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Content

WELCOME SPEECH

Professor Dušanka **Savić-Pavićević**
President of the Serbian Society
for Molecular Biology

Dr. Melita **Vidaković**
President of the Steering Committee
of the Serbian Society for Molecular Biology

Dear colleagues and friends,

On behalf of the Serbian Society for Molecular Biology (MolBioS), we warmly welcome you to Belgrade for the Second Congress of Molecular Biologists of Serbia (CoMBoS2).

The congress is gathering almost 250 participants from 13 countries (Sweden, United Kingdom, Italy, Switzerland, USA, Australia, Hungary, Czech Republic, Romania, Montenegro, Croatia, Bosnia and Herzegovina, and Serbia).

The program covers various fields of Molecular Biology, including Molecular Biomedicine, Molecular Biotechnology and Molecular Cell Biology, and consists of plenary and invited lectures, the MolBioS award winner lecture, poster sessions and the project corner. Special attention is paid to students and young scientists through the MolBioS Student Session, flash presentations and workshops on state-of-the-art molecular biology methods.

We wish you to be inspired by exciting and outstanding lectures given by renowned scientists and experts, exchange ideas, find opportunities for new collaborations, and have good fun.

WELCOME TO

CoMBoS2

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LONG-TERM THREE-DIMENSIONAL GLIOBLASTOMA CELL CULTURE MODEL FOR DRUG RESPONSE STUDIES

Miodrag Dragoj[1]

[1]*Institute for Biological Research "Siniša Stanković" - National Institute of Republic of Serbia, University of Belgrade*

Introduction: Glioblastoma, although not the most common, is one of the deadliest human cancers. Despite the implementation of the Stupp protocol in clinical practice, which prolongs patients' survival for only 2.5 months, there have been no significant advances in glioblastoma treatment. Therefore, it is imperative to better understand the mechanisms behind glioblastoma behavior for more efficient treatment in the future. Conventional two-dimensional cell cultures provide an affordable and easy-to-perform *in vitro* system but fail to recapitulate glioblastoma's complex tumor structures and microenvironmental conditions, which often results in a lack of translation to clinical settings. In contrast, three-dimensional (3D) cancer models can advance the understanding of cancer biology and have the potential to revolutionize the development of new drugs and predict their clinical efficacy.

Methods: We have developed a novel long-term 3D glioblastoma model with potential applications in preclinical studies. Using alginate fibers, this model allows the cultivation of U87 glioblastoma cells for extended periods, lasting up to 28 days, which corresponds to a clinically relevant treatment cycle.

Results: This model was used to validate hypothesized optimal temozolomide scheduling for glioblastomas generated via mathematical modeling. The results indicated that increasing the time spacing between doses of TMZ may reduce toxicity, delay the development of drug resistance, and potentially improve survival outcomes.

Conclusion: In conclusion, the establishment and utilization of advanced 3D glioblastoma models offer significant opportunities to advance our understanding of glioblastoma biology and improve treatment outcomes.

Key words: Glioblastoma; Temozolomide; 3D cancer model; drug resistance

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