

IV MIGUEL R. COVIAN SYMPOSIUM NEW CHALLENGES FOR PHYSIOLOGISTS

This issue of the *Brazilian Journal of Medical and Biological Research* contains 19 papers presented at the IV Miguel R. Covian Symposium held May 23-25, 2008 in Ribeirão Preto, SP, Brazil. Leão and von Gersdorff (1) demonstrated the importance of Ca^{2+} buffering in the developing rat calyx of Held. Garção and Mattioli (2) showed that L-histidine, a histaminergic precursor, impairs memory consolidation in *Carassius auratus* after cerebellar ablation. Cofiel and Mattioli (3), also using L-histamine, evaluated the role of the histaminergic system in learning and stress and showed its importance in the modulation of these responses in zebrafish. The study by Margatho et al. (4) suggested that central amygdala GABAergic mechanisms are involved in atrial natriuretic peptide and oxytocin secretion in response to blood volume expansion. Nascimento and Branco (5) suggested an interesting synergism between peripheral and spinal heme oxygenase-carbon monoxide pathways that may play an antinociceptive role. Evidence was presented by de Faria et al. (6) that activation of purinergic receptors in the brain may affect water intake in animals submitted to dehydration.

Burnstock (7) reviewed the history of his discovery of purinergic transmission and the role of ATP as a cotransmitter in all nerves of the peripheral and central nervous systems. The possible involvement of purinergic mechanisms in several diseases of the central nervous system was also discussed. In the field of renal physiology, Ma et al. (8) presented a review related to the renal protective effect of the blockade of stress-activated protein kinases p38 and JNK, which may be relevant to therapeutic interventions in human renal disease. Balbi et al. (9) reviewed the interaction of mitogen-activated protein kinases and angiotensin II during renal development. With respect to calcium mechanisms, Petersen (10) presented an important review of the role of Ca^{2+} signaling in pancreatic acinar cells in physiological and pathophysiological conditions. This review is an excellent example of the translational physiology from basic concepts to a human disease such as pancreatitis. Rodrigues et al. (11) presented an interesting review discussing the role of Ca^{2+} signaling in the cell nucleus and Navegantes et al. (12) highlighted the mechanisms and effects of Ca^{2+} -dependent protein degradation on oxidative muscles by increasing calpastatin levels and the mechanisms by which endogenous catecholamines

induce anabolic muscle effects.

In the cardiovascular field we have three interesting reviews. Durand et al. (13) discussed the technique and the results obtained with electrical stimulation of the aortic depressor nerve in rats and humans and pointed to the possible use of this approach in patients with resistant hypertension. Franchini et al. (14) discussed the signaling mechanisms regulated by focal adhesion kinase and their possible role in the pathophysiology of cardiac hypertrophy and failure. Since the vascular relaxation in response to endogenous nitric oxide or to nitric oxide donors is impaired in renal hypertensive rats, Lunardi et al. (15) suggested that a vascular smooth muscle dysfunction exists in this experimental model.

Ruginsk et al. (16) presented a review of the central effect of glucocorticoids in the control of body fluid homeostasis and the role of endocannabinoids, glutamate neurotransmission and the nuclear factor kappa B pathways. Leonelli et al. (17) discussed the new roles of neurotransmitters in development, plasticity, neurodegeneration and neuroprotection with focus on endocannabinoids and nitric oxide, which are considered to be unconventional neurotransmitters. Garcia-Cairasco (18) discussed epilepsies in the context of neurobiological models of high complexity systems displaying maladaptive plasticity. Different concepts involving multidisciplinary approaches to the study of epilepsy were also explored. Cardoso et al. (19) presented a review of a model for the circadian timing system of mammals to reproduce the endogenous generation and synchronization to the light-dark cycle, which exhibit responses consistent with physiological patterns.

On behalf of the Organizing Committee (Benedito H. Machado, Luiz Carlos C. Navegantes and Wamberto A. Varanda), I wish to thank the participants and especially the authors and reviewers who contributed to this issue of the *Brazilian Journal of Medical and Biological Research*. The quality and ideas presented in the papers published in this issue dedicated to the Symposium demonstrate that the mission of the IV Miguel R. Covian Symposium to provide a platform for the discussion of new concepts and new challenges for physiologists was accomplished.

Benedito H. Machado
Guest Editor

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