

Day of Physiology and Medicine for University Students

12.02.2026

NEUROSCIENCES	METABOLIC RESEARCH	CARDIOVASCULAR RESEARCH
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PROGRAM				
Introduction		Welcome to IPHYS		Ondřej Kuda, director of IPHYS Olga Zimmermannová
9:00 - 9:15				
Laboratory	Topic	Speaker/s	For students	Time
Pain Research	Neuroinflammation and pain The role of Dorsal Root Ganglion (DRG) neurons in neuropathic pain Mechanisms of neuropathic pain	Jiří Paleček Diana Špicarová	Bc, MSc, PhD	9:15 - 9:30
Biomaterials and Tissue Engineering	The effect of galectins and their inhibitors on vascular wall remodeling in pulmonary hypertension Bilayered vascular wall engineering via co-culture of endothelial and mesenchymal stem cells Interaction of oral cavity cells with dental biomaterials patterned with silver nanoparticle-containing microdomains The role of galectin-3 in extracellular vesicle-mediated intercellular communication in pulmonary hypertension	Antonín Sedlář	PhD PhD Bc, MSc	9:30 - 9:45
Translational Metabolism	Study and treatment of fibrotic changes in Dupuytren's disease	Adam Eckhardt	Bc, MSc, PhD	9:45 - 9:55
Adipose Tissue Biology	Thermoneutrality in laboratory animal husbandry – an important but poorly defined variable in practice Metabolism in preterm and term newborns Bariatric surgery: Mechanism of its beneficial effects on adipose tissue and factors determining its efficiency Thermogenic muscle: Molecular keys to obesity resistance Adipose-derived extracellular vesicles and their effect on muscle cells: Role of sex and genetic differences Secretory function of epicardial adipose tissue and its role in the development of atrial fibrillations Novel strategies to investigate the origins of metabolic dysfunction-associated steatohepatitis	Kristína Bardová Petr Zouhar	Bc Bc Bc MSc MSc PhD	9:55 - 10:15
Molecular neurobiology	TRAK1 and TRAK2 adaptor proteins in brain development and neurodevelopmental disorders	Martin Balaštík	PhD	10:15 - 10:25
Coffee break				10:25 - 10:45
Molecular Physiology of Bone	Studying the role of antioxidant dipeptides in stem cell metabolism Uncovering sex-related differences in the role of Nox4-ROS signaling in bone homeostasis	Michaela Tencerová Mariana de Souza Santos	PhD (MSc) MSc	10:45 - 11:00
Metabolism of Bioactive Lipids	Deciphering lipid metabolism in cancer: Integrative approaches in metabolomics, fluxomics, and metabolic engineering Biochemical regulation of human milk composition in gestational diabetes	Ondřej Kuda Kristýna Brejchová	PhD PhD (MSc)	11:00 - 11:15
Cardiometabolism	Characterizing the role of sex chromosomes in mitochondrial energy metabolism The impact of biological sex on mitochondrial metabolism in cardiomyocytes The impact of the inactive X chromosome on metabolic differences between male and female tissues throughout the body	Lukáš Chmátl	MSc PhD PhD	11:15 - 11:30
Developmental Cardiology	The role of HIF-1α and mitochondria in heart failure	Lukáš Chmátl on behalf of Petra Alánová	Bc, MSc	11:30 - 11:35
Experimental Hypertension	The role of mTOR signaling in cardiometabolic diseases Sexual differences in protective effects of empagliflozin - the role of mTOR The role of hypoxia-inducible factor-1α on the progression of heart failure with preserved ejection fraction. Molecular mechanisms of cellular senescence-associated cardiovascular and renal diseases in hypertensive rats	Almos Boroš	Bc, MSc, PhD	11:35 - 11:55
Experiences of PhD students at IPHYS				11:55 - 12:10
Organizational remarks, questions		Olga Zimmermannová		12:10 - 12:20
Refreshment				12:20 - 13:00
Visits of laboratories				13:00 - 15:00