BULLETIN

CANADIAN GENETIC DISEASES NETWORK

CANADIAN SCIENTISTS MAKE TWO ADVANCES IN GENETIC DISEASE RESEARCH

Vancouver: January 28, 1998: Two teams of scientists with the Canadian Genetic Diseases Network (CGDN), headquartered in Vancouver, will publish the results of important research findings in the February 1 issue of the scientific journal, *Nature Genetics.*

Dr. Guy Rouleau of Montreal General Hospital heads an international team which has discovered the gene and defined a previously unknown mutation responsible for a debilitating muscle disease. Known as oculopharyngeal muscular dystrophy (OPMD), the condition typically strikes victims after age 60 and, in 90% of cases, progresses with age from loss of eyelid muscle and difficulty in swallowing to general muscle weakening and inability to stand. Researchers report that it is the first time the mutation: short GCG repeat amplifications which would lead to an enlarged poly alanine tract in a protein, have been seen.

A high incidence of OPMD carriers in Canada, 1 in 1,000, is found in Quebec. It is believed that almost 100% of carriers of the gene eventually develop the disease and pass the condition on to half of their children; therefore, the long term significance of Dr. Rouleau's discovery is crucial. "Within a few months, a simple blood test will be available to diagnose accurately and easily if a person is a carrier of the OPMD gene", he said. "We will also be able to offer a pre-symptomatic diagnosis which was not previously available", he added. The next step is to move towards finding a treatment for the disease.

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In another *Nature Genetics* paper, Dr. Michael Hayden, Scientific Director of CGDN and the Centre for Molecular Medicine and Therapeutics in Vancouver, reports on new research findings which may assist in reducing human susceptibility to a class of devastating hereditary neurological diseases, in particular Huntington disease (HD). The advance was made in collaboration with CGDN scientist, Dr. Frank Tufaro, at the University of British Columbia, and Dr. Dale Bredesen at the Burnham Institute in California.

HD is associated with a gradual deterioration of brain cells which leads to the onset of disease symptoms typically between the ages of 35 and 45. The sequence of events which follows results in severe physical and behavioral deterioration and eventual death. The results of the study show the effects on cells of protein production by the mutated HD gene, and have found that the protein forms clumps in cells which increase the body's susceptibility to a particular cell death process called 'apoptosis'. The discovery shows that there is a connection between the number of cells with clumps and the degree of cell death. The length of the protein itself influences the site in the cell where clumping occurs, and the shorter the protein, the worse the effect.

These insights provide new therapeutic directions for HD which include preventing shortening of the protein.

The Canadian Genetic Diseases Network is committed to leading-edge research in human genetic disease and to creating strategic partnerships to commercialize discoveries. Fifty scientists and their teams, based in 18 universities, hospitals, and research centres across Canada, focus on the molecular and cellular causes of inherited disease. CGDN has recently been awarded a further seven years' core funding by the federal Networks of Centres of Excellence Program via the Medical Research Council of Canada, to conduct an expanded research program "From Genes to Therapies."

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