

53rd WINTER SCHOOL
OF FB B B 2026

I N T E R A C T I O N S

**The program of 53rd Winter School of the
Faculty of Biochemistry, Biophysics and
Biotechnology**



S T R Y S Z A W A
1 8 - 2 0 F E B R U A R Y 2 0 2 6

Wednesday, February 18, 2026



10:00

Departure from Kraków by chartered buses



13:00 – 14:00

Lunch



14:00 – 14:15

Inauguration of 53rd Winter School WBBiB

SESSION 1 – Part 1: Molecular Conversations

Decoding the molecular language of life – from structure to systems

Chairs: Sylwia Kędracka-Krok, Przemysław Płonka

14:15 – 16:00

14:15 – 14:35	Andrzej Górecki The strength of weak interactions in the control of gene expression
14:35 – 14:55	Anna Wiśniewska-Becker Curcumin–lipid interactions in PEGylated vs. conventional liposomes
14:55 – 15:15	Mateusz Wilamowski Exploring the structural features of N4BP1 as an RNase associated with mRNA decapping complex
15:15 – 15:30	Michał Sarna From titin unfolding to muscle contraction: the effect of mechanical stimulation on sarcomere length and generation of force by cardiomyocytes
15:30 – 15:45	Grzegorz Szewczyk Direct measurements of singlet oxygen – from simple solvents to cell cultures
15:45 – 16:00	Krzysztof Mokrzyński Mapping of the triplet excited states of melanins using time-resolved singlet oxygen phosphorescence detection



16:00 – 16:30

Coffee break

SESSION 1 – Part 2: Molecular Conversations

Decoding the molecular language of life – from structure to systems

Chairs: Aneta Kasza, Ewa Zuba-Surma

16:30 – 17:40

16:30 – 16:40	Alicja Martyniak – ALTIUM INTERNATIONAL (Gold Sponsor) Improving T-cell activation and serial killing through metabolic modulation
16:40 – 17:00	Isabel Fabregat The TGF-beta pathway as a target to improve immunotherapy in hepatocellular carcinoma (HCC)
17:00 – 17:20	Agnieszka Łoboda When a toxic gas becomes protective: hydrogen sulfide in Duchenne muscular dystrophy
17:20 – 17:35	Anna Grochoń-Przęczek The interplay of NRF2 and miR-34a in vascular pathophysiology

FLASH TALK A

Chair: Michał Bukowski

17:40 – 18:10

- **Wojciech Dec** – ModelExplorer: A PyMOL plugin for assessing the quality of macromolecular models
- **Gabriela Dziurman** – Oxygen response to radiotherapy in uveal melanoma murine tumors
- **Milena Cichoń** – KEAP1-driven dysfunction of aging endothelial cells
- **Piotr Rybczyński** – Clozapine regulates neuronal activity-dependent pathways by decreasing AP-1 activity in human neurons
- **Rafał Miłodrowski** – Social media posts as a source of ecological information over time: using Twitter (X) as a proof of principle



19:00 – 20:00

Dinner

20:00 – 21:00 POSTER SESSION A

21:00 – 23:00 Integration meeting with music, bowling and board games

Thursday, February 19, 2026



8:00 – 9:00

Breakfast

SESSION 2 – Part 1: Cell-to-Cell Interactions

From single cells to collective behavior-communication and cooperation

Chairs: Agnieszka Łoboda, Krzysztof Szade

9:00 – 11:00

9:00 – 9:25	Józef Dulak Induced pluripotent stem cells and gene editing in disease modeling and therapy
9:25 – 9:45	Agnieszka Jaźwa-Kusior The immunogenic and paracrine roles of senescent endothelial cells in vascular disease
9:45 – 10:00	Agata Szade Recombinant G-CSF uncouples neutrophil maturity from canonical progenitor marker expression
10:00 – 10:20	Martyna Elas Recent advances in preclinical pO2 imaging
10:20 – 10:40	Przemysław Mieszko Płonka Codes of life and codes of biological information
10:40 – 10:50	Michał Konieczny – CYTO-LOGIC (Silver Sponsor) Flow cytometry in action: Platforms, people and possibilities



11:00 – 11:30

Coffee break

SESSION 2 – Part 2: Cell-to-Cell Interactions

From single cells to collective behavior-communication and cooperation

Chairs: Martyna Elas, Joanna Koziel

11:30 – 13:00

11:30 – 11:40	Mariusz Młyńczak – IKA HABITAT (Silver sponsor) More than a bioreactor – a complete ecosystem for your research
11:40 – 12:05	Ewa Zuba-Surma Stem cells as a source of mediators in cell-to-cell communication – role of extracellular vesicles in tissue repair
12:05 – 12:20	Anna Łabędź-Masłowska MesoCellA-Ortho as an advanced therapy medicinal product for use in orthopedics – from research to clinical trial
12:20 – 12:35	Elżbieta Karnas Polyelectrolytes as effective cryoprotectants for stem cell-derived extracellular vesicles
12:35 – 12:50	Ilona Ayllo Investigating the effects of HSPC mobilising factors on the development of GVHD in a haploidentical murine model
12:50 – 13:00	Weronika Romańska Brain lipids and cholesterol homeostasis: Physiological interactions and relevance in antipsychotic treatment



13:00 – 14:00

Lunch

SESSION 3 – Part 1: Host-Microbe Interactions

Conflict, coexistence, and communication across biological boundaries

Chairs: Teresa Olczak, Benedykt Władyka

14:00 – 15:40

14:00 – 14:25	Joanna Cichy Keratinocyte-neuro-immune crosstalk in skin pathophysiology
14:25 – 14:45	Aleksander Grabiec Gingival fibroblasts in periodontitis: passive responders or imprinted aggressors?
14:45 – 15:05	Justyna Karkowska-Kuleta Moonlighting proteins of <i>Candida</i> fungi in host interactions and contact system binding and activation
15:05 – 15:20	Michał Bukowski Natural diversity of staphylococcal lysostaphins: a foundation for novel antimicrobial drug development
15:20 – 15:35	Mariusz Madej Zuzalysin: a giant virus-like proteolytic cage produced by the periodontal pathogen <i>Porphyromonas gingivalis</i>



15:40 – 16:10

Coffee break

FLASH TALK B

Chair: Justyna Karkowska-Kuleta

16:10 – 16:40

- **Rafał Myrczek** – Development of a single-cell transcriptomic workflow to study hepatocellular carcinoma initiation in a murine model of Zc3h12a deficiency
- **Joanna Król** – Zc3h12b destabilizes mRNAs encoding transcriptional regulators of neural development
- **Weronika Krzyszczyk** – Modification of herpesviruses by gingipains limits their replication
- **Izabela Ciastoń** – Enzymatically inactive but functional: Proteolitically inactive gingipains (piGING) from *Porphyromonas gingivalis* in esophageal cancer progression
- **Alicja Jankowska** – Engineering lysostaphins for targeted antimicrobial activity

16:50 – 17:50 – POSTER SESSION B



18:30 – 23:00

Gala dinner and acknowledgments for Prof. Andrzej Kozik for his long-term work at WBBiB

Friday, February 20, 2026



8:00 – 9:00

Breakfast

SESSION 3 – Part 2: Host-Microorganism Interactions

Conflict, coexistence, and communication across biological boundaries

Chairs: Dariusz Dziga, Aleksander Grabiec

9:00 – 10:00

9:00 – 9:15	Aliaksandr Zhydzetski The role of the cell wall-binding domain in the activity and specificity of novel lysostaphins
9:15 – 9:25	Zuzanna Głowacka-Grzyb Yin-Yang – the two component system of lysostaphin resistance in <i>Staphylococcus simulans</i>
9:25 – 9:35	Alicja Frączek Puzzling contradictions in research on immunomodulatory activity of bacteriocin BacSp222
9:35 – 9:45	Mariia Melnykova Oral pathogens induce trained-like immunity in gingival fibroblasts: A novel mechanism of innate immune memory in periodontal disease
9:45 – 9:55	Maciej Kosiński - BIOMEDICA (Silver sponsor) Nanopore sequencing - technology and applications



10:00 – 10:30

Coffee break

SESSION 4: Interactions and the Environment

Life in dialogue with its environment – from molecules to ecosystems

Chairs: Dariusz Dziga, Aleksander Grabiec

10:30 – 11:45

10:30 – 10:50	Ariel Kamiński Can I eat this? Algae as a valuable component of the human diet
10:50 – 11:10	Ewa Kowalska Uncovering the role of FEN1 phosphorylation in <i>Arabidopsis thaliana</i> by the atypical cyclin-dependent kinase CDKF;1
11:10 – 11:25	Sebastian Pintschner Cryo-EM of bioenergetic complexes in native membranes
11:25 – 11:35	Aleksandra Brankiewicz Hyperforin-mediated mitochondrial uncoupling sensitizes A549 lung cancer cells to everolimus in 2D and 3D models
11:35 – 11:45	Saravana Kumar Application and comparison of composites coated with TiO ₂ – does it have an impact on Cyanotoxins and Cyanobacterial Blooms?

11:45 – 12:15 – Closing of the 53rd WBBiB Winter School and announcement of the Best Poster Award winners



12:30 – 13:30

Lunch (optional)



14:15

Departure to Kraków by chartered buses