University Health Network

Media Release

— For Immediate Release —

UHN Researchers Discover New Class of Human Stem Cells

Cells show promise for cancer and transplant patients because of rapid growth in bone marrow

(Toronto, June 9, 2003) – Scientists with University Health Network have discovered a new class of human stem cells that rapidly grow when implanted in the bone marrow of mice. The findings, available today in an advance on-line publication of the international scientific journal *Nature Medicine*, are a major advancement in human stem cell research with possible significant clinical implications for designing more effective cancer therapies.

"This is an exciting discovery because for the first time we have found human stem cells that rapidly rebuild a blood system," said Dr. John Dick, lead author of the study, senior scientist with UHN, and a professor in the University of Toronto's Department of Molecular and Medical Genetics. "The potential is that it may allow transplant patients to quickly regain their blood cells, which are critical to their immune system."

The scientists identified the new stem cells after injecting a batch of stem cells directly into the bone of mice, instead of the traditional method of intravenous injection into the blood stream. They observed this new subpopulation of stem cells rapidly repopulate the blood-producing system of the mice, produced high levels of blood cells within the first week or two after transplant, which is one- to two-weeks earlier than the normal rate. This discovery builds on the Dr. Dick's pioneering method of studying human stem cells by transplanting them into immunodeficient mice which will not reject the human cells.

The discovery could have far reaching implications for cancer and transplant patients whose immune systems are weakened by their treatment. These patients are very vulnerable to infections, usually for as long as three weeks after the treatment, until their blood system recovers enough to fight off infections.

"If these new human stem cells rebuild the blood system of a person as they have in the mice in this study, it may significantly reduce the time a patient is at risk," said Dr. Armand Keating, Chief of Medical Oncology at Princess Margaret Hospital.

Further study is needed to see if the new stem cells can be separated in larger batches and to refine the method of delivery. "Implanting stem cells directly into bone is a more complex and difficult procedure than the traditional intravenous method, " said Dr. Dick.

The research was supported by grants from the Association pour la Recherche contre le Cancer, the Stem Cell Network, one of Canada's Networks of Centres of Excellence, the Canadian Cancer Society, the Canadian Genetic Diseases Network, and the Canadian Institutes of Health Research.

University Health Network is a major landmark in Canada's healthcare system, and a teaching hospital of the University of Toronto. Building on the strengths and reputation of each of our three hospitals, Toronto General Hospital, Toronto Western Hospital and Princess Margaret Hospital, UHN brings together the talent and resources needed to achieve global impact and provide exemplary patient care, research and education.

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