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Dr. Michael Hayden, Department of
Medical Genetics, University of British
Columbia

Exploring the human genome for clues to preventive treatment for Huntington's disease

By: Matthew DiCicco

Huntington's disease (HD) is a progressive neuropsychiatric condition that progressively destroys the neurons crucial for cognitive skills, emotions and motor control. HD is a hereditary condition, with each child of an affected parent having a 50 per cent chance of inheriting the abnormal gene. Researchers at the University of British Columbia are using DNA technology to closely examine how specific genetic mutations lead to HD to learn more about the disease and its progression.

Dr. Michael Hayden, Director at the University of British Columbia's Centre for Molecular Medicine and Therapeutics, has gained a greater understanding of the cellular events that lead to the onset and progression of HD. Although HD is an incurable condition, Hayden's research has led to new testing models that could advance disease therapy.

HD symptoms usually do not begin until later midlife. Once the individual starts displaying symptoms, the disease gradually worsens. Predictive testing identifies the disease's genetic markers in a blood test, so an individual can understand if their symptoms may progress later in their life.

Hayden is applying his own research with predictive testing to mice in a yeast artificial chromosome (YAC) transgenic model – in which the disease mechanisms responsible for neuron loss in the brain can be observed. Hayden and his team have found patterns of selective neuron degeneration in the YAC model in mice similar to the pattern observed in human HD patients.

According to Hayden, these new research findings are leading to new therapeutic approaches which could extend the patients' quality of life and ward off the onset of severe HD symptoms.

This research with predictive testing also has broader medical implications. Predictive testing for HD has served as a model for testing other illnesses, such as Alzheimer's disease and AIDS. Hayden would ultimately like to see this research soon change from predictive testing to preventative treatment.

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"Ideally we want to go from predictive to new approaches for treatment within the next few years," says Hayden.

Hayden's long-term work with HD research has been widely recognized. He was named Canada's Health Researcher of the Year by CIHR in 2008. This honour is awarded to a Canadian researcher in biomedical and clinical research who has demonstrated outstanding commitment, innovation, creativity, achievement and leadership in health research. In 2007, he was awarded the most prestigious award in the pharmaceutical and biotechnology field, the Prix Galien Canada (Research) which recognizes the outstanding contribution of a researcher to Canadian pharmaceutical research.

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