



Understanding the regulation of cell death in glioblastoma. Context matters?

SEMINAR & VISITING SPEAKER SERIES

DATE

Friday, March 29, 2019
9:00 AM

LOCATION

PX236/238 PsychHealth Bldg

SPEAKER

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Director, Manitoba Institute of Cell Biology
Senior Scientist, Research Institute in Oncology and Hematology
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OBJECTIVES

1. Context (location, microenvironment, and time) matters in cell death
2. Understand different forms of cell death
3. Role this plays in glioblastoma treatment

ABSTRACT

Cells undergo different forms of cell death depending on the context. In cancer including glioblastoma (GBM), the context depends upon location, microenvironment and time. This will determine whether a cancer cell dies or survives. The context is dynamic and changes over time leading to drug resistance in cancer. The location of cell death regulatory gene changes their function, we found that a BH3 only Bcl-2 family member BNIP3 switch from pro-cell death to pro-survival depending on subcellular localization. The microenvironment also changes where hypoxic regions develop and drive GBM drug resistance and growth factor signaling that changes cell survival. Finally time changes cell death responses where different types of cell death could occur at different times. We found that ferroptosis (iron dependent cell death) is induced at early times during hypoxia but switches to autophagy (self-eating) during late times. Thus, understanding this balance between cell death and survival will allow more rationale therapeutic strategies to be developed and hopefully prevent drug resistance in GBM.

Dr. Gibson graduated from the University of Toronto where he earned his Ph.D. in the Department of Laboratory Medicine and Pathobiology. During his Ph.D. studies, he traveled to M.D. Anderson Cancer Center in Houston, Texas as a pre-doctoral fellow where he completed his Ph.D. studies. Dr. Gibson was a post-doctoral fellow at the National Jewish Medical and Research Center in Denver, Colorado. Dr. Spencer B. Gibson is currently a Professor in the Department of Biochemistry and Medical Genetics at the University of Manitoba and is a Senior Investigator at the Research Institute of Oncology and Hematology (formerly the Manitoba Institute of Cell Biology, MICB) since 1999. In 2008, the Manitoba Health Research Council awarded Dr. Gibson a Manitoba Research Chair to support his research efforts. At the Research Institute, Dr. Gibson is Director of Translational Research where he contributed to the creation of the expansion of the Manitoba Tumor Bank and initiated new translational research projects. He is also appointed as Director, MICB from 2012-2014, to provide leadership for cancer research with the province of Manitoba and is currently Section Head, Cell Biology for the Research Institute at CancerCare Manitoba. Dr. Gibson has 130 peer-reviewed publications with an h-index of 49. The focus of his research is to define the signal transduction pathways leading to cell death or survival in cancer including leukemia. This will elucidate targets that could tip the balance in favour of cell death and will be the foundation to establish clinical trials using molecular targeted therapies to increase effectiveness of chemotherapy in cancer.

For more information:

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