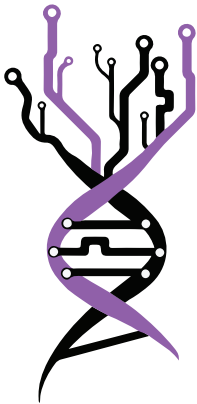


#BelBi2023 • Belgrade, Serbia

BOOK OF ABSTRACTS



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Dr. Ivana Morić

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FOREWORD

Dear colleagues and friends,

The 4th Belgrade Bioinformatics Conference - BelBi2023, where many high-quality scientific contributions were presented, has just ended. With great thanks to all participants, we now proudly present a book of abstracts that both reflects the scientific abundance and diversity of the conference and serves as a reminder of a memorable event.

Several research institutions, faculties, and scientific societies from Serbia joined forces in organizing this international conference, which covered numerous topics in computational biology, bioinformatics, and biomedical and health informatics. The main goal of BelBi2023 was to foster contact between scientists, both early stage career and senior researchers, allowing them to share experiences and latest advances in their fields. We sincerely hope that BelBi2023 has served as a platform for researchers from around the world to meet, initiate new collaborations, and expand professional contacts, and that all of you would become a part of the growing BelBi community.

We are grateful and proud to have welcomed more than 250 researchers from 21 countries. We have had 28 scientific sessions, consisting of more than 60 lectures (including eight Keynote talks), 47 presented posters, as well as three workshops and one satellite event – COST action. We have also organized seven industry lectures, including the NGS Challenge,

two Meet the Expert Sessions, and one Business Coffee Break where ten start-up companies took part. And finally, the future BIO4 campus was presented and first panel on Serbia's resources for storage and analyses of genetic data was organized.

We would like to thank all the members of the International Advisory Board and the International Program Committee for their efforts and help in making this event a success. We are very grateful to the Ministry of Science, Technological Development and Innovation of the Republic of Serbia, SAIGE project, and UNDP-Serbia for their support. Finally, the Local Organizing Committee is very grateful to all the sponsors of the conference - BGI, Illumina & Elta'90MS, PacBio & East Diagnostics, ThermoFisher Scientific & Vivogen, Huawei, Labena, DSP Chromatography, RNIDS, Telekom Srbija, Alfa Genetics, Kefo and Superlab, hoping that they will stay with us for many years to come.

Looking forward to seeing you again at the 5th Belgrade Bioinformatics Conference.

Belgrade, July 2023

*Dr. Valentina Đorđević
& Dr. Ivana Morić,*
On behalf of BelBi2023
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Poster presentation

Numerical and Biological Modeling Approach in the Analysis of the Cancer Viability and Apoptosis

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Biomedicine is a multidisciplinary branch of science that requires a clear approach to the study and analysis of various life processes necessary for a deeper understanding of human health. This research focuses on the use of numerical simulations with the aim of an improved comprehension of cancer viability and apoptosis during treatment with commercial chemotherapeutic agents. In recent times, the usage of numerical models was successfully applied to predict the behavior of tumors. This study includes a wide range of numerical results that have been obtained by examining cell viability in real-time, determining the type of cell death and the genetic factors that control these processes. The results of the *in vitro* test were used to develop a numerical model that provides a new perspective on the proposed problem. In this study, colon, and breast cancer cell lines (HCT-116 and MDA-MB-231), as well as healthy lung fibroblast cell line (MRC-5) were treated with commercial chemotherapeutic agents. The obtained results showed a decrease in viability and the occurrence of predominantly late apoptosis upon treatment, as well as a strong correlation between parameters. A mathematical model was developed and used to gain a better understanding of the investigated processes. This method can accurately simulate the behavior of cancer cells and reliably predict their growth.

Keywords: numerical modeling, cancer, cell viability, apoptosis, gene expression, cytostatics

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