

Report of the National Congress of the Romanian Society of Pathophysiology *with international participation*

2-5 October, 2024, Timișoara, Romania

Danina M. Muntean¹ and Ovidiu Burta²

¹Chair of Pathophysiology, Centre for Translational Research and Systems Medicine,
"Victor Babeș" University of Medicine and Pharmacy of Timișoara, Romania

²Chair of Pathophysiology, Faculty of Medicine, University of Medicine and Pharmacy, Oradea, Romania
E-mails: daninamuntean@umft.ro, ovidiuburta@yahoo.com

The National Congress of the Romanian Society of Pathophysiology was held in Timișoara, Romania, on 2 – 5 October, 2024 and was hosted by "Victor Babeș" University of Medicine and Pharmacy, the largest medical university with international accreditation from Western Romania. The main organizers of the Congress were the Romanian Society of Pathophysiology, the Centre for Translational Research and Systems Medicine, Advanced Research Centre from the Faculty of Medicine of the university, and the Foundation of the University of Medicine and Pharmacy Timișoara.

Dr. Ovidiu Burta, President of the Romanian Society of Pathophysiology, and Dr. Danina M. Muntean, Vice-President of the Romanian Society of Pathophysiology served as Congress Chairs. The Honorary President of the Congress was Prof. Daniel F. Lighezan, Vice-Rector for Education of the university. The scientific endorsement of the Congress by the International Society of Pathophysiology (ISP) was ensured by the participation of Prof. Vladimir Jakovljevic, the ISP President and Prof. Olga Pechanova, the Past President of ISP, both Visiting Professors of our university. The Congress had as logo: "Tradition in Education and Collaboration in Interdisciplinary Research" and was attended by a large number of medical doctors from several medical specialties, pharmacists, researchers. Twelve leading invited speakers, professors at top universities from 7 countries (Austria, France, Hungary, Italy, Serbia, Slovakia, and USA) delivered state-of-the-art lectures during the congress and the two satellite events, the pre-Congress *Advanced Research Workshop* and the *Advanced Research Symposium for PhD Students* organized in the last day, and received the university recognition for their careers of excellence in teaching.

The Organizing Committee included the members and collaborators of the Centre for Translational Research and Systems Medicine: Prof. Sorin Ursoniu, Assoc. Prof. Adrian Sturza, Assoc. Prof. Oana Aburel, Assoc. Prof. Cosmin Ilie, Lect. Maria Dănilă, Lect. Ana Lascu, Assist. Prof. Mihaela Mariș, Assist. Prof. Theia Stanciu-Lelcu, Assist. Prof. Laura Ghenciu, Assist. Prof. Adina Furdui-Lința, Assist. Prof. Iasmina Hâncu, Assist. Prof. Silvia Giuchici, Assist. Prof. Darius Buriman, and the PhD students Bogdan Lolescu, Karla Pop, and Alina Bătrîn (members), and Prof. Ovidiu Fira-Mladinescu, Prof. Valentina Buda, Prof. Dorina Coricovac and Prof. Alexandra Mioc (collaborators).

The Scientific Committee included professors and associate professors of Pathophysiology belonging to the medical universities from Timișoara, Iași, Cluj-Napoca, București, Craiova, Târgu Mureș, Constanța, Oradea, and Arad. Assoc. Prof. Ovidiu Burta and Prof. Danina M. Muntean served as Presidents, and Prof. Claudia Borza, Prof. Ioana Mozoș, Prof. Manuela Ciocoiu, Prof. Roxana Iancu, Prof. Marcel Costuleanu,

Prof. Florinela Cătoi, Prof. Alina Pârvu, Prof. Sorin Aramă, Prof. Amelia Găman, Prof. Ovidiu Cotoi, Prof. Anca Bacărea, Prof. Cristian Furău, Assoc. Prof. Loredana Pazara, Assoc. Prof. Cătălin Tilișcan, and Assoc. Prof. Cristiana Buștea were the Vice-Presidents.

The 4-day scientific program featured state-of-the-art and plenary lectures, oral communications, and workshops dedicated to medical and pharmaceutical specialties. Sessions focused on the pathophysiological mechanisms and pathogenetic therapies in chronic diseases, providing a platform for the exchange of new ideas and concepts. Competitions such as the Young Investigator Award and poster presentations offered young researchers the chance to present their latest results. The event facilitated interdisciplinary collaboration, networking with international experts, and an exceptional educational experience for early and mid-career trainees and students. Totally, 15 state-of-the-art lectures and 48 plenary lectures were delivered by the invited speakers and 8 talks were given by young investigators during the Young Investigator Award competition.

An outstanding feature of the Congress was the high participation of over 100 undergraduate students from the Romanian, English, and French sections of the Faculty of Medicine and the Romanian and French sections of the Faculty of Pharmacy. These students not only attended the sessions and satellite events of the meeting, but also actively contributed with posters and as participated as volunteers under the umbrella of the Society of Medical Students of Timișoara (SSMT).

Preceding the official opening, the **Pre-Congress Advanced Research Workshop, "Education Through Research – Meet the Experts"** was held on the morning of October 2nd, in the Aula Magna Hall. Welcome messages were delivered by Prof. Daniel F. Lighezan (Vice-Rector for Education), Prof. Vladimir Jakovljevic (President of the International Society of Pathophysiology) and Prof. Danina M. Muntean (Vice-President of the Romanian Society of Pathophysiology). The workshop featured plenary lectures presented by key opinion leaders, namely: Prof. Vladimir Jakovljevic (Kragujevac, Serbia) - "*Pathophysiology as the Best Bridge Between Basic & Clinical Research and Education*", Prof. Bruno Podesser (Vienna, Austria) - "*The Future of Animals in Cardiovascular Research*", Prof. Fabio Di Lisa (Padova, Italy) - "*Some Aspects of Mitochondrial Relevance in Cardiac Injury and Protection*", Prof. Zoltán Papp (Debrecen, Hungary) - "*Cardiomyocyte Contractility During Health and Disease: Calcium Sensitivity vs. Calcium Availability*" and Prof. Attila Tóth (Debrecen, Hungary) - "*Personalized Medicine – Biomarker Based Approaches*".

The Congress officially opened on the afternoon of **October 2nd**, with welcome addresses from Prof. Vladimir Jakovljevic (President of the International Society of Pathophysiology), Prof. Olga Pechanova (Past-President of the International Society of Pathophysiology), Prof. Ovidiu Burta (President of the Romanian Society of Pathophysiology), and Prof. Danina Muntean (Vice-President of the Romanian Society of Pathophysiology). The opening ceremony was followed by two sessions of state-of-the-art lectures. The first session chaired by Prof. Vladimir Jakovljevic (Serbia) and Prof. Ovidiu Burta (Romania) included the key-note lectures presented by Prof. Fabio Di Lisa (Italy) - "*Monoamine Oxidases in Cardiac Pathophysiology*", Prof. Mariana G. Roșca (USA) - "*Nicotinamide Nucleotide Transhydrogenase in Metabolic Syndrome*", and Prof. Bruno Podesser (Austria) - "*Remodelling of the Left Ventricle in Pressure Overload - Translational Aspects*". The second session chaired by Prof. Olga Pechanova (Slovakia) and Prof. Danina Muntean (Romania) included the key-note lectures delivered by Prof. István Baczkó (Hungary) - "*The Potential Role of Transgenic Rabbit Models with Impaired Repolarization Reserve in Preclinical Cardiac Safety Electrophysiology Studies*", Prof. Norbert Jost (Hungary) - "*Investigation of the Antiarrhythmic Effects of Novel Proarrhythmia Free Amiodarone-Like Mexiletine Analogue Compounds*" and

Prof. Ludovico Abenavoli (Italy) - "*The Gut-Liver Axis*". During the opening ceremony the following university recognitions were presented: **Prof. Bruno Podesser (Austria) - Excellence in Translational Research Award**, **Prof. István Baczkó (Hungary) and Prof. Norbert Jost (Hungary) - Visiting Professors** of the university.

The 2nd day of the Congress (October 3rd) featured 5 engaging sessions, 2 symposia, and the Poster session.

Session 1, entitled *Novel Insights into Pathophysiology, Diagnostic & Therapy of Cardiometabolic Diseases I*, was chaired by Ioana Mozoş (Timișoara) and Viviana Ivan (Timișoara). The session included the **SERVIER Symposium "Pathophysiology of Endothelial Dysfunction: What is Old and What Is New?"** with Adrian Sturza (Timișoara) presenting "*Mechanisms and Therapeutic Targets of Endothelial Dysfunction*" and Viviana Ivan (Timișoara) presenting "*Pharmacological Approaches to Alleviate Endothelial Dysfunction in Cardiometabolic Diseases*", as key-note speakers. The session continued with two plenary sessions: "*Vascular Ultrasound Multiparametric Screening of Subclinical Arteriosclerosis & Assessing Plaque Vulnerability for Risk of Evolution Towards Thromboembolic Complications Through Strain Elastograph*" by Mihai Iacob (Timișoara), "*Vascular Ageing: From Bench to Bedside*" by Ioana Mozoş (Timișoara) and one oral communication, "*Arterial Stiffness and Insulin Resistance in Long COVID*" by Dana Emilia Man (Timișoara).

Session 2, entitled *Novel Insights into Pathophysiology, Diagnostic & Therapy of Cardiometabolic Diseases II*, was chaired by Prof. István Baczkó (Szeged) and Prof. Zoltán Papp (Debrecen). The session included five plenary lectures: "*From Myosin Activation to Myosin Inhibition for the Treatment of Cardiac Disease*" by Zoltán Papp (Debrecen), "*The Phosphorylation of SERCA2 at the Heart of Cardioprotection*" by Ludovic Gomez (Lyon), "*Sarcoplasmic Reticulum-Mitochondria Communication in Diabetic HFpEF*" by Mélanie Paillard (Lyon), "*Atrial Fibrillation: Pathophysiology and Novel Therapeutic Targets*" by Alina Scridon (Târgu Mureș), "*Towards Personalized Medicine in Cardiovascular Diseases: Biochemical Efficacy of Cardiovascular Drugs*" by Attila Tóth (Debrecen) and "*Serum Lipids and one oral communication, "Pulse Wave Analysis Variables in Patients with Normal and Early Vascular Ageing*" by Mirela Baba (Timișoara).

Session 3, entitled *Mechanisms of Natural Compounds and Nanoformulations as Potential Targeted Therapy*, was chaired by Prof. Manuela Ciocoiu (Iași) and Prof. Ovidiu Cotoi (Târgu Mureș). The session included four plenary lectures: "*The Use of Different Plant Extracts in Cardiovascular Pathophysiology*" by Vladimir Jakovljević (Kragujevac), "*Flavonoids: Mechanisms of Action and Future Trends*" by Manuela Ciocoiu (Iași), "*The Therapeutic Potential of Honey*" by Alina Pârveu (Cluj), "*Renin Inhibition: Beyond Blood Pressure Lowering Effect*" by Olga Pechanova (Bratislava) and one oral communication, "*Personalized Medicine for Osteosarcoma*" by Raoul Lupușoru (Iași).

Session 4, entitled *Novel Insights into the Pathophysiology and Diagnostic Biomarkers of Metabolic and Renal Diseases* was chaired by Prof. Ligia Petrica (Timișoara) and Prof. Alexandra Sima (Timișoara). The session included four plenary lectures: "*Metabolomics Biomarkers in Diabetic Kidney Disease*" by Ligia Petrica (Timișoara)", "*Uric Acid – Consequence or Risk Factor in the Cardio-Reno-Metabolic Syndrome*" by Alexandra Sima (Timișoara), "*Assessment and Risk Prediction of Chronic Kidney Disease Among Solitary Kidney Patients Using Non-Invasive Biomarkers*" by Florica Gădălean (Timișoara), "*Pathophysiology of Lipid Disorders – What Do We Know in 2024?*" by Laura Gaiță (Timișoara) and one oral communication, "*Mitochondrial Dysfunction in the Pathogenesis of Diabetes Mellitus*" by Vlad Avram (Timișoara). The session concluded with the **TERAPIA Symposium "Primary Prevention of the Dyslipidemic Patient"** with Roxana Buzaș (Timișoara) as key-note speaker.

Session 5, entitled *Clinical Pathophysiology & Case Management – Selected Cases*, was chaired by Cristiana Buştea (Oradea) and Ana Lascu (Timișoara). The session featured the following case presentations: "A Complicated STEMI Case: Challenges in Management and Outcome" by Cristiana Buştea (Oradea), "The Effectiveness of Eosinophil-Depleting Therapy with Benralizumab in a Patient with Multiple Chronic Respiratory Diseases, Toxocariasis, and Hypereosinophilic Syndrome" by Nicoleta Bertici (Timișoara), "Cytomegalovirus Retinitis in the Context of SARS-CoV2 Infection – A Case Presentation" by Laura Ghenciu (Timișoara), "A Complex Case of Immune-Mediated Endocrine Toxicity in a Patient with Non-Small Cell Lung Cancer" by Silvia Giuchici (Timișoara), "Cannula-Associated Deep Vein Thrombosis After Venovenous Extracorporeal Membrane Oxygenation in Cardiac Surgery – A Case Report" by Darius Buriman (Timișoara) and "The Benefits of Empagliflozin in Cardiovascular Prevention in Heart Failure with Preserved Ejection Fraction in Elderly – A Case Report" by Bogdan Lolescu (Timișoara).

The afternoon continued with a **Poster Session** chaired by Adrian Sturza (Timișoara) and Norbert Jost (Szeged).

The 3rd day of the Congress (October 4th) comprised 5 engaging sessions and the Young Investigator Award Competition.

The day began with **Session 6, Updates on the Pathophysiology & Therapy of Chronic Inflammation Associated with Cardiovascular Diseases**, chaired by Roxana Buzaş and Simina Crişan (Timișoara) and featured four plenary lectures. It started with a presentation by Simina Crişan (Timișoara) on "The Role of Low-Grade Chronic Inflammation in the Pathogenesis of Atherosclerosis". This was followed by Ioana Cîtu (Timișoara) discussing "Mechanisms and Inflammatory Mediators in Heart Failure Progression". Cristian Sarău (Timișoara) then presented "Anti-Inflammatory Therapeutic Strategies in Heart Failure" and Roxana Buzaş (Timișoara) concluded the session with "Inflammatory Biomarkers and Cardiovascular Risk Assessment".

The program continued with **Session 7, The Gut Microbiome as Key Player in Health & Disease. Living in the Time of COVID & Its Complications**, which comprised seven plenary lectures and was chaired by Florinela Cătoi (Cluj-Napoca) and Sorin Aramă (Bucureşti). Sorin Aramă (Bucureşti) opened the session with the presentation "Gut Microbiota: Facts and Hopes" and Ovidiu Burta (Oradea) followed with the talk "Microbiota Dysregulation in Irritable Bowel Syndrome". Florinela Cătoi (Cluj-Napoca) further presented "Weight Loss and Weight Regain After Bariatric Surgery". Loredana Pazara (Constanța) discussed "SARS-CoV2-Induced Alterations in Blood Rheology", followed by Cătălin Tilişcan (Bucureşti) with "COVID-19: An Overview of Pathogenic Mechanisms and Current Real-Life Treatment Options". The session concluded with Anca Bacărea (Târgu Mureş) presenting "Lymphogram in the Evaluation of Septic Patients" and Rodica Lighezan (Timișoara) discussing "Platelet Dysfunction - An Overview".

At noon the General Assembly of the Romanian Society of Pathophysiology was held in the Aula Magna Hall where the new board of the society was elected and several changes of the society statute were voted.

Session 8, entitled *Novel Insights into the Blood Pathophysiology. Mitochondria in Focus*, chaired by Amelia Găman (Craiova) and Ludovic Gomez (Lyon) comprised three plenary lectures. Emilia G. Vânturiş (Craiova) opened the session with "Involvement of Oxidative Stress in the Evolution of Patients with Chronic Myeloid Leukemia". Oana M. Aburel (Timișoara) followed with "Platelet Mitochondrial Dysfunction in Disease as Peripheral Bioenergetic Marker" and Gheorghe I. Mihalaş (Timișoara) concluded with "Sonic Representation of Cellular Processes". At the end of the session, **Professor Gh. Mihalaş**, member of the Romanian Academy of Medical Sciences and a reliable collaborator of the

Centre for Translational Research and Systems Biology, received the **Excellence Award for the Entire Career**.

Session 9, entitled *Novel Insights into the Pathophysiology and Diagnostic of Respiratory Diseases* was chaired by Ovidiu Fira-Mlădinescu and Adrian Trifa (Timișoara). The following plenary lectures were presented: Ovidiu Fira-Mlădinescu - "*Epithelial Era in Asthma Pathophysiology*", Ștefan Frent - "*Neuro-Immune Pathways in Inflammation and Airway Remodeling in Asthma*", Adrian Trifa - "*Genetics of Asthma*", Emanuela Vaștag - "*Current Concepts Regarding the Role of the Lung Microbiome in Respiratory Diseases*" and Corina Budin - "*Novel Biomarkers in Lung Cancer. The Inolung Study*".

Session 10, entitled *Novel Insights into the Pathophysiology and Therapeutic Approaches of Gynecological and Rheumatological Conditions* was chaired by Cristian Furău (Arad) and Loredana Pazara (Constanța) and included three plenary lectures followed by three oral communications. Cristian Furău (Arad) opened the session with the lecture "*Human Papillomavirus Infection in Pathology: From Genital to Head & Neck Cancers*". Federico Villani (Arad) followed with "*Prenatal Perineal Training to Prevent Dysfunctions of the Perineal Floor*" and Anamaria Ardelean (Arad) presented "*A MetaAnalysis of the Risks of Symptoms Affecting Life Quality in Natural Menopause vs Premature Menopause*". Victoria Ciobanu (Arad) discussed "*Cervical Dysplasia – Management Options*", followed by Damiano Rigano (Arad) with "*The Benefits of Vaginal Cone Training in Pelvic Floor Dysfunctions*". The session concluded with Daniela Dușa (Constanța) presenting the oral communication "*Low Back Pain: Risk Factors for Chronicity*".

The **Young Investigator Award Competition**, organized for the first time during the Congress, was chaired by Claudia Borza (Timișoara) and Olga Pechanova (Bratislava) and comprised 8 oral presentations selected from the submitted abstracts: Cozma Elena-Codruța (Craiova) - "*Correlations Between Gut Microbiota, Oxidative Stress, and Inflammation in Patients with Psoriasis*", Dănilă Maria-Daniela (Timișoara) - "*Assessment of Imeglimin Effects on Platelet Mitochondrial Respiration & Oxidative Stress: A Pilot Study in Diabetic Patients*", Glăvan Mihaela-Roxana (Timișoara) - "*Mitochondrial Platelet Bioenergetic Profile in Chronic Kidney Disease Patients With and Without Diabetes*", Kosovski Irina-Bianca (Târgu Mureș) - "*The Influence of Adiposity on Peripheral Blood Immune Cells in Young Adults*", Ticolea Mădălina (Cluj-Napoca) - "*Phytochemical Composition Antioxidant and Anti-Inflammatory Activity of Artemisia dracuncululus and Artemisia abrotanum*", Trușculescu Ana-Adriana (Timișoara) - "*Time, Space, and Asthma: An Interdisciplinary Study in Timiș County*", Usatiuc Lia-Oxana (Cluj-Napoca) - "*Assessment of Phytochemical Content and Antidiabetic, Antioxidant, and Anti-inflammatory Activities of Gypsophila paniculata in Rats with Streptozotocin-Induced Diabetes*" and Vornic Ioana (Arad) - "*Antioxidant Defenses, Oxidative Stress Responses, and Apoptosis Modulation in Spontaneous Abortion: An Immunohistochemistry Analysis of First-Trimester Chorionic Villi*".

The day concluded with the **Closing & Awards Ceremony** where the prizes for the oral competition and the poster awards were presented. Also, during this ceremony, lifetime achievements awards and recognition awards for a career in Pathophysiology were presented to several Romanian senior pathophysiologists from all over the country.

Day 4 (October 5th) featured the 2 final sessions of the Congress.

The morning began with **Session 11**, *Novel Insights into the Pathophysiology of Oxidative Stress and Malignancy* chaired by Mihaela Mariș and Dorina Coricovac (Timișoara). The plenary lectures were delivered as follows: Mihaela Mariș (Timișoara) - "*An Overview of the Impaired Antioxidant Defence System in the Pathogenesis of Chronic Venous Disease*", Raluca Soșdean (Timișoara) - "*Monoamine Oxidase Contribution to Valvular Oxidative Stress: A Novel Pathomechanism in Severe Mitral Regurgitation*", Dorina Coricovac

(Timișoara) - *"Malignant Melanoma-Mitochondria - An Intriguing Relationship: Betulinic Acid as A Potent Antimelanoma Agent"*, Alexandra Mioc (Timișoara) - *"Targeting Cancer Cells with Triterpene-Based Natural and Novel Semisynthetic Compounds"*, Maria Suci (Timișoara) - *"Potential Molecular Mechanisms Proposed to Be Involved in the Diabetogenic Effect of Statins"* and Ramona Jurcău (Cluj-Napoca) - *"Auriculotherapy Effectiveness in Modulating Oxidative Stress and Inflammation in Third Molar Extraction"*.

Session 12, entitled ***Towards Pathophysiological Approaches in Clinical Pharmacy*** was chaired by Valentina Buda (Timișoara) and Ligia Hui (Cluj-Napoca). The four plenary lectures presented were: *"Augmented Renal Clearance in Critically Ill Patients and Vancomycin Therapeutic Drug Monitoring"* by Ligia Hui (Cluj-Napoca), *"Black Chokeberry Juice Effect in Pre-Hypertensive and First Grade Hypertensive Patients: A Prospective Study"* by Valentina Buda (Timișoara), *"A Clinical Pharmacist Intervention in Vancomycin Infusion Reaction Case Management"* by Aura Blendea (Cluj-Napoca) and *"The Importance of Interdisciplinary Collaboration in Handling, Preparation, and Administration of Parenteral Preparations"* by Elena Cucerdean (Târnăveni).

The satellite **Advanced Research Symposium for PhD Students "Trends in Cardiovascular Research: Where Do We Stand in 2024?"** was organized in the Iagnov Hall, under the patronage of Prof. Cristina A. Dehelean, the Head of the Doctoral Schools of the university who delivered the welcome address and presented the awards to the invited speakers. The symposium included 2 sessions. The first session, chaired by Danina M. Muntean (Romania) and Mélanie Paillard (France) included the state-of-the-art lectures delivered by Mélanie Paillard (Lyon), *"Mitochondrial Ca²⁺ Regulation: Players, Tools and Pathophysiological Roles"*, Ludovic Gomez (Lyon), *"Can We Still Protect Our Heart?"* and Olga Pechanova (Bratislava), *"Effects of Natural Polyphenolic Substances on Nitric Oxide/ROS Balance in Cardiometabolic Disorders"*. The second session chaired by Claudia Borza (Romania) and Mariana Roșca (USA) comprised two state-of-the-art lectures by Mariana Roșca (Michigan), *"The Division of Work in the Heart's Bioenergetics"* and Norbert Jost (Szeged), *"An Overview of the Arrhythmia Mechanisms"*.

The 2024 Congress of the Romanian Society of Pathophysiology brought together reputed specialists in almost all medical fields, pharmacists, senior and early-career researchers in an engaging exchange of ideas and discoveries. Over the enriching four days, the event showcased the latest advances in understanding disease mechanisms and explored innovative approaches to therapy. With a focus on collaboration and knowledge sharing, the Congress not only highlighted current challenges but also opened new directions for future research and clinical practice. It was a valuable opportunity to connect, learn, and inspire progress in the evolving field of Pathophysiology.

