

## XIX ALL-UKRAINIAN CONFERENCE OF YOUNG SCIENTISTS OF THE INSTITUTE OF MOLECULAR BIOLOGY AND GENETICS OF THE NAS OF UKRAINE, DEDICATED TO THE DAY OF SCIENCE IN UKRAINE

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The XIX All-Ukrainian Conference of Young Scientists of the Institute of Molecular Biology and Genetics of the NAS of Ukraine was held on May 20–21, 2025, to mark the Day of Science in Ukraine (registration certificate issued by UkrISTEI of the Ministry of Education and Science of Ukraine, No. 212, dated February 12, 2025). It was organized by the Council of Young Scientists (Head – PhD Antonenko S.V.).

Three types of participation were available for registered scientists: oral presentation, poster presentation, and abstract publication only. The conference included four sections in the field of biological sciences, namely: Molecular Biology and Bioorganic Chemistry; Molecular Physiology and Biophysics; Biotechnology and Microbiology; Molecular Oncogenetics, Genetics, and Epigenetics.

More than 60 participants registered for the conference, representing research institutions, universities, and medical establishments from various regions of Ukraine. In addition, young scientists from the Institute of Biosciences, Life Sciences Center, Vilnius University (Lithuania), participated in the event.

Oral and poster presentations were evaluated by the Scientific Committee of the Conference, which included members of the Academic Council, leading researchers, and representatives of the Council of Young Scientists of the Institute of Molecular Biology and Genetics of the NAS of Ukraine.

### Oral presentations:

May 20, 2025

#### Section 1. «Molecular Biology and Bioorganic Chemistry»

**Zahanich I.** Potential and immunomodulatory properties of umbilical cord-derived human mesenchymal stem cells. (IMBG NASU)

**Bukhonska Y.** The role of 24-epibrassinolide in biotic stress resistance and modulating root morphology in *Arabidopsis thaliana*. (IBOPC NASU)

**Rudnytska O.** ERN1 protein kinase activity controls the expression of *TWIST1* and *TOB1* genes in glioblastoma cells. (Palladin Institute of Biochemistry, NASU)

**Forys I.** Calix[4]arenes as an effective instrument of influence on mitochondrial functioning and contractility of myometrium. (Palladin Institute of Biochemistry, NASU)

**Yatsenko M.** uORF-encoded peptides of S6K1 mRNA isoform. (IMBG NASU)

**Martsynyuk M.** Cellular characterization of MCF7 cell lines with differentially knocked out isoforms of S6K1. (IMBG NASU)

**Ivanochko M.** Consumption of a cafeteria diet with green broccoli sprouts affects xenobiotic detoxification rather than oxidative stress markers in murine liver. (Vasyl Stefanyk Precarpathian National University)

**Melnyk H.** Outer membrane vesicles of *Pseudomonas aeruginosa* as a source of proteolytic enzymes with selective cytotoxicity to cancer cells. (IMBG NASU)

**Peka M.** Comparison of different C60 fullerene topologies for use in molecular dynamics simulations. (V. N. Karazin Kharkiv National University; Institute of Pig Breeding and Agroindustrial Production)

**Ryskal M.** Characterization of amphiphysin proteins AMPH1 and BIN1 in interaction with WIP: potential roles in breast cancer progression. (IMBG NASU)

**Horyslavets D.** Metagenomic geolocation prediction using de Bruijn graph-based graph neural networks. (IMBG NASU)

### Section 2. «Molecular Physiology and Biophysics»

**Dotsenko M.** Some spectral properties of protonated and deprotonated forms of ribonucleotides in water and some buffers. (IMBG NASU)

**Shelest A.** Impact of a *KCNQ1* mutation on channel function. (IMBG NASU)

**Koroid K.V.** Functional diversity of lamina X neurons and their synaptic response to *trpv1* activation. (Bogomoletz Institute of Physiology NASU)

**Yarynka V.** Impact of type of general anesthesia on recovery of thermal sensitivity following transection and neurorrhaphy of sciatic nerve. (KAU NASU)

**Nikolaiev R.** Analysis of the complexation of mononucleotide phosphates and their disodium salts with D-mannitol by FTIR spectroscopic methods. (IMBG NASU)

**Blashchak I.** Mechanisms of descending control of nociceptive networks in spinal lamina X. (Bogomoletz Institute of Physiology NASU)

May 21, 2025

### Section 3. «Biotechnology and Microbiology»

**Sobolevskyi M.** Precision synthesis of citrate-capped gold nanoparticles for enhancement of dna hybridization biosensors. (IMBG NASU)

**Khmelnyska Y.** Optimization of extracellular vesicle isolation under various culture conditions. (LLC «Medical Center «M.T.K.» BU «Reocell»)

**Mruga D.** Development of an amperometric biosensor for the detection of alanine aminotransferase activity. (IMBG NASU)

**Bakhmat V.** New electrochemical enzyme biosensor for creatinine monitoring in urine. (IMBG NASU)

**Kostiuk I.** Homeostasis of the soil microbiome in considering polyresistance to toxic metals. (D.K. Zabolotny Institute of Microbiology and Virology NASU)

**Bida I.** Determination of the taxonomic position and resistance traits of microorganisms to toxic metals in ionic and nanometallic forms. (D.K. Zabolotny Institute of Microbiology and Virology NASU)

**Izmailova O.** Primary contaminants in combatants treated at feofaniya clinical hospital: a three-year observational study. (IMBG NASU; Feofaniya Clinical Hospital of the State Administration of Affairs)

**Berketa K.** Development and adaptation of an amperometric biosensor based on lactate oxidase and a semipermeable membrane based on polyphenylenediamine for the determination of L-lactate in biological fluid samples. (IMBG NASU)

**Zghurska A.** The novel approach for the bioremediation of soil contaminated by ferrous compounds. (D.K. Zabolotny Institute of Microbiology and Virology NASU)

**Dmyterchuk B.** Predicting glycated hemoglobin levels from blood FTIR spectra using machine learning approaches. (IMBG NASU; Institute of Gerontology)

### Section 4. «Molecular Oncogenetics, Genetics, and Epigenetics»

**Nehrulia D.** Clinically significant hereditary mutations associated with breast and ovarian cancer in Ukrainian women. (IMBG NASU)

**Shloma A.** Investigating the impact of *CHI3L1* and *CHI3L2* overexpression on the expression levels of several other key genes in glioblastoma. (IMBG NASU)

**Kozakov D.** Genetic alterations in non-small cell lung cancer: a Ukrainian study. (IMBG NASU)

**Honcharenko A.** Cell-free RNAs as biomarkers of prostate cancer progression. (IMBG NASU)

**Harashchenko T.** Longer leukocyte telomere length increases the risk of lung injury in children with COVID-19 (SI «Ukrainian Center of Maternity and Childhood of the National Academy of Medical Sciences of Ukraine»)

**Haviaz V.** Studying lncRNAs and *RASSF1A* gene expression as potential biomarkers for bladder cancer. (IMBG NASU)

**Artemenko V.** Clarification of the genetic background of congenital heart defects and study of the prevalence of heart defects in children in Ukraine. (Vinnytsia National Pirogov Memorial Medical University)

**Mishchenko A.** Potential of retrotransposon-based iPBS-markers in the identification of Ukrainian hazelnut varieties. (IMBG NASU)

**Plyhun V.** Analysis of wheat hexaploids variability by structure of conserved regions of resistance genes. (National University of Kyiv-Mohyla Academy)

## Poster Presentations:

Burmistrova N. (IMBG NASU), Labudzynski D. (Palladin Institute of Biochemistry NASU), Hlazunova O. (IMBG NASU), Koshchavko K. (Institute of Cell Biology and Genetic Engineering NASU), Zavalna A. (IMBG NASU).

The winners in the category “Best Oral Presentation” were:

- 1st place — Olha Izmailova, PhD student, IMBG NASU;
- 2nd place — Daryna Mruga, PhD student, IMBG NASU;
- 3rd place — Dmytro Horyslavets, PhD student, IMBG NASU.

In the “Best Poster Presentation” category, the winner was Nataliia Burmistrova, a student of Taras Shevchenko National University of Kyiv, conducting her diploma research at the Department of Molecular Genetics, IMBG NASU.

Within the framework of the conference, a scientific microphotography contest was held at IMBG NASU. The winning entries were:

- 1st place — “Histological Pattern of Infectious Endocarditis” by Olena Moshynets, PhD, Senior Research Scientist, Department of Cell Regulatory Mechanisms.
- 2nd place — “Metaphase Plates in Root Cells of Iris L.” by Olena Alkhimova, PhD, Senior Research Scientist, and Maryana Tvardovska, PhD, Senior Research Scientist, Department of Cell Population Genetics.
- 3rd place — “BCR and Cortactin Proteins” by Dmytro Gurianov, PhD, Research Scientist, Department of Molecular Genetics.

The conference provided a valuable platform for scientific exchange, professional growth, and recognition of young researchers in the field of molecular biology and related disciplines.

## XIX ВСЕУКРАЇНСЬКА КОНФЕРЕНЦІЯ МОЛОДИХ ВЧЕНИХ ІНСТИТУТУ МОЛЕКУЛЯРНОЇ БІОЛОГІЇ І ГЕНЕТИКИ НАН УКРАЇНИ ПРИСВЯЧЕНА ДО ДНЯ НАУКИ В УКРАЇНІ

20–21 травня 2025 відбулась XIX Всеукраїнська конференція молодих вчених Інституту молекулярної біології і генетики Національної академії наук України, організована Радою молодих вчених (Голова Ради – к.б.н. Антоненко С.В.). Конференція зібрала понад 60 учасників із різних регіонів України та Литви. Вона включала усні та стендові доповіді, конкурс мікрофотографій і відзначення найкращих робіт молодих дослідників у галузі біологічних наук.