



BULLETIN



CANADIAN GENETIC DISEASES NETWORK

FOR IMMEDIATE RELEASE: January 25, 1996

SCIENTISTS IDENTIFY NEW GENES REGULATING APOPTOSIS (CELL DEATH)

A team of Canadian and Japanese scientists, led by Dr. Robert Korneluk and Dr. Alex MacKenzie of Children's Hospital of Eastern Ontario at the University of Ottawa, has identified three new genes which are involved in the control of apoptosis, a biological mechanism which regulates cell death in the human body. The work follows from the group's previous identification of a gene which is altered in some children with the neuromuscular disorder, spinal muscular atrophy (SMA).

The research has been carried out with support from the Canadian Genetic Diseases Network and the Medical Research Council, in collaboration with Network member, Dr. Joh-E Ikeda and his research team at Tokai University in Japan. The discoveries provide a new family of cell-death genes that could be important in prevention of cell death in numerous disorders such as neurodegenerative diseases and which could also play a role in cancer. The results of the research are published today in the British scientific journal *Nature*.

The biochemical mechanisms of apoptosis are normally carefully regulated in the body but when this process is disturbed, either indiscriminate cell-death or uncontrolled cell-growth may occur. This can lead to neurodegenerative conditions or in the case of cancer may result in unchecked growth of cells. Research on control of apoptosis, by inhibiting excessive apoptotic activity or by restoration of normal apoptotic function, could lead to new treatments in the future.

"The model of a gene inhibiting apoptosis has given us considerable insight into what may be happening in spinal muscular atrophy", said Dr. MacKenzie. "As a bonus, it has led us to three other genes that are likely to be important in their own right in research on apoptosis."

The discoveries have formed the foundation of a new Ottawa company, *Apoptogen Inc.* The Canadian Genetic Diseases Network, the Canadian Medical Discoveries Fund, the Children's Hospital of Eastern Ontario and the University of Ottawa joined forces to launch the company in December 1995. *Apoptogen Inc.*, under the scientific leadership of Drs. Korneluk and MacKenzie, is cultivating extensive knowledge of the genetic basis of apoptosis, with the objective of designing therapies for diseases linked to abnormal cell death. The partnership provides *Apoptogen Inc.* with support for research and development as well as investments valued at \$1.7 million.

Dr. Michael Hayden, Scientific Director of the Canadian Genetic Diseases Network said, "Apoptosis plays a key role in many diseases that are a significant burden in our society. Discovery of new genes which may be important in either protection against or acceleration of apoptosis may be of significant therapeutic value." He added "I am pleased to report that the Network has played a major role in providing financial and managerial support for the advancement of apoptosis research and the creation of commercial value from the strong science base of the Network's scientific teams."

The Canadian Genetic Diseases Network is a consortium of 38 of Canada's leading geneticists who are linked with 12 universities, 9 hospitals, and 10 core technology facilities across the country. The Network performs leading-edge research on common genetically transmitted diseases and works with industry partners to develop methods of detection and treatment of the diseases.

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