UMS+24°

SERIES

4th - 6th April 2024

MONA PLAZA HOTEL, **Belgrade, Serbia**

XIII CONGRESS OF MICROBIOLOGISTS OF SERBIA

with international participation

MIKROMED REGIO 5

FROM BIOTECHNOLOGY TO HUMAN AND PLANETARY HEALTH

BOOK OF ABSTRACTS

ORGANIZER:

SERBIAN SOCIETY FOR MICROBIOLOGY

SUPPORTED BY:

Federation of European Microbiological Societies

Republic of Serbia

MINISTRY OF SCIENCE, TECHNOLOGICAL DEVELOPMENT AND INNOVATION

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Content

Message from the organizing commitee

Dear colleagues and friends,

The objective of the event was to present the latest developments in microbiology that contributed to a better understanding of the role of microorganisms in nature and to bring together microbiologists from Serbia and the region with professionals from all over Europe, including microbiologists of various disciplines, bioinformaticians, geneticists, molecular biologists, biochemists, epidemiologists, pediatricians, infectious disease physicians, and all other scientists with common interests.

This regional meeting addressed all prevailing microbiological issues and offered solutions to overcome them by world-class experts in the field. The resistance of microorganisms to antimicrobial drugs is causing major problems in veterinary and human medicine, necessitating the improvement of vaccines and the discovery of new drugs, but also alternative treatment models. Growing antimicrobial resistance, especially biofilm-related, requires alternative measures to biocontrol the spread of the microorganisms in various environments. These sessions discussed possible alternatives to common antimicrobials, ranging from bacteriophage applications, new natural compounds biotechnology or nanotechnology, as well as biological control for the inactivation of pathogenic and/or resistant phenotypes of microorganisms.

In addition, food manufacturers and retailers have been trying for decades to reduce the material damage and risks to human health posed by biofilms in food processing facilities. The environment is already too polluted by many human missteps, so any help from microorganisms to remove or process waste materials can be a big help. We are getting better and better at using microorganisms in technological processes, firstly in the medical field, but also in agriculture, industry and the energy sectors.

Our knowledge of how microbial diversity is distributed in natural environments and how microbes influence ecosystems is constantly evolving as public databases are established and new techniques based on massive sequencing are developed. The microbiomes found in anthropogenic environments and on human-made materials are generally much less complex than those found in natural environments. Despite this simplicity, it is very difficult to link cause and effect when it comes to determining the role of individual microorganisms. Improved genome engineering tools in model organisms allow for a comprehensive remodeling of metabolic and regulatory networks.

At the same time, a growing number of non-model organisms can be modified with different traits so that they can be further used in different applications and environments. This expanded range of engineering capabilities and modified species brings their application in the real world closer and has the potential to make a real contribution to sustainability and addressing global health challenges.

Microorganisms are the key drivers of ecosystem functions, and microbial diversity plays a central role in maintaining the stability and sustainability of ecosystems. These sessions were examined some of the principles that shape and maintain this biodiversity and explore the factors that shape microbiomes and contribute to the success of specific members of communities in different habitats.

Presentations were focused on omics techniques such as metagenomics, metatranscriptomics, proteomics and metabolomics, which are used to better understand why the health of humans, animals and plants depends on microbial interactions. In this way, the complex microbiomes and the interactions between the microbiota and a variety of host organisms from different domains of life were explored.

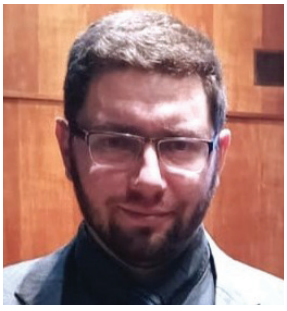
We strongly believe that the Congress was an excellent place to exchange and combine scientific ideas among experts and participants, with great opportunities to start new international collaborations and joint scientific projects. We have received an overwhelming response to our call, with numerous talented applicants, more than 350 participants from more than 20 countries (Austria, Belgium, Bosnia and Herzegovina, Croatia, France, Georgia, Germany, Greece, Hungary, India, Iraq, Italy, Montenegro, Namibia, North Macedonia, Portugal, Russian Federation, Serbia, Slovenia, Netherlands and United States) applying for the limited number of available grant awards (we have accepted 29 participants). In addition to presentations by invited speakers, the programme also included poster presentations by young researchers and PhD students. We were honoured to welcome 62 lecturers, 15 offered talks and 8 panelists and presenting cases. We have organized oral presentations in 15 paralel sessions, complemented by two panel discussions and a workshop entitled "NGS in Microbiology". We would like to thank all participants for their scientific commitment, especially for the more than 170 abstracts submitted, which contributed significantly to the success of the Congress. The Congress is accre ditated by the Health Council of the Republic of Serbia under the registration number A-1-185/24.

We hope you enjoyed the Congress programme and found it stimulating and informative. We also hope that you enjoyed the beauty of Belgrade and the Serbian hospitality. We sincerely wish you health, love and happiness and look forward to the new meetings.

Sincerely,

Ivica Dimkić
University of Belgrade
Faculty of Biology, Serbia

Scientific
Committee
Chairperson



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University of Belgrade
Faculty of Medicine, Serbia

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Lazar Ranin
President of the Serbian Society
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Co-Chairperson

General information

CONGRESS VENUE

The meeting was held at the Hall „Donji Dorćol“ and Hall „SCHONDA 4“, Mona PLAZA hotel, located at Cara Uroša 62-64, Belgrade, Serbia; Hall „Beogradska panorama“ and Hall „Club“, situated Hotel Palace, Topličin Venac 23, Belgrade, Serbia and Institute of Molecular Genetics and Genetic Engineering, Vojvode Stepe 444a, Belgrade, Serbia.

REGISTRATION OF PARTICIPANTS

Registration desk was open on Thursday, April 4 from 08:00 in front of Hall „Donji Dorćol“, Mona PLAZA hotel, as well as on Friday, April 5 and Saturday, April 6 at the same place. Daily updates on the workshop sessions and social events were available at the registration desk and through the specialy designed application for this Congress (https://play.google.com/store/apps/details?id=com.Mikrobiolozi). All participants and accompanying persons were kindly requested to wear their acreditational badges during the scientific sessions and workshop social events.

LANGUAGE

The official language of the congress was English.

SOCIAL EVENTS

A group photo was taken in front of Mona PLAZA hotel on Thursday, April 4th, at 11:50. The poster viewing session took place at Hall ‘Club’ of Hotel Palace, ground floor, located at Topličin Venac 23, Belgrade, on Friday from 17:45 to 19:15.”

INFORMATION FOR PRESENTERS

Oral presentations were held at the Hall “Donji Dorćol” and Hall “SCHONDA 4” , First floor of the hotel Mona PLAZA, Cara Uroša 62-64, Belgrade, from April 4th to 6th.

UMS 24° SERIES

04th - 06th April 2024

MONA PLAZA Hotel, **Belgrade**

XIII CONGRESS OF MICROBIOLOGISTS OF SERBIA

MIKROMED REGIO 5

WITH INTERNATIONAL PARTICIPATION

FROM BIOTECHNOLOGY TO HUMAN AND PLANETARY HEALTH

CONGRESS PROGRAMME

ORGANIZER :

SUPPORTED BY :

Federation of European Microbiological Societies

Republic of Serbia
MINISTRY OF SCIENCE,
TECHNOLOGICAL DEVELOPMENT AND INNOVATION

UMS 24 PROGRAMME

Thursday, April 4, 2024

08:00-09:00 **Registration of participants**

Venue - Hall „DONJI DORĆOL" of the MONA PLAZA Hotel, Cara Uroša 62-64, First floor

ORGANIZATIONAL OPENING REMARKS - **Ivica Dimkić, Dušan Kekić** & **Lazar Ranin**

08:45-09:30
Jelena Begović - Ministry of Science, Technological Development and Innovation
Ljubiša Stanisavljević - Dean of the Faculty of Biology of the University of Belgrade
Luciano Catani - Science Attaché at the Italian Embassy in Belgrade, Serbia
Vaso Taleski - FEMS Director of Events & Internationalization FEMS - 50 years of successful connecting people and sharing knowledge in microbiology worldwide

SESSION IA-1

MICROBIAL GENETICS, METAGENOMICS AND METAPROTEOMICS (PART 1) – MICROBIOMES AND RECENT DEVELOPMENTS & PROBIOTICS
Chaired by: **Maja Rupnik & Nataša Golić**

09:30-09:55 **Maja Rupnik (Slovenia):** The role of gut microbiota on infection with multiresistant bacteria

09:55-10:20 **Nataša Golić (Serbia):** The use of integrative multi-omics approach in cultivation and characterization of gut bacteria related to microbiota-gut-brain axis as a source for Next Generation Probiotics

10:20-10:45 **Vladimir Milivojević (Serbia):** The importance of probiotics and modulation of microbiota in gastroenterology

10:45-11:10 **Mirjana Rajilić-Stojanović (Serbia):** Modulation of human mycobiota as a tool for promoting health

11:10-11:35 **Marina Atanasković-Marković (Serbia):** Dangerous relations: bacteria, antimicrobial therapies, and allergic diseases

11:35-11:50 **Hristina Mitrović (Serbia, Offer. pres.):** From gut to lab: unlocking anti-inflammatory potential with GABA-producing bacteria

11:50-12:10 **AbelaPharm (INDUSTRY LECTURE) - Nada Tršić-Milanović (Serbia):** From microscope to shelf: How our research becomes strength

Venue - Hall „SCHONDA 4" of the MONA PLAZA Hotel, Cara Uroša 62-64, First floor

SESSION IB-1

INDUSTRIAL AND FOOD MICROBIAL BIOTECHNOLOGY (PART 1) - MICROBIAL VALORIZATION OF WASTES AND SECONDARY MATERIALS & BIOTECHNOLOGY AND SYNTHETIC MICROBIOLOGY
Chaired by: **Vera Karličić & Alexander Osmolovskiy**

09:30-09:55 **Alexander Osmolovskiy (Russian Federation):** Proteinases of filamentous fungi as activators of hemostatic system proteins: key properties and application

09:55-10:20 **Nemanja Mirković (Serbia):** Bacteriocins: past, current knowledge and future prospects
10:20-10:45 **Marina Jovanović (Serbia):** Valorization of psychobiotics and agri-food by products as functional ingredients
10:45-11:10 **Vera Karličić (Serbia):** Ecological services of beneficial microorganisms as a paradigm of sustainable agroecosystems
11:10-11:25 **Vincent Léguillier (France, Offer. pres.):** Structural optimization of an I-motif aptamer for the specific detection of *Staphylococcus aureus*
11:25-11:40 **Marija Duvnjak (Croatia, Offer. pres.):** Aerobic stability of the alfalfa silage

12:10-12:30 **COFFEE BREAK**
12:20-12:30 **GROUP PHOTO IN FRONT OF THE MONA PLAZA HOTEL**

Venue - Hall „DONJI DORĆOL" of the MONA PLAZA Hotel, Cara Uroša 62-64, First floor

SESSION IIA-1

ACTIVE IMMUNIZATION AS THE KEY ELEMENT IN INFECTION PREVENTION AND CONTROL (PART 1) - VIRAL VACCINES
Chaired by: **Maja Stanojević & Aleksandra Knežević**

12:30-12:55 **Maja Čupić (Serbia):** Vaccines for influenza and Covid 19 - what we need to know
12:55-13:20 **Aleksandra Knežević (Serbia):** HPV vaccines in the cancer prevention – recommendations and future prospective
13:20-13:45 **Maja Stanojević (Serbia):** Poliovirus eradication: challenges of containment
13:45-14:10 **Ivana Lazarević (Serbia):** Advances, challenges and novelties in HBV and HCV vaccines development
14:10-14:35 **Ana Banko (Serbia):** Development of new viral vaccines with a focus on the new RSV vaccine

Venue - Hall „SCHONDA 4" of the MONA PLAZA Hotel, Cara Uroša 62-64, First floor

SESSION IIB-1

ENVIRONMENTAL MICROBIOLOGY AND BIOTECHNOLOGY (PART 1) - HOST-MICROBE INTERACTIONS & TOWARDS A MORE SUSTAINABLE AGRICULTURE AND SOIL MICROBIAL LEGACY
Chaired by: **Ines Mandić Mulec & Ivica Dimkić**

12:30-12:55 **Ines Mandić Mulec (Slovenia):** Social strategies by beneficial bacterium *Bacillus subtilis*
12:55-13:20 **Vittorio Venturi (Italy):** Inter-species bacterial signaling in the plant microbiome
13:20-13:45 **Stéphane Compant (Austria):** Harnessing fungal-bacterial interactions to improve plant growth and health
13:45-14:10 **Ioannis Kampouris (Germany):** A consortium of plant-beneficial microorganisms mitigates drought effects on maize by aiding the recruitment of focal soil microorganisms in rhizosphere
14:10-14:25 **Dmitrii Deev (Slovenia, Offer. pres.):** Enhancing bioremediation efficiency: novel isolation techniques for microbial consortia in recalcitrant PAH-contaminated soils
14:25-14:40 **Ivana Galić (Serbia, Offer. pres.):** Soil microbiome diversity in maize-winter wheat crop rotation

14:40-15:30 **LUNCH BREAK**

Venue - Hall „DONJI DORĆOL" of the MONA PLAZA Hotel, Cara Uroša 62-64, First floor

15:30-15:50 **EuroMedicina (INDUSTRY LECTURE) - Aleksa Jovanović (Serbia):** EXS2600 MALDI TOF - new possibilities

SESSION IIIA-1

ENVIRONMENTAL MICROBIOLOGY AND BIOTECHNOLOGY (PART 2) - TOWARDS A MORE SUSTAINABLE AGRICULTURE AND SOIL MICROBIAL LEGACY & PHYTOPATHOLOGY
Chaired by: **Jovana Grahovac & Aleš Lapanje**

15:50-16:15 **Aleš Lapanje (Slovenia):** Harnessing spatial microbiome dynamics for cutting-edge environmental biotechnology

16:15-16:40 **Đorđe Bajić (The Netherlands):** Using fitness landscapes to engineer optimal function in microbial communities

16:40-17:05 **Matjaž Hladnik (Slovenia):** Comparative analysis of phyllosphere microbiota in olive leaf spot disease

17:05-17:30 **Jovana Grahovac (Serbia):** Microbial biomass production and application within biorefinery concept

17:30-17:45 **Marko Vincenković (Croatia, Offer. pres.):** Preparation, characterization and application of copper microparticles in controlling of phytopathogenic fungi

Venue - Hall „SCHONDA 4" of the MONA PLAZA Hotel, Cara Uroša 62-64, First floor

SESSION IIIB-1

PANEL SESSION - INFECTIONS IN PATIENTS ON IMMUNOMODULATION AND IMUNOSUPRESIVE THERAPIES
Moderator: **Dušan Kekić**

15:50-17:45

PANELISTS:

Gordana Petrović (Serbia)
Tamara Knežević (Serbia)
Borko Gobeljić (Serbia)
Aleksandra Plavšić (Serbia)
Ana Banko (Serbia)

PRESENTING CASES:

Tijana Đerić (Serbia): Occurrence of pneumonia in a patient on biological therapy due to TRAPS

Olga Odanović (Serbia): Infections in patients with inflammatory Bowel disease on biologic therapy: Challenges in management

Ljubica Matić (Serbia): Biological therapy and infections in hematopoietic stem cell transplantation

Uroš Karić (Serbia): A series of rare infectious complications in an immunosuppressed patient with SLE

17:45-18:10 **COFFEE BREAK**

Venue - Hall „DONJI DORĆOL" of the MONA PLAZA Hotel, Cara Uroša 62-64, First floor

SESSION IVA-1

INDUSTRIAL AND FOOD MICROBIAL BIOTECHNOLOGY (PART 2) - FOOD MICROBIOLOGY
Chaired by: **Mirna Mrkonjić Fuka & Konstantinos Papadimitriou**

- **18:10-18:35** **Tamar Sachaneli (Georgia):** Microbial diversity of Georgian artisanal cheese production
- **18:35-19:00** **Konstantinos Papadimitriou (Greece):** Multi-omics approaches to characterize the microbiome of certain greek artisanal fermented foods and wines
- **19:00-19:25** **Mirna Mrkonjić Fuka (Croatia):** Fermented food ecosystems - a treasure chest of untapped microbial potential
- **19:25-19:40** **Marija Todorovska Ivkovikj (North Macedonia, Offer. pres.):** Isolation and characterization of yeasts from Macedonian wineyards for production of Macedonian unique wine

Venue - Hall „SCHONDA 4" of the MONA PLAZA Hotel, Cara Uroša 62-64, First floor

SESSION IVB-1

ACTIVE IMMUNIZATION AS THE KEY ELEMENT IN INFECTION PREVENTION AND CONTROL (PART 2) - VIRAL VACCINES
Chaired by: **Danijela Miljanović & Ivana Lukić**

- **18:10-18:35** **Danijela Miljanović (Serbia):** MMR vaccine and seroprevalence of measles, mumps and rubella IgG antibodies among young medical students in Serbia
- **18:35-19:00** **Ivana Lukić (Serbia):** mRNA vaccine manufacturing – challenges in plasmid DNA cloning vector design
- **19:00-19:15** **Marko Janković (Serbia, Offer. pres.):** Human cytomegalovirus oncoprotection across diverse populations, tumour histologies, and age groups: the relevance for prospective vaccinal therapy

Friday, April 5, 2024

- **08:00-09:00** **Registration of participants**

Venue - Hall „DONJI DORĆOL" of the MONA PLAZA Hotel, Cara Uroša 62-64, First floor

SESSION IA-2

MULTI DRUG AND PAN DRUG RESISTANCE & HEALTH MICROBIOLOGY AND BIOTECHNOLOGY (PART 1)
Chaired by: **Ina Gajić & Paul Cos**

- **09:00-09:25** **Paul Cos (Belgium):** Challenges and lessons learned from antimicrobial research projects
- **09:25-09:50** **Ina Gajić (Serbia):** Genomic epidemiology of carbapenem-resistant *Pseudomonas aeruginosa*

09:50-10:15 **Katarina Novović (Serbia):** *Acinetobacter baumannii* resistant to last line antibiotics: an emerging threat in Western Balkan

10:15-10:40 **Dušan Milivojević (Serbia):** From soil to lab: Exploring toxicology with *Caenorhabditis elegans*

10:40-10:55 **Miloš Jovićević (Serbia, Offer. pres.):** High-level resistance of carbapenem-resistant *Klebsiella pneumoniae* to novel β-lactam-β-lactamase inhibitor combinations in clinical settings in Serbia

10:55-11:20 **Jose Alexander (USA) - *online*:** Understanding antimicrobial resistance for testing and treatment strategies

11:20-11:40 **bioMérieux (INDUSTRY LECTURE) - Snežana Jovanović (Serbia):** Syndromic PCR or how to solve diagnostic Rubik's cube easily

Venue - Hall „SCHONDA 4" of the MONA PLAZA Hotel, Cara Uroša 62-64, First floor

SESSION IB-2

MICROBIAL GENETICS, METAGENOMICS AND METAPROTEOMICS (PART 2) - MICROBIOMES AND RECENT DEVELOPMENTS & MICROBIAL GENOMES AND THEIR EVOLUTION

Chaired by: **Livia Leoni & Gergely Maróti**

09:00-09:25 **Livia Leoni (Italy):** Role of stringent response in *Pseudomonas aeruginosa* virulence

09:25-09:50 **Gergely Maróti (Hungary):** Genome level investigation of inter-kingdom microbial interactions

09:50-10:15 **Elena Perrin (Italy):** Insights into the evolution of multipartite genomes in *Proteobacteria*

10:15-10:40 **Svetlana Ugarčina Perović (Italy) - *online*:** Challenges in metagenomic annotation of antibiotic resistome

10:40-10:55 **Marko Panić (Serbia, Offer. pres.):** Exploring *E. coli*-based expression of genetically inactivated tetanus toxin for vaccine development

10:55-11:10 **Allwin Mabes Raj (Slovenia, Offer. pres.):** Mer B (organomercurial-lyase) mediated quartz crystal microbalance (QCM) based methylmercury detection

11:40-11:55 **COFFEE BREAK**

Venue - Hall „DONJI DORĆOL" of the MONA PLAZA Hotel, Cara Uroša 62-64, First floor

SESSION IIA-2

ACTIVE IMMUNIZATION AS THE KEY ELEMENT IN INFECTION PREVENTION AND CONTROL (PART 3) - BACTERIAL VACCINES

Chaired by: **Tamara Kastrin & Nataša Opavski**

11:55-12:20 **Tamara Kastrin (Slovenia):** The importance of vaccination and national surveillance of invasive bacterial diseases and whooping cough in Slovenia

12:20-12:45 **Nataša Opavski (Serbia):** Do we need higher valency pneumococcal conjugate vaccines in Serbia?

12:45-13:10 **Marko Veljković (Serbia):** Vaccination against pertussis in Serbia: past, current challanges and future perspectives

13:10-13:35 **Nevena Jovičić (Serbia):** Complications of pneumococcal pneumonia in children

13:35-14:00 **Aleksandar Sovtić (Serbia):** Respiratory infections in children – over the horizon

Venue - Hall „SCHONDA 4" of the MONA PLAZA Hotel, Cara Uroša 62-64, First floor

SESSION IIB-2

ENVIRONMENTAL MICROBIOLOGY AND BIOTECHNOLOGY (PART 3) - BIODETERIORATION OF MATERIALS: EXTREME ENVIRONMENTS & ANTIMICROBIAL RESISTANCE: A ONE HEALTH CHALLENGE
Chaired by: **Cecilia Flocco & Nikola Unković**

- **11:55-12:20** **Cecilia Flocco (Germany):** New perspectives for microbiology and biotechnology in cultural heritage research
- **12:20-12:45** **Nikola Unković (Serbia):** Research into the application of bacterial-based bioformulations in the conservation of fungal-deteriorated works of art in Serbia
- **12:45-13:10** **Nikolina Udiković Kolić (Croatia):** Environmental spread of antibiotic resistance – the role of industrial, agricultural and municipal waste
- **13:10-13:35** **Stoimir Kolarević (Serbia):** Impact of untreated wastewaters on the microbiological water quality of the Danube river and its tributaries in Serbia
- **13:35-14:00** **Dragana Predojević (Serbia):** Phytoplankon in small water bodies

14:00-15:00 **LUNCH BREAK**

Venue - Hall „DONJI DORĆOL" of the MONA PLAZA Hotel, Cara Uroša 62-64, First floor

- **15:00-15:20** **Pfizer (INDUSTRY LECTURE) - Ivana Ćirković (Serbia):** Together in the fight against AMR, from immunization and diagnostics to targeted therapy

SESSION IIIA-2

ALTERNATIVE APPROACHES IN ANTIMICROBIAL CONTROL (PART 1) - BACTERIOPHAGES APPLICATIONS
Chaired by: **Mariagrazia Di Luca & Goran Vukotić**

- **15:20-15:45** **Mariagrazia Di Luca (Italy):** Unveiling the Janus-Face of Bacteriophages: A dual perspective on antibacterial therapy
- **15:45-16:10** **Hugo A. M. de Oliveira (Portugal):** Novel bacteriophage-based depolymerase strategies to control *A. baumannii*
- **16:10-16:35** **Goran Vukotić (Serbia):** Bacteriophages of multidrug-resistant nosocomial pathogens – Belgrade experience
- **16:35-17:00** **Luís D. R. de Melo (Portugal):** Phage-host interaction with cells in different metabolic states: A *S. epidermidis* case
- **17:00-17:15** **Sonja Gostimirović (Serbia, Offer. pres.):** Non-tailed icosahedral phages as antibacterial agents

Venue - Hall „SCHONDA 4" of the MONA PLAZA Hotel, Cara Uroša 62-64, First floor

SESSION IIIB-2

PANEL SESSION - INTRAHOSPITAL AND EMERGING INFECTIONS
Moderator: **Dušan Kekić**

15:20-17:15 PANELISTS:

Miodrag Milenović (Serbia)
Novica Nikolić (Serbia)
Jelena Jordović (Serbia)

PRESENTING CASES:

Marija Rajković (Serbia): Fulminant necrotizing fasciitis: A fatal outcome. Case series

Elena Đukić (Serbia): Unraveling the mystery: A case of septic shock with unknown orgin

Ana Mirković (Serbia): A case report of *Staphylococcus aureus* prosthetic valve endocarditis in patient with Randu – Osler – Weber syndrome

Martina Jug (Serbia): Aspergillosis - diagnostic and therapeutic challenges

17:45-19:15 **POSTER VIEWING SESSION - HALL CLUB OF THE HOTEL PALACE, GROUND FLOOR, TOPLIČIN VENAC 23, BELGRADE**

Saturday, April 6, 2024

08:30-09:30 **Registration of participants**

Venue - Hall „DONJI DORĆOL" of the MONA PLAZA Hotel, Cara Uroša 62-64, First floor

SESSION IA-3

MICROBIAL GENETICS, METAGENOMICS AND METAPROTEOMICS (PART 3) - MICROBIOMES AND RECENT DEVELOPMENTS & MICROBIAL GENOMES AND THEIR EVOLUTION
Chaired by: **Tamara Janakiev & Alfonso Esposito**

09:30-09:55 **Nađa Nikolić (Serbia):** Microbiomes in oral carcinomas

09:55-10:20 **Alfonso Esposito (Italy):** Next-Generation Sequencing and Bioinformatics: How does microbiology benefit from cutting edge technologies?

10:20-10:45 **Tamara Janakiev (Serbia):** Plant microbiomes: from diversity to healthy crops

10:45-11:00 **Maurizio Zotti (Italy, Offer. pres.):** Microbiome associated with mycelial activity of three species of *Basidiomycetes*: Fairy rings in the gardens of the Royal Palace of Caserta (Italy)

11:00-11:15 **Daria Tsibulskaia (Serbia, Offer. pres.):** Description of a new potential aggregation factor from the *Streptococcus thermophilus* genome

11:15-11:40 **Jose Alexander (USA) - *online*:** Implementation of a rapid, cost-effective, and clinically focused NGS solution

Venue - Hall „SCHONDA 4" of the MONA PLAZA Hotel, Cara Uroša 62-64, First floor

SESSION IB-3

HEALTH MICROBIOLOGY AND BIOTECHNOLOGY & ALTERNATIVE APPROACHES IN ANTIMICROBIAL CONTROL (PART 2)
Chaired by: **Lidija Đokić & Jon Salmanton-García**

09:30-09:55 **Marina Šantić (Croatia):** *Legionella pneumophila* - journey from the environment to human macrophages

09:55-10:20	**Jon Salmanton-García (Germany):** Overview on the current situation on epidemiology and management of IFI and future perspectives
10:20-10:45	**Ivana Čolović Čalovski (Serbia):** Diagnosis of intestinal helminth infections: strengths and limitations
10:45-11:10	**Eleonora Dubljanin (Serbia):** Biomarker guided antifungal therapy: a current state of laboratory mycology and antifungal management
11:10-11:35	**Lidija Đokić (Serbia):** New approaches in the treatment of chronic bacterial infections

11:40-12:10 **COFFEE BREAK**

Venue - Hall „DONJI DORĆOL" of the MONA PLAZA Hotel, Cara Uroša 62-64, First floor

SESSION IIA-3

ALTERNATIVE APPROACHES IN ANTIMICROBIAL CONTROL (PART 3) - BIOTECHNOLOGICAL APPROACH OF USING NATURAL PRODUCTS & NANOTECHNOLOGY IN MICROBIOLOGY
Chaired by: **Marina Soković & Ivana Gobin**

12:10-12:35	**Marina Soković (Serbia):** Microfungi as a target and source of valuable compounds
12:35-13:00	**Ivana Gobin (Croatia):** Biofilms in premise plumbing systems - current challenges and potential solutions
13:00-13:25	**Marina T. Milenković (Serbia):** Herbal products as an alternative to antibiotics: application possibilities and limitations
13:25-13:50	**Tatjana Stević (Serbia):** Biocontrol activity of plant products against plant pathogens
13:50-14:05	**Miroslav Dinić (Serbia, Offer. pres.):** Host-microbiota interplay regulates epithelial barrier function and wound healing

Venue - Hall „SCHONDA 4" of the MONA PLAZA Hotel, Cara Uroša 62-64, First floor

SESSION IIB-3

WORKSHOP "NEXT GENERATION SEQUENCING (NGS) IN MICROBIOLOGY "
Moderators: **Valentina Đorđević & Ivana Morić**

12:10-12:35	**Valentina Đorđević (Serbia):** Center for Genome Sequencing and Bioinformatics
12:35-13:00	**Ivana Morić (Serbia):** Introduction to NGS technologies
13:00-13:25	**Mirjana Novković (Serbia):** Genome sequence diversity of SARS-CoV-2 in Serbia during pandemic
13:25-13:55	**Nada Stanković & Ivana Galić (Serbia):** Metagenomic studies

14:15-14:30 **ORGANIZATIONAL CLOSING REMARKS**

IL100

BACTERIOPHAGES OF MULTIDRUG-RESISTANT NOSOCOMIAL PATHOGENS – BELGRADE EXPERIENCE

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Antimicrobial resistance (AMR) arises when bacteria and other microbes stop responding to medications. AMR is now recognized as one of serious global health threats, repeatedly appearing in the World Health Organization's (WHO) lists of urgent global health challenges, including the 2024 list. It is taking a fatal toll – nearly 5 million deaths globally per year are associated with AMR, encompassing 1.27 million directly attributed to AMR. The COVID-19 pandemic paved the way for aggravation of bacterial AMR – primarily due to enhancement in unspecific and unjustified prescription and use of broad-spectrum antibiotics, resulting in what is now recognized as „silent pandemic of AMR". Bacteriophages (phages) are natural and specific predators of bacteria - viruses that can infect, replicate inside and lyse arguably any bacteria. Their therapeutic potential is being hastily evaluated through different approaches: in silico, in vitro, ex vivo and in vivo – in laboratory animals as well as in human case and clinical studies. Although the results are promising, bacteria rapidly develop resistance against phages, which why the isolation and research of new phages is needed. Our work is concentrated on three bacterial species for which critical priority by WHO has been declared – carbapenem-resistant *Acinetobacter baumannii*, *Pseudomonas aeruginosa* and *Klebsiella pneumoniae*. Twenty distinct pathogenic strains of *A. baumannii*, 6 *K. pneumoniae* and 6 *P. aeruginosa* were used as targets for bacteriophage isolation, and total of 14, 22 and 8 potentially distinct phages were collected, respectively. All strains were nosocomial isolates obtained from various tissues, including from terminally ill patients. Six phages were characterized in detail. In particular, phage vB_AbaM_ISTD was applied against *A. baumannii* in zebrafish embryo model of systemic infection, and demonstrated powerful therapeutic potential, eradicating the infection. Interestingly, its DNA was characterized with highly modified thymidine (amassing 1228 Da), making it the largest non-canonical deoxynucleoside reported so far.

KEYWORDS: antimicrobial resistance (AMR); nosocomial infections; bacteriophages, zebrafish model