

The XLIX Winter School of the Faculty of Biochemistry, Biophysics and Biotechnology of the Jagiellonian University – “Omics research – from methodology to application”. February 22nd–24th, 2022, Kraków, Poland

The XLIX Winter School of the Faculty of Biochemistry, Biophysics and Biotechnology of the Jagiellonian University, entitled “Omics research – from methodology to application”, took place in Kraków on February 22th–24th, 2022. This event was held under the honorary patronage of Prof. dr hab. Jolanta Jura, the Dean of the Faculty of Biochemistry, Biophysics and Biotechnology.

This year’s School was divided into training and conference sessions. First part of the school was devoted to the methodological aspects of omic methods and consisted four sessions related to Genomics, Transcriptomics, Proteomics and Metabolomics. The scientific programme of second part of the school consisted three oral sessions named Nucleic acids, Proteins and Cells and two poster sessions; 24 oral and 75 poster presentations focused on current research conducted at our Faculty. Additionally, the attendees had a unique occasion to participate in extraordinary opening lectures of two invited speakers, Prof. Krzysztof Meissner and Prof. Pawel Golik. The scientific part of the School was complemented by two social events allowing the continuation of lively scientific discussions and planning of future collaborations. The detailed scientific programme and the conference Book of Abstracts is available at the Winter School web page (see: <https://winterschool.wbbib.uj.edu.pl>).

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The Organizing Committee would like to express special thanks to the experts that presented the basic and advanced methodological aspects of omic methods during training sessions. Additionally, we gratefully acknowledge the members of Scientific Committee and all the volunteers for their great contribution in this event.

The scientific presentations of the XLIX Winter School gave an opportunity to release a special issue of *Acta Biochimica Polonica*, which contains 5 scientific articles prepared on the basis of selected presentations held at the Winter School. Additionally, the article of Prof. Kazimierz Strzalka presents the history of the establishment and development of the Institute of Molecular Biology at the Jagiellonian University, the reasons for the transformation of the Institute into the Faculty and provides information on the current scientific and teaching potential of the Faculty.

In the manuscript of M. Durbas and co-workers the authors demonstrate the mechanism of neuroblastoma cell death *in vitro* following the addition of an anti-GD2 human-mouse chimeric ch14.18/CHO mAb and two aurora A inhibitors. The combination of these two factors were shown to enhance apoptosis in IMR-32 cells compared to when used individually. Group of I. Guevara-Lora analyzed the ability to produce kinin peptides and to characterize the effect of bradykinin on the pro-inflammatory responses in human adipocytes. Their results suggest an important role of kinin peptides in inducing inflammatory responses in adipocytes, which may ultimately lead to diseases related to disturbance of energy homeostasis. In the paper of M. Sabat the computer simulation study was employed to compare metabolic effects of mitochondrial diseases in context of the vulnerability to fatigue. The research group from the Department of Plant Physiology and Biochemistry (D. Latowski and M. Bojko as corresponding authors) provided a paper related to molecular markers of mercury bacterial resistance. Results of their research indicate that, although *merA* is commonly regarded as a molecular marker of bacterial mercury resistance, there is a need to verify this idea and further investigate this phenomenon. The authors from the same Department – P. Żbik and P. Malec presented research on the structure of myxoxanthophylls – specific carotenoid glycosides accumulated in cyanobacterial cells, which attracts emerging interest from biotechnological perspective.

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On behalf of the Organizing Committee