Huntington Society of Canada
HUNTINGTON
Société Huntington du Canada

MEDIA BACKGROUNDER

HUNTINGTON DISEASE (HD)

Huntington disease (HD) is an inherited brain disorder, affecting both body and mind. HD results from the degeneration of neurons in certain areas of the brain causing uncontrolled movements, loss of intellectual faculties, and emotional disturbances – and ultimately leads to total incapacitation and death.

One in every 10,000 Canadians has Huntington disease. HD touches one in 1,000 for example, as a person with HD, a family member, a person at risk, or caregiver.

Symptoms usually appear in the late 30s, though HD can also occur in much younger or older people. Every child of a parent with HD has a 50% risk of developing the disease. Genetic testing can be performed to determine whether the child carries the defective gene.

HD remains incurable, and there are currently no effective treatments.

HUNTINGTON SOCIETY OF CANADA (HSC)

HSC was founded in 1973 as a national voluntary health charity. HSC's Charitable Registration Number is 11896 5516 RR0001.

The Society's goals are to find, through research, new treatments and ultimately a cure for Huntington disease; to provide urgently required services for affected individuals and families; and to promote public and professional awareness of Huntington disease.

The Huntington Society of Canada is comprised of approximately thirty (30) volunteer chapters and area representatives across Canada, a national network of ten (10) Resource Centres and support workers, leading members of the medical and scientific community, and a small national office staff.

HSC is a founding member of the International Huntington Association, representing members in more than 35 countries around the world.

HSC is in the 2nd year of an ambitious $17 million fundraising campaign entitled *Road to Triumph (RTT). RTT* was launched to ensure services are available to assist HD families through crisis points throughout the progression of HD, and to continue the search for a treatment and eventual cure for HD.

CHILD AND FAMILY RESEARCH INSITITUTE'S CENTRE FOR MOLECULAR MEDICINE AND THERAPUDICS (CMMT)

The Centre for Molecular Medicine and Therapeutics (CMMT) is dedicated to the practice of world-class discovery research contributing to the fundamental knowledge in the determination and control of genetic susceptibility to disease.

Among the unique advantages of the CMMT is flexibility, the ability to develop, evaluate and incorporate ideas, and to move rapidly into promising areas. The Centre offers an infrastructure and support system that have allowed faculty to interact with collaborators in a highly productive environment. The CMMT promotes research excellence and innovation, providing flexible funding to researchers and an environment that enhances the ability to reach goals in a time effective manner.

MEDIA BACKGROUNDER

CMMT RESEARCH FINDINGS

To explore the role of cleavage, Dr. Hayden's team established an animal model of HD that replicated the key disease features seen in patients. A unique aspect of this particular animal model is that it embodied the human HD gene in exactly the same way seen in patients. This replication allowed researchers to examine the progression of HD symptoms including the inevitable cleavage of the mutant huntingtin protein. In the study, researchers confirmed that the deadly cleavage is caused by a key enzyme called caspase-6. By blocking the action of this target, they showed that the mouse did not develop any symptoms of Huntington disease.

This discovery offers hope for patients and the HD community that this disease can be relieved in humans. It represents a major research milestone and this work brings the field closer to finding effective treatment for this disorder.

This discovery does not guarantee that a cure in humans will be found although it is hopeful that this will be the case. The goal is to successfully replicate this mouse model of prevention in humans, and the recent findings tell researchers what they need to do in order to achieve this. But there will be challenges that could affect an ideal outcome, including: the physiological differences between mice and humans, finding the right drug inhibitor that will not cause toxicity and other side effects in the brain or other peripheral tissues, and the blood-brain barrier.

NEXT STEPS

The next step is to engage in therapeutics trials in mouse models, where researchers will test this model of prevention in a mouse using drug inhibitors instead of a genetic modification. If the results are positive, then they will proceed into Phase 1 human clinical trials, which represent the final stage in developing a treatment in humans. It could take at least another five years to develop a treatment and cure in humans.

ADDITIONAL QUOTE

"A monumental effort! This latest work by the group that has steadfastly defended the critical fragment hypothesis as a basis for Huntington's disease pathogenesis comes up with the most compelling evidence in its favor to date. They show in convincing fashion that many of the same changes seen in patients with HD can be attenuated or erased in HD mice simply by engineering a mutation into the disease gene that prevents the disease protein from getting cleaved. Remarkably, a mutation that creates resistance to cleavage at a nearby site in the protein by a different protease has no beneficial effect in the HD mice. Key is finding the right fragment! This group of investigators and other scientists will now have the opportunity to focus on what makes the product of caspase 6 cleavage so deadly. HD patients and families should know that this is a research milestone for all and that this work brings the field closer to finding effective treatment for a devastating disorder."

- Marian DiFiglia, Ph.D., June 9, 2006
Professor in Neurology, Massachusetts General Hospital and Harvard Medical School.