



CoMBoS2 – the Second Congress of Molecular Biologists of Serbia, Abstract Book – Trends in Molecular Biology, Special issue 06-08 October 2023, Belgrade, Serbia Online Edition https://www.imgge.bg.ac.rs/lat/o-nama/kapacitet-i-oprema/istrazivackadelatnost

https://indico.bio.bg.ac.rs/e/CoMBoS2

IMPRESSUM

PUBLISHER: Institute of Molecular Genetics and Genetic Engineering (IMGGE), University of Belgrade

FOR THE PUBLISHER: Dr. Sonja **Pavlović**

EDITOR: Dr. Zorana **Dobrijević**

EDITORIAL REVIEW BOARD: Prof. Dr. Silvana **Andrić** Dr. Valentina **Ćirković** Dr. Ivica **Dimkić** Prof. Dr. Branko **Jovčić** Prof. Dr. Gordana **Matić** Ass. Prof. Dr. Milena **Milutinović** Dr. Aleksandra **Stanković** Dr. Nemanja **Stanisavljević** Dr. Maja **Stoiljković**

EDITOR IN CHIEF: Prof. Dr. Dušanka **Savić-Pavićević**

DESIGN: Ivan **Strahinić**

All rights reserved Institute of Molecular Genetics and Genetic Engineering (IMGGE), University of Belgrade Belgrade, 2023 ISBN 978-86-7078-173-3

 \circledcirc Copyright 2023 by Institute of Molecular Genetics and Genetic Engineering (IMGGE), University of Belgrade <code>belgrade + 2023</code>

CoMBoS2

Content

Welcome speech 4

Congress Orginizers 5

MolBioS Award Winner 9

Plenary speakers 10

Session plenary speakers

- MOLECULAR BIOMEDICINE 11
- MOLECULAR BIOTECHNOLOGY 13
- MOLECULAR MECHANISMS OF CELL FUNCTIONS 16

Abstracts

Session PLENARY LECTURES 20

Session MOLECULAR BIOMEDICINE 25
PLENARY LECTURES 26
INVITED LECTURES 31
POSTERS 38

Session MOLECULAR BIOTECHNOLOGY 100 PLENARY LECTURES 101 INVITED LECTURES 107 POSTERS 112

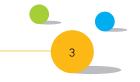
Session MOLECULAR MECHANISMS OF CELL FUNCTIONS 126
PLENARY LECTURES 127
INVITED LECTURES 134
POSTERS 139

MolBioS Student Session 157

Project Corner 182

Congress Friends 190

Sponsors 191



PRECISION MEDICINE AND COVID-19: IMPORTANCE OF HOST GENOME PROFILING

Branka Zukic¹

¹Institute of Molecular Genetics and Genetic Engineering, University of Belgrade, Belgrade, Serbia

Introduction: The clinical picture and the course of the disease in COVID-19 patients, caused by coronavirus SARS-CoV-2, vary from asymptomatic to fatal outcome. As the same agent cause the disease, the individual genomic profile of the patient could contribute to better understanding of this phenomenon. The current knowledge about genetic markers responsible for a wide range of clinical pictures, as well as possible application of individualized treatment, will be presented.

Methods: Variants in genes responsible for predisposition and response to SARS-CoV-2 infection, pharmacogenetic variants related to drugs used in the treatment of COVID-19, nutrigenetic markers in genes relevant for the metabolism of the micronutrients (vitamin D, selenium and zinc) were investigated using GWAS, PCR and sequencing. Genotype data were extracted from database previously obtained using TruSight One Gene Panel (Illumina).

Results: Eleven pharmacogenomics markers in 7 pharmacogenes relevant for COVID-19 treatment and 10 variants affecting the structure and/or function of proteins important for susceptibility and resistance to SARS-CoV-2 infection were identified. Several variants in genes related to micronutrients were associated with severe COVID-19. Moreover, GWAS detected a significant genetic signal associated with COVID-19 related pneumonia.

Conclusion: Multidisciplinary approach, modern sequencing technologies, comprehensive studies with well-characterized patients' groups, as well as the design of robust bioinformatics tools, enable identification of novel human genetic markers associated with COVID-19. Newly gained knowledge will empower the development of the targeted therapy, as well as the implementation of nutrigenomics/pharmacogenomics, leading to the application of precision medicine in the treatment of COVID-19 patients.

Key words: COVID-19; precision medicine; pharmacogenomics; nutrigenomics; GWAS

Acknowledgements: This study was supported by the Ministry of Science, Technological Development and Innovation of the Republic of Serbia (Agreement no. 451-03-47/2023-01/200042).

