



Trends in **Molecular Biology** • Special issue

Abstract Book

CoMBoS²

2nd Congress of Molecular Biologist of Serbia

Belgrade • 2023

ISBN-978-86-82679-15-8



**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/istrazivacka-delatnost>

<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

© Copyright 2023 by Institute of Molecular Genetics and Genetic Engineering (IMGGE), University of Belgrade
Belgrade • 2023

Content

Welcome speech 4

Congress Organizers 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

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



CONGRESS ORGANIZERS



Serbian Society for Molecular Biology (MolBioS)



University of Belgrade, Institute for
Biological Research "Siniša Stanković",
National Institute of the Republic of Serbia



University of Belgrade,
Faculty of Biology



University of Belgrade, Institute of Molecular
Genetics and Genetic Engineering



University of Belgrade,
Institute of Nuclear Sciences "Vinča",
National Institute of the Republic of Serbia



University of Novi Sad, Faculty of Sciences,
Department of Biology and Ecology



University of Kragujevac, Faculty of Science,
Department of Biology and Ecology



University of Belgrade,
Institute for Medical Research,
National Institute of the Republic of Serbia

CONGRESS COMMITTEES

HONORARY COMMITTEE

Jelena **BEGOVIĆ**

Minister of Science, Technological Development
and Innovations of the Republic of Serbia

Ljubiša **STANISAVLJEVIĆ**

Dean, University of Belgrade-Faculty of Biology

Milica **PAVKOV HRVOJEVIĆ**

Dean, University of Novi Sad, Faculty of Sciences

Marija **STANIĆ**

Dean, University of Kragujevac, Faculty of Science

Mirjana **MIHAILOVIĆ**

Director, University of Belgrade, Institute for
Biological Research "Siniša Stanković" -
National Institute of the Republic of Serbia

Ivana **STRAHINIĆ**

Acting Director, University of Belgrade, Institute
for Molecular Genetics and Genetic Engineering

Snežana **PAJOVIĆ**

Director, University of Belgrade, Institute for
Nuclear Sciences "Vinča" - National Institute of
the Republic of Serbia

Saša **RADOVANOVIĆ**

Director, University of Belgrade, Institute for
Medical Research - National Institute of the
Republic of Serbia

Goran **ANAČKOV**

Head of the Department of Biology and Ecology,
University of Novi Sad, Faculty of Sciences

Milan **STANKOVIĆ**

Head of the Department of Biology and Ecology,
University of Kragujevac, Faculty of Science

Gordana **MATIĆ**

retired Professor

Svetlana **RADOVIĆ**

retired Professor

Ljubiša **TOPISIROVIĆ**

retired Professor

Dragutin **SAVIĆ**

retired Professor

Radomir **CRKVENJAKOV**

retired Professor

Branka **VASILJEVIĆ**

retired Principal Research Fellow

Dragica **RADOJKOVIĆ**

retired Principal Research Fellow

Selma **KANAZIR**

retired Principal Research Fellow

Goran **POZNANOVIĆ**

retired Principal Research Fellow

Gordana **NIKČEVIĆ**

retired Principal Research Fellow

Diana **BUGARSKI**

retired Principal Research Fellow

SCIENTIFIC COMMITTEE

Chair: Dušanka **SAVIĆ-PAVIĆEVIĆ**

Members (in alphabetical order by last name):

Silvana **ANDRIĆ**
Goran **BRAJUŠKOVIĆ**
Valentina **ĆIRKOVIĆ**
Ana **DJORDJEVIĆ**
Gordana **MATIĆ**
Mirjana **MIHAILOVIĆ**
Sonja **PAVLOVIĆ**
Milena **STEVANOVIĆ**
Aleksandra **STANKOVIĆ**

ORGANIZING COMMITTEE

Chair: Melita **VIDAKOVIĆ**

Members (in alphabetical order by last name):

Zorana **DOBRIJEVIĆ**
Svetlana **DINIĆ**
Maja **ŽIVKOVIĆ**
Dušan **KECKAREVIĆ**
Milena **MILUTINOVIĆ**
Biljana **POKIMICA**
Jelena **PURAĆ**
Jovana **RAJIĆ**
Jelena **SAMARDŽIĆ**

TECHNICAL COMMITTEE

Chair: Svetlana **DINIĆ**

Members (in alphabetical order by last name):

Marija **ATANASKOVIĆ**
Stefan **BLAGOJEVIĆ**
Anastasija **BUBANJA**
Tatjana **ČELIĆ**
Marija **ĐORĐEVIĆ**
Srđana **ĐORĐIEVSKI**
Sofija **DUNJIĆ MANEVSKI**
Nemanja **GARAI**
Valentina **IGNJATOVIĆ JOCIĆ**
Bojan **ILIĆ**
Milivoje **KONSTANTINOVIĆ**
Tijana **MARKOVIĆ**
Stefan **MARKOVIĆ HADŽIĆ**
Jana **MILENKOVIĆ**
Jovan **PEŠOVIĆ**
Nikola **RADENKOVIĆ**
Ana **SARIĆ**
Katarina **ŠAPIĆ**
Teodor **SKENDŽIĆ**
Jelena **SPREMO**
Milan **STEFANOVIĆ**
Jovana **STEVANOVIĆ**
Stefana **STOJANOVIĆ**
Marija **VUKOVIĆ**
Ivan **ŽIVOTIĆ**

SCIENTIFIC AND ORGANIZING COMMITTEE

(MoBioS STUDENT SECTION)

Natalija **MILADINOVIĆ**
Natalija **MIŠKOV**
Milena **STEPIĆ**
Jana **MILENKOVIĆ**
Milivoje **KONSTANTINOVIĆ**

METABOLIC DISTURBANCES IN ANIMAL MODEL OF POLYCYSTIC OVARY SYNDROME: IMPACT OF EARLY POSTNATAL OVERFEEDING

Bojana Mičić,¹ Nataša Veličković,¹ Ana Djordjevic,¹ Ana Teofilović,¹ Sanja Kovačević,¹ Marina Radovanović,¹ Jelena Brkljačić,¹ Djuro Macut,² Danijela Vojnović Milutinović¹

¹ *Department of Biochemistry, Institute for Biological Research "Siniša Stanković" - National Institute of the Republic of Serbia, University of Belgrade, Belgrade, Serbia;*

² *Clinic for Endocrinology, Diabetes and Metabolic Diseases University Clinical Centre of Serbia, Faculty of Medicine, University of Belgrade, Belgrade, Serbia*

Introduction: Polycystic ovary syndrome (PCOS) is a common endocrine disorder that affects women's fertility and metabolic health throughout their life time. Insulin resistance and obesity, in conjunction with excess androgens, are undeniably involved in its development. We aimed to elucidate how hyperandrogenemia and prepubertal adiposity contribute to the development of metabolic disturbances in rat model of PCOS.

Methods: The animal model of PCOS induced by 5 α -dihydrotestosterone (DHT) was additionally challenged by litter size reduction (LSR) during suckling period, to ensure overfeeding and development of prepubertal adiposity. Systemic parameters of insulin sensitivity, along with markers of energy sensing, insulin signaling, and lipid metabolism were analyzed in visceral adipose tissue (VAT) and skeletal muscle.

Results: The combination of treatments led to hyperinsulinemia and impaired systemic insulin sensitivity. This was not accompanied with altered insulin signaling in the VAT, in spite of observed adipocytes hypertrophy probably due to activation of AMPK and restrained lipogenesis in this tissue. On the other hand, insulin signaling in skeletal muscle was impaired, which resulted in increased muscle fatty acid uptake and oxidation after combined treatment. The switch to fatty acids oxidation subsequently led to oxidative stress and inflammation, which was followed by adaptive activation of AMPK and increased expression of its targets involved in antioxidant protection and mitochondrial biogenesis.

Conclusion: Our results suggest that prepubertal weight gain predisposes to insulin resistance development in androgen-excess PCOS. The protective activation of AMPK in VAT and muscle makes it a potential therapeutic target for insulin-resistant PCOS patients.

Key words: polycystic ovary syndrome; early postnatal overfeeding; insulin resistance; adipose tissue; skeletal muscle

Acknowledgements: This study was supported by the Ministry of Science, Technological Development and Innovations of the Republic of Serbia (Agreement no. 451-03-47/2023-01/200007).