

**18th Congress of the Polish Biophysical Society
September 6 – September 9, 2022, Warsaw**

Programme

Tuesday, September 6th 2022

<i>Room</i>	<i>Congress foyer</i>
14.00	Registration and Lunch
<i>Room</i>	<i>Auditorium</i>
15.50-16.00	Welcome and Introduction to the Congress Beata Wielgus-Kutrowska and Piotr Bednarczyk
Plenary Lectures	
Chair	Wojciech Bal Institute of Biochemistry and Biophysics, PAS, Warsaw, Poland
16.00-16.40	MULTIPLE ASPECTS OF PROTEIN CONFORMATIONAL DYNAMICS REVEALED BY HYDROGEN DEUTERIUM EXCHANGE Michał Dadlez Institute of Biochemistry and Biophysics, PAS, Warsaw, Poland
16.40-17.20	ENHANCED FLUORESCENCE DETECTION FOR BIOMEDICAL DIAGNOSTICS AND IMAGING Zygmunt Gryczynski Texas Christian University, TX, USA
17.20-17.50	Awards of the Polish Biophysical Society (PTBF) David Shugar Medal
Chair	Ryszard Stolarski University of Warsaw, Poland
17.50-19.20	Historical Session "PTBF 50th Anniversary" (in Polish) Krzysztof Dołowy - PAMIĘCI TRZECH WIELKICH BIOFIZYKÓW: DAVIDA SHUGARA, STANISŁAWA PRZESTALSKIEGO I LECHA WOJTCZAKA Wiesław Gruszecki - POLSKIE TOWARZYSTWO BIOFIZYCZNE: TOWARZYSTWO SPRZYJAJĄCE TWÓRCZOŚCI, PRZYJAZNE I Z KLASĄ – Z PAMIĘTNIKA BIOFIZYKA Bogdan Lesyng - KRÓTKA HISTORIA POCZĄTKÓW POLSKIEJ BIOFIZYKI
19.20-19.50	Performance: University of Warsaw Choir
19.50	Welcome Party
Wednesday, September 7th 2022	
<i>Room</i>	<i>Auditorium</i>
Session I - Medical Biophysics - part 1	
Chair	Anna Marcinkowska-Gapińska Poznan University of Medical Sciences, Poland
9.00-9.30	NANOPARTICLES AS POSSIBLE ANTICANCER DRUGS ACTIVITY MODULATORS Jacek Piosik Intercollegiate Faculty of Biotechnology UG and MUG, Gdansk, Poland
9.30-9.50	TIME-RESOLVED FLUORESCENCE SPECTROSCOPY OF BLOOD AND PLASMA IN COVID-19 PATIENTS Tomasz Wybranowski Collegium Medicum in Bydgoszcz, Nicolaus Copernicus University in Toruń, Poland

9.50-10.10	VISCOELASTICITY OF BRAIN TISSUE AND ITS IMPACT ON GLIOBLASTOMA CELLS Katarzyna Pogoda Institute of Nuclear Physics, PAS, Krakow, Poland
10.10-10.30	ASSOCIATION BETWEEN ALBUMIN AND CHIMERIC LIPID NANOPARTICLES Nikolaos Naziris University of Lodz, Poland
10.30-10.45	THE NEW MELPHALAN ANALOG (EM-T-MEL) ALTERS THE CONFORMATION OF B-DNA AND INDUCES DNA DAMAGE IN HEMATOLOGICAL MALIGNANCY CELLS Anastazja Poczta University of Lodz, Poland
10.45-11.00	Coffee break
Session II - Mechanisms of ligand-receptor interactions	
Chair	Beata Wielgus-Kutrowska University of Warsaw, Poland
11.00-11.30	ON ORIENTING ELECTROSTATIC AND HYDRODYNAMIC STEERING EFFECTS IN THE KINETICS OF RECEPTOR-LIGAND ASSOCIATION Jan Antosiewicz University of Warsaw, Poland
11.30-12.00	INTERACTIONS OF PEPTIDE NUCLEIC ACIDS WITH RNA AND BACTERIAL TRANSPORTER PROTEIN Btub Joanna Trylska Centre of New Technologies, University of Warsaw, Poland
12.00-12.30	GROUND STATE TAUTOMERIC EQUILIBRIUM AND EXCITED STATE PROTON TRANSFER IN SELECTED PURINE NUCLEOSIDE PHOSPHORYLASE LIGANDS DETERMINED BY QUANTUM CHEMISTRY METHODS Maciej Maciejczyk University of Warmia and Mazury in Olsztyn, Poland
12.30-12.50	INSIGHTS INTO LIGAND BINDING TO PTERIDINE REDUCTASE 1 FROM MOLECULAR DYNAMICS SIMULATIONS Joanna Panecka-Hofman University of Warsaw, Poland
12.50-13.05	TWO-STEP BINDING OF NEOMYCIN TO AN RNA APTAMER Piotr Chyży Centre of New Technologies, University of Warsaw, Poland
13.05-14.30	LUNCH
<i>Room</i>	<i>Auditorium</i>
Session III - Modelling and nonlinear analysis	
Chair	Jan Antosiewicz Division of Biophysics, University of Warsaw, Poland
14.30-15.00	REVIEW OF QUANTUM-CASSICAL MOLECULAR DYNAMICS METHODS AND THEIR SELECTED APPLICATIONS IN THE STUDY OF COVALENT DOCKING PROCESSES OF BORATE INHIBITORS Bogdan Lesyng University of Warsaw, Poland
15.00-15.20	THE CROSS-CORRELATION-BASED ANALYSIS TO DIGEST THE CONFORMATIONAL DYNAMICS OF THE BK CHANNELS IN TERMS OF THEIR MODULATION BY FLAVONOIDS Agata Wawrzekiewicz-Jalowiecka Silesian University of Technology, Gliwice, Poland

15.20-15.40	HOW IS INFORMATION DECODED IN DEVELOPMENTAL SYSTEMS? Marcin Zagórski Jagiellonian University, Krakow, Poland
15.40-16.00	ENSEMBLE EMPIRICAL MODE DECOMPOSITION OF BK ION CHANNELS SIGNALS Paulina Trybek University of Silesia, Chorzow, Poland
16.00-16.20	HOW SHEARING AND PULLING AFFECTS GLUTEN PROTEINS: A MOLECULAR DYNAMICS STUDY Łukasz Mioduszewski Cardinal Stefan Wyszyński University, Warsaw, Poland
16.20-16.35	ROLE OF DISULFIDE BONDS IN RIBONUCLEASE A Pamela Smardz Institute of Physics, PAS, Warsaw, Poland
16.35-17.00	TRIBUTE TO PROF. MAREK CIEPLAK Włodek Minor (on-line) University of Virginia, Charlottesville, VA, USA
17.00-17.15	Coffee break
Room	Auditorium
Session IV - Protein dynamics, disorder and phase separation	
Chair	Anna Niedźwiecka Institute of Physics, PAS, Warsaw, Poland
17.15-17.45	MECHANICAL UNFOLDING, REFOLDING AND MISFOLDING OF BIOLUMINESCENT PROTEINS: ONE MOLECULE AT A TIME Piotr Marszałek (on-line) Duke University, Durham, NC, United States
17.45-18.15	ENERGY-DRIVEN PROTEIN DISAGGREGATION: UNSCRAMBLING SCRAMBLED EGGS, ONE POLYPEPTIDE AT A TIME Michał Żółkiewski (on-line) Kansas State University, KS, USA
18.15-18.35	INTRINSIC DISORDER AND PHASE SEPARATION OF THE BHLH-PAS TRANSCRIPTION FACTORS Beata Greb-Markiewicz Wrocław University of Science and Technology, Poland
18.35-18.50	FLUORESCENCE CORRELATION SPECTROSCOPY STUDIES OF PROPERTIES AND INTERACTIONS OF INTRINSICALLY DISORDERED PROTEINS INVOLVED IN REGULATION OF GENE EXPRESSION Michał Białobrzewski Institute of Physics, PAS, Warsaw, Poland
18.50-19.05	PEG AND FICOLL AS MODELS OF CROWDED ENVIRONMENT IN MOLECULAR DYNAMICS SIMULATIONS: TOWARDS UNDERSTANDING DIFFERENTIAL EFFECTS OF SYNTHETIC CROWDERS ON THE HYDROLYTIC ACTIVITY OF A VIRAL PROTEASE Natalia Ostrowska Centre of New Technologies, University of Warsaw, Poland
19.05-21.30	Poster Session and Refreshments
Thursday, September 8th 2022	
Room	Auditorium
Session V - Ion transport: receptors, transporters and channels	
Chair	Piotr Bednarczyk Warsaw University of Life Sciences, Poland

9.00-9.30	ACTIVATION MECHANISMS OF THE GABA TYPE A RECEPTOR Jerzy Mozrzymas Wroclaw Medical University, Poland
9.30-10.00	KINETIC ASPECTS OF EXTRACELLULAR COPPER TRANSPORT Wojciech Bal Institute of Biochemistry and Biophysics, PAS, Warsaw, Poland
10.00-10.30	THE INFLUENCE OF CO-APPLICATION OF STATINS AND FLAVONOIDS ON THE ACTIVITY OF VOLTAGE-GATED POTASSIUM CHANNELS Kv1.3 AND APOPTOSIS OF Kv1.3 CHANNEL-EXPRESSING CANCER CELLS Andrzej Teisseyre (on-line) Medical University, Wrocław, Poland
10.30-10.50	MEASUREMENT OF WATER TRANSPORT ACROSS WILD-TYPE AND CYSTIC FIBROSIS BRONCHIAL EPITHELIUM Mirosław Zając Warsaw University of Life Sciences, Poland
10.50-11.10	EFFECT PATTERN OF AMINO ACIDS AND NMDA ON ACTION POTENTIALS OF GLR GENES-LACKING MACROALGAE Indrė Lapeikaitė Vilnius University, Lithuania
11.10-11.25	Coffee break
Room	Auditorium
Session VI - Spectroscopy	
Chair	Wiesław Gruszecki Maria Curie-Skłodowska University, Lublin, Poland
11.25-11.45	PROGRESS IN FLUORESCENT NUCLEOBASE/NUCLEOSIDE ANALOG DEVELOPMENT AND APPLICATIONS Alicja Stachelska-Wierzchowska University of Warmia and Mazury in Olsztyn, Poland
11.45-12.05	SEARCH AND PROCESSING OF HOLLIDAY JUNCTIONS WITHIN LONG DNA BY JUNCTION-RESOLVING ENZYMES Artur Kaczmarczyk Imperial College London, UK
12.05-12.25	LASER EMISSION OF THIOFLAVIN T TO UNCOVER THE EARLY SYMPTOMS OF NEURODEGENERATIVE DISEASES Piotr Hańczyc University of Warsaw, Poland
12.25-12.45	SUPER-RESOLUTION FLUORESCENCE MICROSCOPY Maciej Bosek Nicolaus Copernicus University, Collegium Medicum, Bydgoszcz, Poland
12.45-13.05	Workshop: NanoIR3 - a combined Atomic Force Microscope and Near Field IR Microscopy (AFM-IR) LabSoft - Michał Kuźdzał
13.05-14.30	Lunch
Room	Auditorium
Session VII - Medical applications of proteins and nucleic acids	
Chair	Joanna Trylska Centre of New Technologies, University of Warsaw, Poland
14.30-15.00	GLUCOCORTICOIDS AND NATURAL KILLER CELLS: A SUPPRESSIVE RELATIONSHIP Domenico Vittorio Delfino University of Perugia, Italy

15.00-15.20	N2-MODIFIED CAP ANALOGUES – A VERY POTENT TOOL FOR mRNA ENGINEERING Renata Grzela University of Warsaw, Poland
15.20-15.40	PERMEABILIZATION OF OUTER BACTERIA MEMBRANE BY NANOPARTICLES TO ENHANCE ANTIMICROBIAL EFFECT OF ANTIMICROBIAL PROTEINS-LYSOZYME AND ENDOLYSIN Karol Ciepluch Jan Kochanowski University, Kielce, Poland
15.40-15.55	PEPTIDE STAPLING AS A WAY TO ENHANCE ANTIBACTERIAL PROPERTIES OF ANOPLIN Julia Macyszyn Centre of New Technologies, University of Warsaw, Poland
15.55-16.10	DESIGNED RIBOZYME DIRECTED AGAINST ESSENTIAL BACTERIAL MESSENGER RNA Joanna Miszkiewicz Centre of New Technologies, University of Warsaw, Poland
16.10-16.25	FEDERATED EUROPEAN GENOME ARCHIVE – POLISH NODE Błażej Marciniak University of Lodz, Poland
16.25-16.45	Workshop: Analytical instruments for biophysics applications. A.P. INSTRUMENTS
16.45-18.10	General Meeting of Polish Biophysical Society
18.10-19.30	Transfer
19.30	Gala Dinner
Friday, September 9th 2022	
<i>Room</i>	<i>Auditorium</i>
Session VIII - Application of microfluidic technology and biosensors in biophysical research	
Chair	Slawomir Jakiela Warsaw University of Life Sciences, Poland
9.00-9.30	FROM IDEA TO A PRODUCT FOR MEDICAL DIAGNOSTICS - PCR ONE AND BACTEROMIC Piotr Garstecki Institute of Physical Chemistry, PAS, Warsaw, Poland
9.30-9.50	THE CELL-IN REAGENT AS A METHOD FOR MACROMOLECULES DELIVERY INTO MAMMALIAN CELLS Karina Kwapiszewska Institute of Physical Chemistry, PAS, Warsaw, Poland
9.50-10.05	NOVEL BIOSENSING SYSTEMS WITH SELF-QUENCHING FLUORESCENCE NANOFLARES FOR CANCER BIOMARKERS' DETECTION Katarzyna Ratajczak Warsaw University of Life Sciences, Poland
10.05-10.20	MONITORING THE MITOCHONDRIAL NETWORK IN SH-SY5Y CELLS UNDER THE INFLUENCE OF POTENTIAL DRUGS IN NEURODEGENERATIVE DISEASES Damian Woźnica Warsaw University of Life Sciences, Poland
10.20-10.35	APPLICATION OF TWO-PHASE MICROFLUIDIC TECHNOLOGY FOR VISCOSITY CHANGE DETECTION IN BIOLOGICAL MICROLABORATORIES Karolina Skłodowska-Jaros Warsaw University of Life Sciences, Poland

10.35-10.50	<p>EXPRESSION OF PROTEINS CONTROLLING THE MITOCHONDRIAL DYNAMICS IN SH-SY5Y CELLS, IN RESPONSE TO STIMULATION WITH DRUG-MIMETIC COMPOUNDS IN NEURODEGENERATIVE DISEASES</p> <p>Hubert Grel Warsaw University of Life Sciences, Poland</p>
10.50-11.05	Coffee break
Room	Auditorium
Session IX - Medical Biophysics - part 2	
Chair	Piotr Bojarski University of Gdańsk, Poland
11.05-11.35	<p>MOLECULAR INTERACTION OF SARS-CoV-2 SPIKE PROTEIN WITH HUMAN VIMENTIN</p> <p>Robert Bucki Medical University of Białystok, Poland</p>
11.35-12.05	<p>RHEOLOGICAL ASPECT OF BIOPHYSICS OF CIRCULATORY SYSTEM</p> <p>Anna Marcinkowska-Gapińska Poznan University of Medical Sciences, Poland</p>
12.05-12.35	<p>LASER INTERFEROMETRY SYSTEM FOR BACTERIAL BIOFILM STUDIES</p> <p>Michał Arabski Jan Kochanowski University, Kielce, Poland</p>
12.35-12.55	<p>BIOPHYSICAL HALLMARKS OF TUMOR GROWTH AND INFLAMMATION</p> <p>Piotr Deptuła Medical University of Białystok, Poland</p>
12.55-14.00	Lunch
Room	Auditorium
Session X - Biophysics of the mitochondria	
Chair	Adam Szewczyk Nencki Institute of Experimental Biology, Warsaw, Poland
14.00-14.30	<p>MECHANOSENSITIVE CHANNELS - FROM BACTERIA TO MITOCHONDRIA</p> <p>Piotr Koprowski Nencki Institute of Experimental Biology, Warsaw, Poland</p>
14.30-14.50	<p>EFFECTS OF QUERCETIN AGAINST PARTICULATE MATTER INDUCED IMPAIRMENT OF HBE CELL FUNCTION</p> <p>Agnieszka Łukasiak Warsaw University of Life Sciences, Poland</p>
14.50-15.10	<p>NEW REGULATORY MECHANISMS OF MITOCHONDRIAL POTASSIUM CHANNELS</p> <p>Bogusz Kulawiak Nencki Institute of Experimental Biology, Warsaw, Poland</p>
15.10-15.30	<p>ANALYSIS OF FUNCTIONAL DIFFERENCES BETWEEN HUMAN VDAC3 ISOFORMS</p> <p>Andonis Karachitos Adam Mickiewicz University, Poznań, Poland</p>
15.30-15.50	<p>RESHAPING MITOCHONDRIAL NETWORK AS A PART OF CELLULAR ADAPTATION IN PRIMARY HUMAN FIBROBLASTS FROM HEALTHY DONORS AND FROM ALZHEIMER'S DISEASE PATIENTS</p> <p>Dominika Malińska Nencki Institute of Experimental Biology, Warsaw, Poland</p>
15.50-16.05	<p>EFFECTS OF STATINS USED IN THE TREATMENT OF HYPERCHOLESTEROLEMIA ON THE OXIDATIVE METABOLISM OF MITOCHONDRIA ISOLATED FROM THE RAT BRAIN</p> <p>Krzysztof Wójcicki Adam Mickiewicz University in Poznan, Poland</p>

16.05-16.20	NEW INSIGHTS INTO STRUCTURE AND FUNCTION OF PHOTOSYNTHETIC CYTOCHROME b6f Mateusz Szwalec Jagiellonian University, Krakow, Poland
<i>Room</i>	<i>Auditorium</i>
16.20-16.50	Awards & Conference closing Beata Wielgus-Kutrowska and Piotr Bednarczyk
16.50-17.20	Departure Refreshment
17.20	Departure