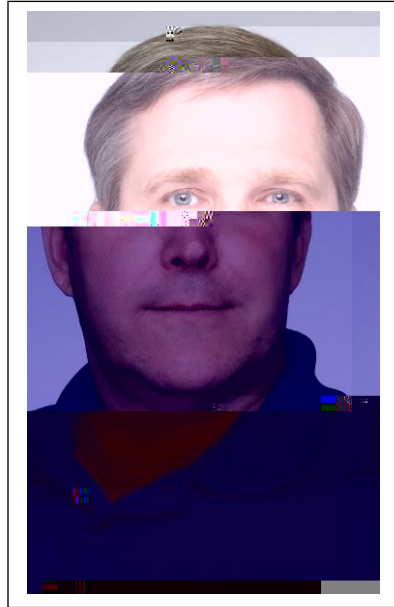


Focus on Faculty #94

Peter Siegel



I was born in 1969 and grew up on a farm just outside of Kincardine, which is a small town in mid-western Ontario. The family farm was a great place to grow up and I learned the importance of hard work and the meaning of responsibility, which has served me well throughout my career. I was introduced to the excitement and promise of molecular biology by my Grade 13 high school biology teacher, which prompted me to apply to the newly formed Molecular Biology and Biotechnology program that was being offered at McMaster University in Hamilton, Ontario in 1988.

It was at McMaster that I met Dr. William Muller, who provided me with my first experience in a fundamental research lab that focused on understanding the molecular mechanisms leading to the formation of ErbB2/Her2+ breast cancer. Dr. Muller fostered a great atmosphere that promoted scientific curiosity and collaboration, which convinced me to pursue my Ph.D. degree in his laboratory in 1992. Using transgenic mouse models of ErbB2-driven breast cancer, I identified a class of activating mutations that increased the oncogenic potential of the ErbB2 receptor.

From McMaster, I moved to New York City in 1999 to pursue a post-doctoral fellowship at the Memorial Sloan-Kettering Cancer Center under the supervision of Dr. Joan Massagué. I pursued projects aimed at investigating the dual role that TGF- β signaling plays in breast tumor growth and progression to metastatic disease. It was in the Massagué lab that I also became interested in how breast cancer cells were able to successfully seed and colonize distinct organs and tissues, and the mechanisms contributing to metastatic organotropism.

In 2004, I joined the Faculty of McGill University as an Assistant Professor in the Department of Medicine. I am currently a Professor in the Department of Medicine, a researcher at the Goodman Cancer Institute and hold cross-appointments in the Departments of Biochemistry, Anatomy & Cell Biology and Oncology. My research program focuses on the fundamental mechanisms that control organ-selective breast cancer metastasis. My group employs pre-clinical animal models and clinical material to identify molecular mediators and cellular process that promote breast cancer metastasis to distinct sites such as

the bone, lung, liver and brain. We have also begun to examine how metastatic cancer cells modulate their metabolic programs to enhance their metastatic fitness. We have now expanded our research to investigate colorectal cancer metastasis to the liver and solid cancer metastasis to the brain (lung, breast, melanoma). When possible, my laboratory explores avenues to therapeutically target candidate molecules that emerge as key promoters of the metastatic process.

Currently I am co-lead (with Dr. Julie St-Pierre, University of Ottawa) on the Terry Fox Foundation Program Project Grant in Targeting Metabolic Vulnerabilities in Cancer and direct the Metabolomics core facility at the Goodman Cancer Institute. In addition to my research interests, I have acted as Interim Director and Associate Director for the Goodman Cancer Research Centre (now the Goodman Cancer Institute) and I have served on the research advisory boards for the Canadian Institutes for Health Research (Institute Advisory Board for Cancer) and the Canadian Cancer Society (Advisory Council on Research).

In my free time, I enjoy spending time with my wife Josie (who is a Professor in the Gerald Bronfman Department of Oncology at McGill) and my two boys, Matthew and Adam. If I need a little time to myself, I like to do a little fishing; however, I pose little threat to the local fish population in and around Montreal.

Recent Publications:

M. Dankner, M. Caron, T. Al-Saadi, W. Yu, V. Ouellet, R. Ezzeddine, M.G. Annis, P.U. Le, J. Nadaf, N.S. Neubarth, P. Savage, D. Zuo, C.P. Couturier, J. Monlong, H. Djambazian, H. Altoukhi, G. Bourque, J. Ragoussis, R.J. Diaz, M. Park, M-C. Guiot, S. Lam, K. Petrecca* and **P.M. Siegel***. (2021). Invasive growth associated with Cold-Inducible RNA-Binding Protein expression drives recurrence of surgically resected brain metastases. **Neuro-Oncology**. 23(9): 1470-1480. **Co-corresponding Authors*.

L. El-Houjeiri, M. Biondini, M. Paquette, H. Kuasne, A. Pacis, M. Park, **P.M. Siegel*** and A. Pause*. (2021). Folliculin impairs breast tumor growth by repressing TFE3-dependent induction of the Warburg effect and angiogenesis. **J Clin. Invest.** 131(22). E144871. **Co-corresponding Authors*.

M. Biondini, A. Kiepas, L. El-Houjeiri, M.G. Annis, B.E. Hsu, A-M Fortier, G. Morin, J.A. Martina, I. Sirois, A. Aguilar-Mahecha, T. Gruosso, S. McGuirk, A.A.N. Rose, U.M. Tokat, R.M. Johnson, O. Sahin, E. Bareke, J. St-Pierre, M. Park, M. Basik, J. Majewski, R. Puertollano, A. Pause, S. Huang, T. Keler and **P.M. Siegel**. (2022). HSP90 inhibitors induce GPNMB cell surface expression and sensitize breast cancer cells to Glembatumumab Vedotin. **Oncogene**. 41(12): 1701-1717.