

Neurological & Psychiatric Research

Nearly one out of every seven households in the United States is affected by a neurological disease. Yet these devastating conditions, which cause the progressive loss of memory, mobility, cognition, or combinations of each, have no cure. Some are impossible to even predict.

All neurological diseases are as interconnected as the nervous system itself. HudsonAlpha's Memory and Mobility (M&M) Program allows a better understanding of related conditions. A discovery in one can lead to advancements in others.

Genetic research holds incredible promise to help untangle diseases like Alzheimer, Huntington and Parkinson's diseases as well as ALS and frontotemporal dementia.

New Genetic Causes

HudsonAlpha is sequencing and analyzing thousands of patient samples to learn more about the genetic causes of neurological diseases. The M&M Program allows scientists to investigate the genetic causes of these diseases. The program involves various projects and has already led to new gene discoveries, each one opening the door to potential new treatments and prevention approaches.

Early Detection and Disease Monitoring

Early detection in neurodegenerative disease is critical to improving treatment outcomes. Using small RNA – short strands of ribonucleic acid – in blood plasma, HudsonAlpha researchers hope to find signs of disease as early as possible. In addition, we are using our expertise in immunogenomics to better understand the immune system. By analyzing the immune response found in the blood, scientists can generate a picture of health — something we call the immune repertoire. This may allow clinicians to detect disease before symptoms appear. Both tests can also be used to scientifically monitor how well medications are working.

New Therapeutic Approaches

All genes have an "on/off" switch. Controlling how genes are turned on and off is an important process called gene regulation. Using knowledge from our program with Huntington disease, we are exploring gene regulation with other neurological diseases. We are doing this by identifying all the "on/off" switches for known disease-specific genes. Learning how to turn off abnormal genes responsible for the disease without compromising the "good" genes may lead to new and innovative therapeutic approaches.



5M Americans are living with Alzheimer disease today, that number will triple by 2050.



\$290B the cost of Alzheimer disease and other dementias to the nation.



Every 65 seconds someone in the U.S. develops Alzheimer disease.



Local and international projects. HudsonAlpha is part of an international collaboration to find the underpinnings of neurological disease. Through local clinical research projects, HudsonAlpha is returning results to patients and families while making discoveries to inform the neurological community.



Diseases and disorders that have been studied at HudsonAlpha include Alzheimer disease, frontotemporal dementia, Huntington disease, Parkinson disease, Amyotrophic Lateral Sclerosis (ALS), and other forms of neurological disease and dementias.

To learn more, visit HudsonAlphaFoundation.org