



Cholesterol Modulation in Glioblastoma: A Pathway to Overcoming Chemoresistance in Cancer Therapy?

NEUROSCIENCE GRAND ROUNDS

SPEAKER

Saeid Ghavami , PhD

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BIO

Dr. Saeid Ghavami is an Associate Professor at the University of Manitoba's Department of Human Anatomy & Cell Science and is ranked among the top 2% of scientists worldwide since 2019.

With over 300 peer-reviewed publications and 30,000 citations, he holds an h-index of 71. His research focuses on cholesterol's role in cancer, particularly its influence on glioblastoma's resistance to temozolomide (TMZ).

Dr. Ghavami also explores lung cancer metastasis and therapeutic strategies for alveolar rhabdomyosarcoma, integrating multi-omics and machine learning approaches in cancer biology to develop innovative therapies.

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DATE

Friday, October 25th, 2024

9:00 AM - 10:00 AM

LOCATION

Psychiatry Bldg. 2nd Floor Rm PX236/238

ABSTRACT

In my presentation, I will explain the relationship between cholesterol metabolism and chemotherapy resistance, particularly in glioblastoma (GBM) cells. Specifically, we will explore how cholesterol and its derivatives influence the resistance of GBM to temozolomide (TMZ), a common chemotherapeutic agent. I will discuss the role of BCL2L13 as a ceramide synthase inhibitor and its regulatory impact on apoptosis in TMZ-resistant GBM cells. Moreover, I will highlight key findings from lipidomics analysis showing that resistant GBM cells exhibit increased cholesterol esters and altered ceramide profiles, contributing to chemoresistance. Finally, the presentation will offer insights into how targeting cholesterol metabolism and ceramide pathways can provide novel therapeutic strategies to overcome chemoresistance in GBM. This presentation aims to integrate molecular mechanisms with clinical relevance, offering potential directions for translational cancer therapies.

OBJECTIVES

1. Identify the Role of Cholesterol in Glioblastoma Development and Chemoresistance. The audience will be able to explain how cholesterol metabolism influences glioblastoma survival and contributes to resistance to chemotherapeutic agents like temozolomide (TMZ).
2. Analyze the Mevalonate Pathway's Influence on Cancer Cell Survival. The audience will evaluate the role of the mevalonate pathway in cancer cell proliferation and its potential as a therapeutic target in glioblastoma, particularly in overcoming chemoresistance.
3. Evaluate the Role of Lipid Metabolism and Autophagy in TMZ-Resistance. The audience will understand how changes in lipid metabolism and autophagy mechanisms affect the development of chemoresistance in glioblastoma cells.