

Foreword

This special issue of *Physiological Research* is dedicated to Jan Bureš, M.D., D.Sc. on the occasion of his 75th birthday.

Jan Bureš was born June 13, 1926 in the south Bohemian town of České Budějovice. Just after the reopening of the Czech universities he began his university education in mathematics but after quickly becoming bored with the overly theoretical introductory classes, he decided instead to study medicine and in 1945 entered the Medical School of the Charles University in Prague. He received his M.D. degree in 1950. After finishing Medical School, he started training in neuroscience, studying epilepsy in the laboratory of the late Professor Servit in the Central Institute of Biology. This big institute became a part of the newly formed Czechoslovak Academy of Sciences in 1952 and two years later it was divided into specialized institutes, one of them, the Institute of Physiology. It was here that Jan Bureš defended his PhD thesis, founded his own laboratory, and established the tradition of his experimental innovation. His research was at first focused on the mechanisms of spreading depression, its elicitation, spread, and repetition - mostly studied electrophysiologically. He and his collaborators described different ways of how to induce spreading depression, its features in various brain structures, its pathways of propagation and transition into neighboring structures and the ontogenetic development of the phenomenon. These data reviewed in his 1963 D.Sc. thesis, were published as a book. During that time another book appeared – Bureš, Petráň, Zachar: *Electrophysiological Techniques in Biological Research*. This book became a cookbook of many electro-physiologists the world over, and revised editions appeared two times. It was also translated into Chinese and Russian.

Spreading depression in Dr. Bureš' laboratory progressively changed from the object of research into a tool for transient ablation of individual brain structures and in this way it was used for behavioral studies. This marked the start of the Bureš lab's second major period of research which resulted in tens of important publications that fractionated the memory process into phases of acquisition, consolidation and retrieval as well as providing a means to study the hemispheric lateralization, subsequent transfer, and synthesis of

engrams which were studied in a broad spectrum of behavioral models. The results of the studies of the basic mechanisms of spreading depression and of its use in behavioral research are summarized in a book „The mechanism and applications of Leao's Spreading Depression of Electroencephalographic Activity“ by Bureš, Burešová, and Křivánek. During this period another book detailing experimental approaches to study the relationship between the brain and behavior was also written *Techniques and basic Experiments for the Study of Brain and Behavior*“ by Bureš, Burešová and Huston. Among the models used to study memory, the introduction of the Morris water maze to the Bureš lab in 1981, marks a transition into the third, current period of research – studies of spatial behavior and memory. Today, classical behavioral techniques, functional ablation techniques and the logic of early experiments are combined with sophisticated electrophysiological techniques to study how representations of abstract information is stored and manipulated by the brain.

A list of publications from Dr. Bureš' laboratory contains well over one thousand items. Among coauthors of these papers we can find not only stable collaborators from the laboratory – Jan's wife Olga Burešová, Eva Fífková, Tomáš Weiss, Jiří Křivánek, Gustav Brožek – but also numerous people who have spent some time in the laboratory. Some of these collaborators were from Czechoslovakia, but the majority came from abroad. Authors of papers in this volume represent only a small sample of Jan's students and collaborators.

Jan's work was repeatedly awarded by national as well as international awards. He is a honorary member of numerous Czech and foreign medical, and academic societies and in 1994 he became a member of the National Academy of Sciences of USA.

Dr. Bureš activities were not restricted to laboratory work. He served (and still serves) on many editorial boards of international journals and was active in committees of Czech and international societies. He started to use scientometric criteria for evaluating research teams, a method which was extremely useful during the period of reduction of the Czechoslovak Academy of Sciences. He was also one of the pioneers of the Czech granting system using his wide international

connections to ask referees from abroad to evaluate grant proposals.

In addition to all these merits Jan Bureš was and still is an excellent teacher and adviser. He is always eager to help colleagues to solve their scientific

problems. We hope that this volume is able to communicate the style and wide interest of the neuroscientist that is Jan Bureš.

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