

## Guest Editor

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**Dr Guy Sauvageau**

Dr Guy Sauvageau is an associate professor of medicine at the Université de Montréal and a clinician scientist who specializes in stem cell biology. His research is focused on the identification of key regulators of self-renewal of hematopoietic stem cells (HSC). Dr Sauvageau attended the Université de Montréal receiving an MD degree in 1987, an MSc in Immunology in 1989 and completed his internal medicine and haematology specialty in 1992. He extended his training as and completed a PhD degree in experimental medicine at the University of British Columbia under the supervision of Dr Keith Humphries (1995).

In Dr Humphries' lab, he initiated studies on the molecular genetics of stem cells with the aim of identifying key regulators of HSC self-renewal. He focused his studies on Hox genes and showed, in collaboration with Dr Unnur Thorsteinsdottir, that at least one member of this family has the potential to

enhance HSC self-renewal. With the help of Dr Jana Krosil and through an ongoing collaboration with Dr Humphries, he has recently developed a recombinant HOXB4 protein, which induces unprecedented HSC expansion *in vitro*. These findings may open new therapeutic avenues in the field of stem cell transplantation and blood banking.

In 1996, he accepted a position at the Institute for Clinical Research in Montreal where he continued his studies on Hox genes with a new interest in the oncogenic potential of these genes and on the biology of leukemia stem cells. With Dr Julie Lessard, he developed a new program on the *Polycomb Group* (PcG) genes and demonstrated that primitive hematopoietic cell proliferation is regulated by the relative contribution of repressive (Eed-containing) and enhancing (Bmi1-containing) PcG gene complexes. Moreover, they recently showed that *bmi-1* is required for the self-renewal activity of the normal and leukemia stem cells. Without self-renewal, stem cells lack the ability to self-perpetuate and are eventually lost. These findings open new possibilities for eliminating tumor stem cells.

Guy Sauvageau recently joined l'IRIC, a new Immunology and Cancer Institute located on the campus of Université de Montréal where he assumes the position of scientific director. He is also the founder, and codirects with Dr Josée Hébert, the Leukemia Cell Bank of Québec and spends a small proportion of his time practicing stem cell transplantation in the haematology department of Maisonneuve-Rosemont Hospital. He currently holds a Canada Research Chair in *Molecular Genetics of Stem Cells* and is a scholar of the Leukemia Lymphoma Society of America.

In this review issue, Dr Sauvageau and the other participants wanted to provide an overview of the developing concepts and controversies in the area of stem cell biology of both normal and cancerous tissues. Our aim was to provide a head start to the newcomers in this field. The hematopoietic system was preferred because it has been (and still is) extensively studied and has become a model for other fields of research. We hope that you will find these articles useful to your work.