

## 4<sup>th</sup> World Congress on

# Cancer Science & Therapy

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## Targeting and tackling the cancer stem cell niche

Lynne-Marie Postovit

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Tumours contain populations of cells with stem cell like properties, and it is believed that these phenotypically plastic cells are responsible for cancer progression and metastatic potential. Stem cell-like populations are regulated by dynamic niches, characterized by specific growth factors and extracellular matrices, as well as biophysical features such low oxygen tensions. Moreover, a growing body of evidence suggests that cancer cells co-opt stem cell-associated regulatory networks in order to sustain plasticity. We have discovered that an embryonic-associated protein called Nodal maintains stem cell phenotypes in cancer, and that it promotes classical hallmarks of cancer such as angiogenesis, invasion and metastasis. We have also found that biophysical features of a growing tumour, in particular hypoxia, can promote tumour cell plasticity by up-regulating embryonic proteins like Nodal via a combinatorial mechanism. Finally, we have determined that exposure to normal embryonic stem cell factors can reprogram metastatic cancer cells toward a more differentiated, less tumourigenic phenotype. We are currently using quantitative SILAC-based proteomics together with developmental and cancer model systems to identify potential anti-tumourigenic proteins in stem cell-derived extracellular matrices; and to further understand how cancer cells hijack developmental signalling cascades to facilitate progression. By studying the mechanisms by which cancer cells acquire and sustain phenotypic plasticity, we may uncover novel targets for the prediction and prevention of tumour progression.

### Biography

Lynne-Marie Postovit is the Alberta Innovates Health Solutions Translational Chair in Cancer, the Sawin-Baldwin Chair in Ovarian Cancer and the Dr. Anthony Noujaim Legacy Oncology Chair as well as an Associate Professor in the Department of Oncology at the University of Alberta and an Adjunct Professor in the Department of Anatomy and Cell Biology at Western University. She has published over 45 peer-reviewed manuscripts in the area of the cellular microenvironment, and her work has produced 3 patents; one of which progressed into clinical trials for the treatment of prostate cancer and has led to the development of a start-up company. In 2009, Dr. Postovit received the Peter Lougheed/CIHR New Investigator Award, the Canadian Institutes of Health Research's (CIHR's) most important career development award, given annually to Canada's brightest young researcher at the beginning of their career. Finally, in 2012 she was named "a scientist to watch" by the Scientist magazine. She studies the microenvironmental regulation of cell phenotype in cancer and stem cells. She is particularly interested measuring and targeting stem cell promoting proteins in the cancer microenvironment.

## Impact of adverse events in cancer patients' safety

Marcia Novaretti

Nove de Julho Medical School, Brazil

Cancer is the second leading cause of death worldwide. In the last ten years, many efforts have been made to early diagnosis, improve survival and cancer cure. However, all of these struggles implies in higher risk in patient's safety. The purpose of this lecture is to present upto date data on patient's cancer safety, how to reduce patient's risk and finally to improve quality of health for these patients.

### Biography

Marcia Novaretti is Professor of Hematology at Nove de Julho Medical School, Saõ Paulo, Brazil. She is MD and earned her PhD at University of São Paulo School of Medicine. She did her fellowship at Tufts University, Boston. She was awarded by American Association of Blood Banks for her research during her fellowship. She is involved in patient's safety and patient's management research and teaching. She is also Professor of Master Administration Program at Nove de Julho University. She has served in several Brazilian and International Committees and she actively involved in her field. She has more than 60 papers published and more than 200 presented in International Meetings.