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BOOK OF ABSTRACTS



4th Belgrade Bioinformatics Conference

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EDITORS

Dr. Ivana Morić

Dr. Valentina Đorđević

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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

Deciphering the reward-related impulsivity domains in rats: The big data study of historical control

Jovana Arandelović^{1*}, Kristina Mirković¹, Jana Kojić¹, Miroslav Savić¹

¹ Faculty of pharmacy, University of Belgrade,
Vojvode Stepe 450, Belgrade, Serbia
jarandjelovic@pharmacy.bg.ac.rs

Impulsivity is a lack of ability to control own impulses, and encompasses many subdomains. The variable-delay-to-signal (VDS) paradigm is behavioral procedure for assessing motor impulsivity and delay intolerance in rats, but it was unclear whether all parameters contributed to these domains. Therefore, the aim of this study was to uncover the relationship between impulsivity parameters in a large cohort.

VDS adapted to a touchscreen environment was used to assess impulsivity in adult Sprague-Dawley rats. After 1 week of training, animals were tested in a 3-stage testing protocol. The first stage included 20 trials with 6s inter-trial interval (ITI6s) that suggested motor impulsivity. The second stage, with 60 randomly distributed trials of ITI9s or 15s, was interpreted as delay intolerance, whereas for the last stage (ITI6sf), which is similar to the first stage, it was unclear to which type of impulsivity it was associated. Principal component analysis (PCA) was used to determine the different behavioral domains. The results of 132 controls from 11 independent VDS experiments were analyzed. Based on the cumulative variance explained, scree plot, and eigenvalues, the main components were extracted whereby varimax rotation was used on factor loadings to extract the components. PCA with varimax rotation was performed in R studio.

PCA revealed that 96.45% of the variance could be explained by 3 principal components (PCs). After varimax rotation, loadings for ITI9s and ITI15s were 0.8189 and 0.9419, respectively, for rotated PC1 (RC1), loading for ITI6sf was 0.9482 for RC2, and loading for 6si was 0.9183 for RC3.

In the VDS paradigm, 3 different impulsivity domains could be determined. In addition to motor impulsivity and delay intolerance, it is suggested that reflection impulsivity can also be assessed as learning-based impulsivity.

Keywords: principal component analysis, biostatistics, rat behavior, impulsivity



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