

Introduction

Comenius University Faculty of Medicine in Bratislava had the privilege to host the **90th Physiological Days** – the annual conference of Czech and Slovak physiologists – in February 2014. Except senior researchers many young scientists and PhD students took part on the conference and I find it very promising for the research in the field and for blossoming of talented young individuals. Three invited talks were presented during the conference days: Dr. V. Štrbák presented on the changes of the cell volume and its role in regulation and pathogenesis of diseases, Assoc. Prof. P. Celec reported on molecular biology in medicine and Prof. V. Donič presented on electrical auricular stimulation. Ninety three oral presentations and 83 poster presentations provoked discussions, inspired new ideas and helped to promote interdisciplinary collaborations.

Physiological Research was established as a platform for articles that address the most important research topics in physiology. The purpose of this special issue is to give the active participants the opportunity to prepare the manuscripts with the presented results. We are very pleased to introduce this issue of the journal with original scientific articles that were selected by the evaluation committee for publication.

Nineteen papers had the privilege to share the outcomes of the research topics. The emerging interest of gender differences in cardiovascular disorders is presented by S. G. Yang. Stress related to autonomic regulations is discussed in paper of A. Garafova. Research on neurodevelopmental diseases have more substantive focus on ADHD and autism, I. Tonhajzerová addresses mechanisms leading to cardiac adverse outcomes in ADHD patients and K. Babinská reports on gastrointestinal problems and inflammation in autistic children. M. Ferko elaborates on ischemic preconditioning induced protection of myocardial energetics. Gestational diabetes mellitus is the research topic of E. Žákovičová,

peroxisomal enzymes and diabetes were studied by L. Turecký and colleagues. J. Moudr addresses the relationship between arterial compliance and arterial transmural pressure. A. Vašků in her paper shares information on matrix metalloproteinases and their inhibitors in controlling extracellular matrix turnover. The influence of domoic acid on behavior and CT imaging and behavioral characteristics after mannitol administration were studied in experimental animals by physiologists from the 1st Faculty of Medicine at the Charles University in Prague (P. Kozler, K. Jandová). The articles from R. Šlamberova's group focus on methamphetamine exposure and its consequences on cognition and behavior. J. Kopincová continues with experimental studies on meconium aspiration syndrome and M. Kolomaznik from the same research group is focused on changes in lung surfactant in induced fever. Vitamin D is the hot topic in medicine; M. Morvova Jr. studied vitamin D supplementation effect on ATP activity in chronic kidney disease. V. K. M. Khandelwal contributes with oxidative stress and autophagy and I. Herichová reports on clock and natriuretic peptide gene expression in the heart.

We owe many thanks to all contributors and the members of the Editorial Board (prof. MUDr. Jaroslav Pokorný, DrSc., doc. MUDr. Jakub Otáhal, PhD., MUDr. Vladimír Riljak, PhD. and prof. MUDr. Daniela Ostatníková, PhD.). High acknowledgement goes to Ing. Hynek Moravec for technical editing of all papers.

The 91st Physiological Days are organized by the Faculty of Medicine at the Masaryk University in Brno. We are looking forward to meeting the Czech and Slovak physiologists in February 2015 and we wish all of them successful conference and inspirational contributions.

Daniela Ostatníková