# Neurogenetics research sheds light on the causes of neurological disease

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The last two decades have seen tremendous progress in understanding the genetic basis of human brain disorders. Research developments in this area have revealed fundamental insights into the genes and molecular pathways that underlie neurological and psychiatric diseases. In a new series of review articles published by Cell Press in the October 21 issue of the journal *Neuron*, experts in the field discuss exciting recent advances in neurogenetics research and the potential implications for the treatment of these devastating disorders.

Genetic discoveries have transformed clinical practice in neurology and psychiatry and provided new hope for many patients and their families. Recent advances in sequencing technologies coupled with improved analytical and computational approaches have led an amazing pace of discovery of genes linked to human disease. The complexity of neuropsychiatric and neurological disorders is apparent in the fast-growing list of genetic defects linked to these diseases. These genetic findings have provided key insight into underlying causes of these disorders and inspired further research aimed at prevention and therapy.

Genetic research has great potential for revolutionizing the treatment of human disease. However, the translation of genetic findings into the development of new disease therapies can take time. In an overview of the series, researchers Huda Zoghbi from Baylor College of Medicine and Stephen Warren from Emory University School of Medicine discuss recent achievements in neurogenetics research and the promise that it holds for disease treatment. They point out that gene discovery is a

critical first step in the path to development of new therapies and that follow up investigations are needed to reveal disease pathways that lend themselves to therapeutic intervention. These preclinical investigations are a key step in the translation of genetic discoveries to clinical applications. Recent data from mouse disease models indicate that some developmental and degenerative diseases are reversible. These findings provide hope that genetic discoveries could potentially lead to the reversal of serious neurological and psychiatric disorders through the development of therapeutics that suppress the pathways contributing to disease.

Zoghbi and Warren make a strong case for the need for scientific collaboration and the appropriate infrastructure to support partnerships among academic research, governments, private institutions and foundations, and pharmaceutical industries. The authors argue that combining resources and expertise will help accelerate the development of therapies based on genetic discoveries.

**More information:** www.neuron.org/

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