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BOOK OF ABSTRACTS



4th Belgrade Bioinformatics Conference

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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

Integrated relational database of human protein-protein interactions

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Protein-protein interactions' data are stored in various publicly available databases of different types and formats. In this work, a new database for protein-protein interactions is created by integrating data from multiple existing databases. This task is not trivial since different databases use distinct gene or protein identifiers for protein annotation. Additionally, they use different methods to determine interaction scores, and the interactions are obtained through diverse experimental or predictive methods. As a result, two databases may store different data about the same interaction.

To integrate data from various databases, namely *BioGRID*, *STRING*, *HIPPIE*, *IntAct*, and *Reactome*, into a single PPI database, the following process is undertaken. Initially, data is downloaded from these databases in the MITAB format, encompassing all pertinent interaction information such as protein identifiers, publication sources and other. In order to obtain unique protein identifiers in all PPIs in the database, the *UniProt ID mapping* tool was used to determine *UniProt IDs*. Next, since scoring systems differ among databases, for every interaction a new score is calculated using *MISCORE* tool as an additional metrics unique for all the PPIs in the database. The resulting database contains tens of millions of human PPIs from five different sources.

Keywords: bioinformatics, protein-protein interaction, database, computer science



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