

INTEGRATIVE Biology & Medicine



October 2-7, 2017 | Kyiv, Ukraine



PROGRAM & ABSTRACTS



Systems
Biology



Molecular
Biology



Bio
Informatics



Evolution



Translational
Medicine



Personalized
Medicine

integrativebio.com.ua

Welcome to the conference Integrative Biology & Medicine, the first conference in Ukraine focused on computational biology for researchers driven by passion to understand life and disease.

The conference is organized by a team of volunteers and co-funded by individual companies and foundations.

Homepage: <https://integrativebio.com.ua/>

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Conference venue:

Great Conference Hall
of the National Academy of Sciences of Ukraine
Volodymyrska Street 55
Kyiv, Ukraine

PROGRAM

OCTOBER 2, Monday

10:00 – 11:00 **Registration & Coffee**

11:00 – 11:15 **Welcome**

11:15 – 12:30 **Eli Eisenberg** | *Tel Aviv University, Israel*

AN ALTERNATE ROUTE TO COMPLEXITY: TRADE-OFF
BETWEEN TRANSCRIPTOME PLASTICITY AND GENOME
EVOLUTION IN CEPHALOPODS

12:30 – 13:30 **Vaida Bankauskaite** | *ERC Life Sciences*

EUROPEAN RESEARCH COUNCIL FUNDING SCHEMES

13:30 – 14:30 **Lunch**

14:30 – 18:30 **Scientific Fair**

14:30 – 15:00 **Networking**

15:00 – 15:05 **Scientific Fair Welcome**

15:05 – 15:30 **Sergey Zozulya** | *Bienta/Enamine, Ukraine*

DISCOVERING NOVEL MEDICINES IN UKRAINE

15:30 – 16:15 **Christian Popp** | *MDC/BIMSB, Germany*

PRESENTATION OF BIMSB-NYU PHD PROGRAM

16:15 – 17:00 **Participants pitches**

Alyona Borovskaya KAU - Research University of a new type

Oleksii Molchanovskyi Master Degree program in Data Science at the
Ukrainian Catholic University

Oleksii Shershnov Medical Company ILAYA. Regenerative Medicine

Olena Yemets BioLabTech Ltd: Our way of fostering excellence in Life
Sciences' research and practice

Volodymyr Kravchenko «NanoMedTech» LLC

Szabolcs Kokeny Illumina Signed Distributor Agreement in Ukraine

Dmytro Simonov Science in Ukrainian Society: Lost in Translation

Michael Tulsy Fundamental Production: From Fundamental Science
to Society and Back

Marina Chernysh: FabLab Fabricator

17:00 – 18:00 **Networking**

October 3, Tuesday

08:45 – 09:00 **Morning Coffee**

09:00 – 10:00 **Hedwig Deubzer** | *Charité Universitätsmedizin Berlin, Germany*
TRANSLATIONAL NEUROBLASTOMA RESEARCH

10:00 - 11:00 **Sergiy Klymenko** | *NRC for Radiation Medicine, Ukraine*
FUNDAMENTAL RESEARCH IN CLINICAL ONCOLOGY

11:00 – 11:30 **Coffee**

11:30 – 12:00 **Oksana Sulaieva** | *Ukrainian Research and Practical Centre of
Endocrine Surgery, Ukraine*
UNDERSTANDING MOLECULAR BIOLOGY OF THYROID
CANCER

12:00 – 12:30 **Yakov Vitrenko** | *IMG, Ukraine*
ILLUMINA PLATFORMS, SOLUTIONS AND PIPELINES FOR
SMALL- AND MID-SCALE LABS FOCUSING ON
ONCOGENETICS

12:30 – 13:00 **Dimitri Zubov** | *Medical company ilaya®, Ukraine*
UKRAINIAN BIOMEDICINAL TISSUE-ENGINEERED PRODUCT
FOR TREATMENT OF BONE CRITICAL SIZED DEFECTS AND
AVN: MANUFACTURING AND FIRST-IN-HUMAN CLINICAL
OUTCOMES

13:00 – 13:15 **Svitlana Drozdovska** | *National University of Physical Education and
Sport of Ukraine, Ukraine*
INTEGRATIVE GENETIC VARIANTS IN UKRAINIAN ATHLETES

13:15 – 13:30 **Maria Obolenska** | *Institute of Molecular Biology & Genetics, Ukraine*
THE TISSUE-SPECIFIC TRIGGERS OF IFNA NEUROTOXICITY:
BIOINFORMATICS PREDICTION AND EXPERIMENTAL
VERIFICATION

13:30 – 14:30 **Lunch & Posters Discussion**

14:30 – 16:00 **ORPHEUS workshop**

SUPERVISORS' ROLE IN SUCCESS OF DOCTORAL SCHOOL

PhD supervision in Ukraine: responsibilities and challenges. -

Oksana Sulaieva

Good supervisor - young scientists opinion. - Antonina

Kalmykova

Controversies about academic Mentor, Tutor, Supervisor or

Advisor - Zdravko Lackovich

Successful PhD supervision for successful PhD projects – the

ORPHEUS recommendations - Michael Mulvany

Discussion.

16:00 – 17:30 **Gisela Zimmermann** | *DAAD in Kiev*

DAAD-PROGRAMMES FOR INTERNATIONAL COOPERATION

WITH GERMAN UNIVERSITIES & DAAD-RESEARCH GRANTS

17:30 – 18:30 **Maksym Pogorielov** | *Sumy State University, Ukraine*

HORIZON 2020 PROPOSAL: STEPS FROM IDEA TO

SUCCESSFUL SUBMISSION

October 4, Wednesday

08:45 – 09:00 **Morning Coffee**

09:00 – 10:00 **Mikhail Gelfand** | *Institute for Information Transmission Problems, Russia*

THREE-DIMENSIONAL STRUCTURE AND FUNCTIONAL STATE OF CHROMATIN: WHO IS THE DRIVER?

10:00 – 11:00 **Bartek Wilczynski** | *Institute of Informatics, University of Warsaw, Poland*

INTEGRATING GENE EXPRESSION AND CHROMATIN STRUCTURE FOR BETTER MODELS OF GENE REGULATION

11:00 – 11:30 **Coffee**

11:30 – 12:25 **Michal Okoniewski** | *Scientific IT Services, ETH, Switzerland*

ANSWERING BIOLOGICAL AND MEDICAL QUESTIONS WITH GENOMIC BIG DATA

12:25 – 13:25 **Dmytro Fishman** | *University of Tartu, Estonia*

DEEP LEARNING IN MEDICINE AND COMPUTATIONAL BIOLOGY

13:25 – 13:45 **Alina Frolova** | *Institute of Molecular Biology & Genetics, Ukraine*

INTEGRATIVE ANALYSIS OF EXPRESSION PROFILES IN HEALTHY AND PREECLAMPSIA-AFFECTED HUMAN PLACENTA

13:45 – 14:00 **Anastasiia Hryhorzhevskia** | *Warsaw University of Technology, Poland*

A SCALABLE DISTRIBUTED APPROACH TO POPULATION STRUCTURE ANALYSIS

14:00 – 15:00 **Lunch & Posters Discussions**

- 15:00 – 15:45 **Stephanie Duguez** | *Ulster University, Northern Ireland*
STRATIFIED MEDICINE FOR MOTOR NEURON DISEASE:
IDENTIFICATION OF BIOMARKERS SPECIFIC TO ALS
- 15:45 – 16:30 **William Duddy** | *Ulster University, Northern Ireland*
TAILORED BIOINFORMATICS TOOLS FOR
NEUROMUSCULAR FUNCTION & DISEASE
- 16:30 – 17:00 **Coffee**
- 17:00 – 17:45 **Paweł Łabaj** | *Jagiellonian University, Poland*
ARE WE READY FOR PERSONALIZED MEDICINE? – URBAN
MICROBIOME PERSPECTIVE
- 17:45 – 18:15 **Dmytro Fishman** | *University of Tartu, Estonia*
ELIXIR: SAFEGUARDING THE RESULTS OF LIFE SCIENCE
RESEARCH IN EUROPE
- 18:15 – 19:00 **Markiyan Samborskyy** | *University of Cambridge, UK*
EVOLUTION OF ILLUMINA SEQUENCING TECHNOLOGIES
AND IMPLICATIONS OF READS QUALITY AND LENGTH
CHANGES FOR DOWNSTREAM DATA ANALYSIS

October 5, Thursday

08:45 – 09:00 **Morning Coffee**

09:00 – 10:15 **Eugene Koonin** | *NCBI, National Library of Medicine, NIH, USA*
METAGENOMIC DISCOVERY OF NEW VIRUSES AND
ANTIVIRUS DEFENSE SYSTEMS

10:15 – 11:15 **Jan Barciszewski** | *Institute of Bioorganic Chemistry, Poland*
NEW CATALYTIC RNA-BASED STRATEGY FOR
MITOCHONDRIA TRANSFORMATION AND GENE
REGULATION

11:15 – 11:45 **Coffee**

11:45 – 12:45 **Siegfried Labeit** | *University of Heidelberg, Germany*
MOLECULAR MEDICINE OF THE GIGANTIC MUSCLE
PROTEIN TITIN FILAMENT

12:45 – 13:45 **Oksana Piven** | *Institute of Molecular Biology & Genetics, Ukraine*
ADHESION PROTEINS MORE THAN JUST CARDIOMYOCYTES
COUPLING

13:45 – 14:00 **Adrian Karmazyn** | *U.S.-Ukraine Foundation*
A NEW U.S.-BASED BIOTECHNOLOGY INITIATIVE IN
SUPPORT OF UKRAINIAN BIOTECH

14:00 – 15:00 **Lunch & Posters Discussion**

15:00 – 16:00 **Alex Shcheglovitov** | *University of Utah, USA*
USING IPSC-DERIVED NEURONS AND ORGANIDS FOR
STUDYING HUMAN CORTICAL DEVELOPMENT, SYNAPSES,
AND SYNAPTOPATHIES

16:00 – 17:00 **Svitlana Kurinna** | *ETH, Switzerland*
MIRNAS AS NEW REGULATORS OF REGENERATION

17:00 – 18:00 **John L. Wallace** | *University of Calgary, Antibe Therapeutics Inc.,
Canada*
HYDROGEN SULFIDE TO THE RESCUE: TRIALS AND
TRIBULATIONS OF TRANSLATIONAL RESEARCH

18:00 – 18:15 **Arnold Martin** | *Zymo Research Europe GmbH, Germany*
FROM SAMPLE TO INSIGHT: SIMPLIFY YOUR LAB LIFE WITH
ZYMO RESEARCH

October 6, Friday

08:45 – 09:00 **Morning Coffee**

09:00 - 10:00 **Alexander V. Zholos** | *Taras Shevchenko National University of Kyiv, Ukraine*
SPECIES DIFFERENCES IN RECEPTOR-OPERATED TRPC4 CHANNELS

10:00 – 11:00 **Bohdan Ostash** | *Ivan Franko National University of Lviv, Ukraine*
CODON USAGE BIAS AS A REGULATORY DEVICE: LESSONS FROM GC-RICH GENOMES

11:00 – 11:20 **Oleksandr Yushchuk** | *Ivan Franko National University of Lviv, Ukraine*
EVOLUTION OF GLYCOPEPTIDE AND MOENOMYCIN ANTIBIOTIC BIOSYNTHESIS PATHWAYS IN BACTERIA

11:20 - 11:40 **Coffee**

11:40 – 12:25 **Oleh Lushchak** | *Vasyl Stefanyk Precarpathian National University, Ukraine*
FROM SMALL OBSERVATION TO BIG DISCOVERY

12:25 – 12:45 **Victoria Novitska** | *Taras Shevchenko National University of Kyiv, Ukraine*
V-TABLE© – AN INTERACTIVE TOOL TO EXPLORE VIRUS DIVERSITY PROVIDING A STRUCTURED OVERVIEW ON A VIRAL WORLD

12:45 – 13:00 **Tatiana Yakushkina** | *National Research University Higher School of Economics, Russia*
EVOLUTIONARY MODELS WITH LETHAL MUTATIONS

13:00 – 13:30 **Florian Graedler** | *Illumina, Germany*
NEXT GENERATION SEQUENCING IS THE KEY METHOD FOR IDENTIFYING GENETIC DISORDERS ON POPULATION SCALE

13:30 – 14:00 **Klas Udekwu** | *Stockholm University, Sweden*
AMR IN THE BUILT ENVIRONMENT MOBILOME; THE STOCKHOLM SUBWAY

14:00 - 15:00 **Lunch & Posters Discussion**

15:00 – 16:00 **Pavel Gol'din** | *Schmalhausen Institute of Zoology, Ukraine*
HETEROCHRONY AS A DRIVER OF CETACEAN EVOLUTION

16:00 - 17:30 **Eugene Koonin** | *NCBI, National Library of Medicine, NIH, USA*
EVOLUTIONARY PRINCIPLES AND CONCEPTS IN THE
POSTGENOMIC ERA

17:30 – 18:00 **Concluding remarks**

October 7, Saturday

Informal meetings, sightseeing walk-together, and departure

A COMPOSITE OF BACTERIAL CELLULOSE AND LIGNIN FOR A HEALING OF INCURABLE WOUNDS

Iryna Orlovska¹, D. Zmejkoski², L. Khirunencko³, N. Kozyrovskia¹

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²*Vinča Institute of Nuclear Sciences, University of Belgrade, Serbia;*

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Biofilm-forming multi-drug resistant pathogens may account for 10% of all hospital acquired infections and can occur in burns, post-surgical wounds, pressure injuries and diabetic foot wounds. Hydrogels – natural polymers or composite materials – represent both a bandage and a matrix for therapeutics in a wound healing. Novel composite based on bacterial cellulose and synthetic analog of lignin - DHP (dehydrogenate polymer) has been designed with the aim to suppress pathogenic agents in incurable wounds. The FT-IR spectra of the BC/DHP membrane established an appearance of characteristic for DHP absorption bands in the composite in the 1600–1510 cm^{-1} spectral range. A clear position of these bands in BC/DHP showed that DHP had been incorporated into the BC polymeric matrix. In addition, disappearance of the bands at the 3630–3650 cm^{-1} spectral range assigned to the cellulose free OH vibration, strengthening the bands assigned to intermolecular interactions and an appearance of a new band at 3293 cm^{-1} could serve as a proof of the interaction of BC molecules and DHP. Micrographs obtained from a scanning electron microscopy proved the dose-dependent interaction of DHP with BC, which resulted in a decrease of the pore number in the cellulose membrane. The antimicrobial activity of composites BC/DHP were tested the *in vitro* experiments, using *Pseudomonas aeruginosa* (YMB-100) (MTT-test) and showed that BC/DHP inhibited *P. aeruginosa*. BC/DHP composite will be promising hydrogel for a healing of infected incurable wounds.