

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		9:00 - 9:15
		Olga Zimmermannová		
Laboratory	Topic	Speaker/s	For students	Time
Pain Research	Neuroinflammation and pain	Jiří Paleček Diana Špicarová	Bc, MSc, PhD	9:15 - 9:30
	The role of Dorsal Root Ganglion (DRG) neurons in neuropathic pain			
	Mechanisms of neuropathic pain			
Biomaterials and Tissue Engineering	The effect of galectins and their inhibitors on vascular wall remodeling in pulmonary hypertension	Antonín Sedlář	PhD	9:30 - 9:45
	Bilayered vascular wall engineering via co-culture of endothelial and mesenchymal stem cells		PhD	
	Interaction of oral cavity cells with dental biomaterials patterned with silver nanoparticle-containing microdomains		Bc, MSc	
	The role of galectin-3 in extracellular vesicle-mediated intercellular communication in pulmonary hypertension			
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	Kristína Bardová Petr Zouhar	Bc	9:55 - 10:15
	Metabolism in preterm and term newborns		Bc	
	Bariatric surgery: Mechanism of its beneficial effects on adipose tissue and factors determining its efficiency		Bc	
	Thermogenic muscle: Molecular keys to obesity resistance		MSc	
	Adipose-derived extracellular vesicles and their effect on muscle cells: Role of sex and genetic differences		MSc	
	Secretory function of epicardial adipose tissue and its role in the development of atrial fibrillations		PhD	
	Novel strategies to investigate the origins of metabolic dysfunction-associated steatohepatitis	Martin Rossmeisl	PhD	
Molecular neurobiology	TRAK1 and TRAK2 adaptor proteins in brain development and neurodevelopmental disorders	Martin Balaščík	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	Michaela Tencerová Mariana de Souza Santos	PhD (MSc)	10:45 - 11:00
	Uncovering sex-related differences in the role of Nox4-ROS signaling in bone homeostasis		MSc	
Metabolism of Bioactive Lipids	Deciphering lipid metabolism in cancer: Integrative approaches in metabolomics, fluxomics, and metabolic engineering	Ondřej Kuda Kristýna Brejchová	PhD	11:00 - 11:15
	Biochemical regulation of human milk composition in gestational diabetes		PhD (MSc)	
Cardiometabolism	Characterizing the role of sex chromosomes in mitochondrial energy metabolism	Lukáš Chmátal	MSc	11:15 - 11:30
	The impact of biological sex on mitochondrial metabolism in cardiomyocytes		PhD	
	The impact of the inactive X chromosome on metabolic differences between male and female tissues throughout the body		PhD	
Developmental Cardiology	The role of HIF-1α and mitochondria in heart failure	Lukáš Chmátal on behalf of Petra Alánová	Bc, MSc	11:30 - 11:35
Experimental Hypertension	The role of mTOR signaling in cardiometabolic diseases	Almos Boroš	Bc, MSc, PhD	11:35 - 11:55
	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			
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