

Introduction

This issue of *Physiological Research* summarizes the recent results achieved by investigations of the nervous system conducted at the Neuroscience Center, one of the research centers supported by the Ministry of Education, Youth and Sports of the Czech Republic. Most representative groups of researchers in the field of neuroscience in the Czech Republic have joined forces in the Neuroscience Center. In 2004 sixteen labs studying the structure and function of the nervous system in four different Prague institutions (the Institute of Experimental Medicine and the Institute of Physiology, both of the Academy of Sciences of the Czech Republic, the Institute of Neuroscience at the Second Medical Faculty of Charles University and the Department of Normal, Clinical and Pathological Physiology at the Third Medical Faculty, Charles University) decided to form a consortium under the umbrella of the Neuroscience Center. Their main intention was to intensify their research with the aim of achieving excellent scientific results and improving the education of doctoral students. Sixty PhD students conduct their research in the Center, supervised by almost forty scientists. The proposal of the Neuroscience Center succeeded in an open competition for grants, and in the spring of 2005 the Center started to fulfill its goals. Up to now, the results achieved by the labs of the Center have been presented at two joint seminars, at two meetings of the Czech Neuroscience Society and at two meetings of the Forum of European Neuroscience Societies (in Vienna and in Geneva).

The issue starts with two minireviews from molecular neuroscience, concentrated on neuronal proteins. The following three reviews describe properties of the purinergic, cholinergic and glutamate receptors in the central nervous system. The third section comprises minireviews oriented towards certain aspects of pain perception. Additionally, pathological aspects of brain activity such as changes occurring in the extracellular space in different diseases, glial dysfunction and mechanisms of cortical seizures, are covered. Finally, a section on system neuroscience focuses on neuronal modeling, circadian rhythms, auditory perception and behavioral studies of space perception. In all cases the results achieved in the laboratories of the Center of Neuroscience are compared with data from the contemporary world literature to introduce the reader to a most authentic and fresh view of the studied problems. The goal of the researchers in the Center of Neuroscience is to produce scientific results comparable with those of the leading European teams in neuroscience and thus to contribute in a representative way to world knowledge. In addition to the above-mentioned program of the Ministry of Education, Youth and Sports for research centers, financial support for researchers in the Center of Neuroscience also originates from grants of the Sixth and Seventh Framework Programmes of the European Union and from Czech grant agencies, particularly the Grant Agency of the Czech Republic.

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