



Chronicle

15th Congress of Bulgarian Microbiologists with International Participation - Achievements and Perspectives

The Fifteenth Congress of Bulgarian Microbiologists with International Participation, 5-8 October 2022, showed itself to be a significant scientific forum that brought together prominent and young scientists to discuss, educate, inspire, encourage, exchange ideas and conceive new joint projects. It was dedicated to the 200th anniversary of the birth of the world-famous microbiologist Louis Pasteur, to the 75th anniversary of the Stefan Angelov Institute of Microbiology at the Bulgarian Academy of Sciences (BAS), and to the International Year of Basic Sciences for Sustainable Development, proclaimed by the United Nations General Assembly for 2022.

Organizer of the Congress was the Bulgarian Microbiology Society (BMS) Section at the Union of Scientists in Bulgaria. Founded in 1927, the society is a leading scientific organization of about 200 scientists involved in research work in more than ten areas of microbiology. Traditionally, along with BMD, co-organizers were the Union of Scientists in Bulgaria (UBS) and the Stefan Angelov Institute of Microbiology at the BAS.

The Congress was held in Koprivshtitsa, aka the “insurgent capital of the *Bulgarian National Revival* period”. The town is the birthplace of some of Bulgaria’s most significant historical figures, such as Lyuben Karavelov, Dimcho Debelyanov, Todor Kableshkov, Georgi Benkovski among others. The Bridge of the First Rifle Shot in Koprivshtitsa was the place where the April Uprising broke out. The town had a pivotal role in Bulgaria’s historical past and piqued the interest of both foreign and Bulgarian participants. The venue of the Congress sessions was the old Saints Cyril and Methodius school - the first grade school in Koprivshtitsa. The unique revival period architecture of building and the entire atmosphere of the place steeped in history evoked a specific spirit among the participants.

More than 120 scientists from Bulgaria and Europe, representing all branches of the microbiological science (general, applied, medical, veterinary, plant microbiology and microbial biotechnologies, virology and infection immunology) participated in the Congress. Guests at the Congress were Professor Eliora Ron, President of the International Union of Microbiological Societies (IUMS) from Tel-Aviv University (Israel), and Prof. Colin Harwood, Treasurer of the Federation of European Microbiological Societies (FEMS) from Newcastle University (UK). Apart from scientists from Bulgaria, scholars from Italy, Great Britain, France, Greece, Turkey, Israel, Russia, Romania, and Albania took an active part in the work of the Congress.

The Congress was opened by the BMS Chairman, Academician Angel S. Galabov, and Prof. Diana Petkova, Chairman of the UBS, welcomed the participants on behalf of the Union. The introductory lecture delivered by Prof. Colin Harwood (UK) was focused on molecular-biological approaches to optimization of secretion of proteins for anthrax vaccine. The lecture of Corresponding Member Hristo Naydenski was dedicated to the life and work of Louis Pasteur on the occasion of the 200th anniversary of the birth of the great scientist.

A separate session was devoted to Covid-19 issues, in which leading experts in this field from Bul-

garia and abroad reported the latest epidemiological, morphological and immunological aspects of SARS-CoV2: Eliora Ron (Israel), Iva Hristova (NCZPB), Arzu Sayiner (Turkey), Pelagia Foka (Greece), Andi Koraqi (Albania), and Athanasios Tsakris (Greece).

A total of more than 100 papers were presented at the Congress, 52 of which were oral presentations and 50 were poster presentations. The 28 plenary lectures aroused a great deal of interest. Among the participants in the field of general and applied microbiology were Massimiliano Fenice (Italy), Jean-Marie François (France), Ilia Iliev, and Pavlina Dolashka (Bulgaria). Recent research results related to the biodiversity of extreme niche microbial communities and the effect of the metabarcoding approach, predictive models for probiotic potential, molecular mechanisms of antimicrobial activity of natural peptides, oxidative stress, the localization-function relationship in sialidases, novel enzymes from lactic acid bacteria, the role of industrial microbiology for sustainable alternatives to fossil resources, etc. were reported.

In the field of medical microbiology, plenary speakers were Igor Mokrousov (Russia), Mariana Murdzheva, Stefan Panayotov, Emma Kyoleyan and Robert Penchovski (Bulgaria), as well as young scientists from Bulgaria and Russia. They communicated advances in the use of modern molecular methods in the diagnosis of severe infections, the development of new antibacterial preparations, establishment of an antibiotic stewardship program, rapid and reliable detection of pathogens in raw milk, etc. Attention was also drawn to the personalized TB treatment in the setting of multidrug resistance, and the consequences of antibiotic overuse in COVID-19 treatment.

The problems of veterinary medicine were the focus of plenary speakers Hristo Naydenski and Raiko Peshev, as well as the researchers from the team of Petya Orozova and Valentina Urumova. The challenges of antimicrobial resistance in pig farms and the role of genes responsible for its global spread were discussed. New data were presented on the spread of herpes virus infections in ruminants, the first isolation and complete genome sequene of the causative agent of bacterial cold water disease in fish, the first confirmed presence in Bulgarian Black Sea's aquatorium of *Vibrio aestuarianus*, causing disease in oysters, the prevalence of *Staphylococcus* spp., involved in the etiology of mastitis in cattle and their sensitivity to antimicrobial agents, etc.

In the field of Environmental Microbiology, Gabriel Ionescu (Romania), Ivan Simeonov and Alexander Krumov presented the role of control on the use of valuable biological materials of different origins (toxins, genetic materials, GMOs, foods, cellular components), a strategy for anaerobic biogas production, as well as a model of a multifunctional laboratory for the production of algae on waste materials.

The Virology Department opened their session by celebrating the 90th anniversary of the birth of the eminent Bulgarian virologist Professor Stefan Dundarov. In his address, Academician Angel S. Galabov paid tribute to Stefan Dundarov's life and work, and an honorary diploma was presented on behalf of BMS. The congress agenda continued with the presentation of six papers on various current topics, such as the use of an accessible molecular laboratory method for hepatitis B virus DNA detection (Zhivka Stoykova et al.), the challenges of drug resistance and HIV-1 molecular epidemiology in Bulgaria (Ivaylo Alexiev), the role of gene silencing in Cocksackie B virus (Nikolay Petrov), an effective model for studying the pathogenesis of influenza infection in the lung (Lora Simeonova), etc.

In the field of food microbiology, the guest speakers Stefan Denev, Svetla Danova and Galina Sachanska focused on the problems of probiotics, with an emphasis on those with Bulgarian lactobacilli, the presence of pathogenic bacteria in dairy products, etc.

Petya Dimitrova and Anastas Pashov from the Department of Infection Immunology took active part by presenting their achievements regarding the role of neutrophils as a promising therapeutic targets in various diseases, as well as the importance of specific antibodies (IgOme) for diagnostics and new studies of the complexity of the immune system.

In his closing speech, Academician Angel S. Galabov highlighted the paper of Iva Hristova, director of the National Centre for Infectious and Parasitic Diseases, summarizing and analyzing data from studies on the COVID pandemic in Bulgaria, and the paper of Ivaylo Alexiev, summarizing all data on the AIDS/HIV-1 epidemic in Bulgaria. Particular attention was given to both papers on infection immunology. In addition, Academician Angel Galabov pointed out that the presentations of some of the guests from abroad were a great honor for the congress, as they are of global importance. These were the papers of Massimiliano Fenice (Tuscia University, Viterbo, Italy) on the deep-sea influence on prokaryotes, of IUMS Pres-

ident Eliora Ron (Tel-Aviv) on global data on the effect of drug-resistant E. Coli on the COVID pandemic, of Athanasios Tsakris (Athens) on the impact of seasonal coronaviruses (such as 229E, O43, etc.) on the development of the COVID pandemic and the need to diagnose and monitor their spread, among others.

Two poster sessions were held within the framework of the Congress. Some of the results they presented aroused huge interest and extensive discussions.

Most of the participants were young microbiologists, 20 of whom received grants from the Scientific Research Fund of the Ministry of Education and Science, and from the BAS. An authoritative panel with an Italian researcher among its members selected the best posters of young scientists. At the closing ceremony, the names of the awardees were announced and awarded diplomas:

1st prize

- Melani Dimitrova – Sofia University St. Kliment Ohridski
- Teodora Panayotova – University of Plovdiv Paisii Hilendarski

2nd prize

- Tsvetozara Damyanova – Institute of Microbiology, Bulgarian Academy of Sciences
- Maria Pandova – Sofia University St. Kliment Ohridski

3rd prize

- Mila Kaleva – Institute of Microbiology, Bulgarian Academy of Sciences
- Katerina Takova – University of Plovdiv Paisii Hilendarski

For the time of the Congress, young artists from the National Academy of Art and New Bulgarian University displayed their paintings in two exhibitions.

The participants in the 15th Congress were offered a sightseeing tour round the historical sights in Koprivshtitsa.

The Congress proceeded in an atmosphere of keen interest, creating opportunities to build new connections and pave the way to fruitful collaborations

The event was supported by the Scientific Research Fund at the Ministry of Education and Science, the Bulgarian Academy of Sciences and business partners (AAMEDICAL, Ltd RIDACOM, RSR Ltd, ELTA'90M, SEVEX PHARMA Ltd), who organized an exhibition of their latest products with potential application in microbiology.



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