

# Oncology Nursing, Cancer Care & Radiology and Imaging

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## Temozolomide resistance in glioblastoma multiforme and its application for drug development

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Gliomas account for 28% of all primary brain and central nervous system (CNS) tumors, and 80% of them are malignant. Among gliomas, glioblastoma multiforme (GBM) is the most common malignant type. The median survival time for GBM patients is 14.6 months. The 2 year survival rate of GBM patients is just 10.4% for those treated with radiotherapy alone and 26.5% for patients treated with both chemotherapy, temozolomide (TMZ), and radiation. The current chemotherapeutic standard for GBM is TMZ - an oral alkylating agent. However, at least 50% of TMZ treated patients do not respond to TMZ. This is due primarily to the over-expression of O6-methylguanine methyltransferase (MGMT) and/or lack of a DNA repair pathway in GBM cells. Multiple GBM cell lines are known to contain TMZ resistant cells and several acquired TMZ resistant GBM cell lines have been developed for use in experiments designed to define the mechanism of TMZ resistance and the testing of potential therapeutics. The characteristics of intrinsic and adaptive TMZ resistant GBM cells, however, have not been systemically compared. In this presentation, I will i) compare the characteristics and mechanisms of TMZ resistance in natural and adapted TMZ resistant GBM cell lines, ii) summarize potential treatment options for TMZ resistant GBMs, and iii) drug development using TMZ resistant cells.

### Biography

Sang Y Lee is an Assistant Professor in the Neurosurgery Department of the Pennsylvania State University College of Medicine (PSUCOM). His research focuses on the role of iron metabolism in neurodegenerative diseases and cancers. His research interests also include drug development for cancers, especially brain cancer, lung cancer, and neuroblastoma. He is a recipient of innovation award from the PSUCOM. He is an active member of Biolron, AACR and SNO. He has published more than 34 peer-reviewed papers and his research has been recognized by multiple private foundations and state and federal governments including NIH. He served grant reviewers for NCI and NIH.

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