

## Focus on Faculty #88

### Vincent Giguère



I was born in Québec City in 1957 at the Hôtel-Dieu de Québec, at the time the teaching hospital of Université Laval. I liked the hospital so much that I decided to stay there another 18 months to have my intestine fixed. Without the insistence of my aunt Thérèse, an Augustine nun and surgical nurse extraordinaire, to fetch the chief of the department of surgery at his fishing camp, I would not be here today. Performing delicate surgery on a two-month-old baby in 1957 was not for everyone, and she knew it. The procedure took three different operations, and I have large scars to prove it. One consequence of the anaesthesia was that I had a learning disability in my first few years in school, and that forced me to work and study very hard to catch up with the high standard that my older brother had set up for his 5 younger brothers. This instilled in me a strong work ethic that served me well at all steps of my education and career as a scientist.

At high school, an excellent biology teacher introduced me to the wonder of the DNA double helix. I was also fascinated by the simple dogma of molecular biology elaborated only a decade earlier by Francis Crick: DNA > RNA > proteins. I thus entered CEGEP in the basic science stream where I excelled in biology and organic chemistry classes, but not so much in mathematics and physics. Biochemistry was clearly the perfect home to continue my scientific education. At the end of my 2nd year as an undergraduate, I was awarded a summer studentship from the Medical Research Council of Canada (later CIHR) to work in the laboratory of Dr Fernand Labrie, a future giant in medical research and builder of research infrastructures in Québec. Since obtaining this studentship in 1978, I have been continuously funded by the MRCC/CIHR without a gap for 44 years. After graduating with a B.Sc. in biochemistry, I then re-joined Dr Labrie's group to pursue graduate work in the field of molecular endocrinology, where I enjoyed his great passion for research. During my PhD studies, I had the opportunity to publish a first author paper with Dr Andrew Schally, Nobel Laureate in Physiology and Medicine (1978). A great confidence booster. I graduated with a PhD in Physiology in 1982 and set sail for England to finally reach my original goal, to learn how to clone and express genes.

In London, I joined the group headed by two young molecular biologists, Drs Richard Flavell and Frank Grosveld at the National Institute for Medical Research at Mill Hill as a post-doctoral fellow. There, I explored all facets of molecular biology, most particularly cloning large segments of the

human genome. From cloudy London, I moved to sunny California to go back to my roots studying molecular endocrinology under the direction of Dr Ronald Evans at the Salk Institute. I quickly applied the skills acquired at Mill Hill using the newly identified glucocorticoid receptor to develop a transcriptional co-transfection assay that would rapidly become an indispensable molecular biology tool for mechanistic investigations, and a standard screening tool in the pharmaceutical industry. That assay then allowed me to identify the receptor for retinoic acid. It was soon uncovered by several groups that the gene encoding this receptor was involved in a genomic translocation driving promyelocytic leukaemia (PML), and that PML could be cured with high doses of retinoic acid. It is a rare opportunity that a discovery can so expeditiously provide knowledge to assist in the cure for a deadly cancer. I also identified the first “orphan” nuclear receptor, leading to the creation of the field of “reverse endocrinology”. These discoveries became the foundation of my independent scientific career.

In 1988, I joined the Endocrine division of the Hospital for Sick Children as a staff scientist and the Department of Molecular and Medical Genetics as an Assistant Professor at the University of Toronto. My research interests were then focused on the role played by retinoic acid and its receptor in early development. I was recruited by McGill University in 1994 as Director of the Molecular Oncology Group (MOG), located in the Hershey Pavilion at the Royal Victoria Hospital. The MOG subsequently fused with the McGill Cancer Centre in 2007 to create the Goodman Cancer Research Centre, now known as the Goodman Cancer Institute. My research projects were then redirected toward the study of hormone-dependent cancers and more recently oncometabolism. My group currently investigates the effects of both whole-body (e.g., obesity, diabetes) and cell intrinsic altered metabolism on tumour initiation and progression. Nuclear receptors are still my main passion.

Outside the laboratory, I enjoy cooking fancy meals, drinking good wines, and traveling around the world. Weekends and holidays are spent with family and friends at my cottage on a lake in the Laurentians where I have easy access to alpine skiing and snowshoeing in winter, and paddling, swimming, and biking in summer.

Xia, H, Scholtes, C, Dufour, CR, Ouellet, C, Ghahremani, M and **Giguère, V** (2022) Insulin action and resistance are dependent on a GSK3 $\beta$ -FBXW7-ERR $\alpha$  transcriptional axis. *Nature Communications* 13:2105.

Dufour, CR, Scholtes, C, Yan, M, Han, L., Chen, Y, Li, T, Xia, H, Deng, Q, Vernier, M and **Giguère, V** (2022) The mTOR chromatin-bound interactome of prostate cancer. *Cell Reports* 38:110534.

Scholtes, C and **Giguère, V** (2022) Transcriptional regulation of energy metabolism by nuclear receptors. *Nature Reviews | Molecular & Cellular Biology*