

ON THE 60TH BIRTHDAY OF PROFESSOR DR. OTTÓ FEHÉR



OTTÓ FEHÉR was born in Debrecen in 1927. He was educated in the Protestant College of Debrecen and took his medical diploma at the University Medical School. As a student he joined the Department of Physiology headed at that time by Professor ISTVÁN WENT and became involved in the experimental work about regulation of heart and blood circulation. After having finished his studies in 1951, he began postgraduate course in physiology of the nervous system. In examining the problems of synaptic transmission in the sympathetic ganglia he proved that in the postsynaptic membrane of ganglion cells there are two sorts of acetylcholine receptors: a nicotinic type and a muscarinic type, differing in their physiological role and pharmacological responsiveness. This discovery has been confirmed in the international literature repeatedly and gave starting point of the modern theory of neural membrane receptors. It was subsequently proved that denervation and decentralization supersensitivity can be ascribed to redistribution of the two kinds of receptors in the post-synaptic membrane. In these studies he was aided by his first co-worker and friend EMIL BOKRI and students being active in scientific student society: SÁNDOR DAMJANOVICH, PÉTER HALÁSZ, FERENC MECHLER, ELEMÉR LÁBOS,

TIBOR SZABÓ, GYULA MÓZSIK. He defended his candidate thesis in 1960 entitled: The role of acetylcholine-cholinesterase system in the ganglionic transmission of impulses. As a young research worker he introduced first recording of action potentials from peripheral nervous structures.

Beginning with 1962 his attention turned to the physiology of the central nervous system, the cerebral cortex. In collaboration with PÉTER HALÁSZ, FERENC MECHLER made relevant observations on the origin of cortical convulsive potentials and their relation to the sensory evoked potentials. Meanwhile they introduced the method of micro-electrode recording from the cerebral cortex and proved that rhythmic seizure potentials are generated in intracortical reverberation circuits. With Mrs. G. KLITINA, ANTAL BORSOS and ANDRÁS SZABÓ made original observations on Leão's spreading depression.

In 1967 he was invited to be head of Department of Zoophysiology being founded at the József Attila University, that time. Here he initiated an interdisciplinary research to elucidate correlations between electrophysiological signs of synaptic transmission and morphological changes in synaptic ultrastructure. In this work he was aided by ÁRPÁD PÁRDUTZ, FERENC JOÓ and NORBERT HALÁSZ. The interdisciplinary character of the research was supported by the instrumental and conceptual heredity of Professor AMBRUS ÁBRAHÁM, previous head of the Department of Zoology. From the beginning he made efforts to organize the training of students in comparative physiology and offer facilities for practical courses. In this work he was assisted throughout by his first colleagues and friends at the University, GÉZA TURY and LAJOS ERDÉLYI. Beginning with the seventies a new trend of interdisciplinary work started with IMRE ROJIK. He has been studying the fate of labelled amino-acids in the cerebral cortex and introduced a new method for visualizing active nervous structures making use of autoradiography. As the head of the electronmicroscopic laboratory he gave invaluable help to the complex research activity not only for the Department but for the Faculty.

OTTÓ FEHÉR defended his doctoral thesis in 1973 with the title „The origin of cortical evoked and convulsive potentials”.

Beginning with 1974 he became engaged in the investigation of heterosynaptic facilitation which is considered to be one of the basic mechanisms underlying formation of memory traces. The exceptional skill and gift of his young co-worker ATTILA BARANYI opened the way to discoveries highly appreciated in the international literature. A new approach to the study of the cortical function was initiated with JOSEPH TOLDI from 1976. The examination of the interactions among cortical evoked potentials in the association areas of cat and rat revealed new dimensions of the neocortical activity. The involvement of MAGDOLNA SZENTE and FERENC PONGRÁCZ in the investigation of central epileptogenic phenomena gave a new surge of this work and brought not only significant results but facilitated the introduction of computer aided evaluation and modelling of electrophysiological processes. Some brilliant experiments of ATTILA BARANYI and the exceptional scientific intelligence of TIBOR GYIMÓTHY helped him to formulate a computer model of epileptic membrane which gives account for most of the cellular manifesta-

tions of this disease. This, and the experiments performed with LAJOS ERDÉLYI and ANDRÁS PAPP on *Helix* neurons served as a basis for discovery of new anti-convulsive substances. These are now pharmacologically and toxicologically tested by HORST SCHULZ. The educational and scientific activity which has been developed at the Department of Comparative Physiology needed continuous technical support by construction and building modern equipments. This was fulfilled by FERENC GYULAI an electric engineer who has been able not only to adopt designs taken from the international literature but has built a lot of new devices based upon his original ideas.

Since 1978 OTTÓ FEHÉR and two co-workers are participating in a common scientific research project together with the Institute of Anatomy of Göttingen headed by professor J.R. WOLFF and with the Neurobiological Group of the Biological Research Institute, headed by FERENC JOÓ and sponsored generously by the Deutsche Forschungsgemeinschaft. The results of this multidisciplinary work about neural plasticity have been published in more than 20 articles.

The Department has a fruitful technical collaboration with the Biological Institute of the Soviet Academy (Puschino) and with the Biological Research Institute of the Yugoslavian Academy (Beograd).

In 1977 OTTÓ FEHÉR was awarded the Academy Prize for his pioneer activity in introduction of new electrophysiological methods in Hungary. Together with Professor GYÖRGY ÁDÁM he is co-author in both editions of the university textbook *Comparative Physiology*. He is also co-author and editor of the practice book of this discipline.

He has been an active member of the Scientific Qualification Committee, of the Hungarian Physiological Society, of the Hungarian Biological Society, Hungarian Society for Electroencephalography and Clinical Neurophysiology. He was the organizer of several congresses and international symposium. Five of his co-workers have been awarded the degree Candidate of Biological Science and numerous disciples have made his doctoral work under his auspices. With his collaborators he has published 84 scientific articles.

The Department of Comparative Physiology of the József Attila University was founded and developed by professor FEHÉR. He gave a characteristic educational and scientific profile for this new neurobiological school, and brought it in many respects to international level. His progressive attitude to scientific issues and problems of public life guarantee further successes for him and for the Department headed by him.

We wish professor OTTÓ FEHÉR good health and successful activities

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