

THIRTY YEARS OF THE DEPARTMENT OF COMPARATIVE PHYSIOLOGY

In 1966 the leadership of the József Attila University decided to develop and modernize the biological education and research activity at the Faculty of Natural Sciences. Within the frame of modernization some of new departments have been founded, among them the Department of Animal Physiology (or by its present name: Comparative Physiology). Animal physiology had been taught before at the Department of General Zoology and Biology (headed by Academician AMBRUS ÁBRAHÁM) by FERENC BICZÓK Ph.D., among other zoological disciplines, without separate teaching and research staff. After the retirement of Professor ÁBRAHÁM the anatomy, histology and embryology staff moved to the Department of Systematic Zoology (headed by Academician GÁBOR KOLOZSVÁRY). At the same time a new department: Department of Animal Physiology was founded.

According to a decree of the Ministry of Cultural and Education Affairs, the Department of Comparative Physiology started its activity officially on 1st of November 1967. OTTÓ FEHÉR M.D. was invited to be the head of the new department. OTTÓ FEHÉR was previously a university lecturer at the Department of Physiology of the Medical School in Debrecen. He started to develop a real physiological department immediately. The laboratories had to be reconstructed for the purpose of physiological work, a room for laboratory animals had to be built, and the department needed urgently modern physiological sets for teaching and research. With the financial support of the Ministry of Education Affairs and of the University, the Department furnished the first physiological laboratory. In starting the teaching and research activity one of the founders of the department, LAJOS ERDÉLYI played an outstanding role. In the organizational and technical work GÉZA TURY helped much to head of the department.

To the group of the founders (OTTÓ FEHÉR, LAJOS ERDÉLYI and GÉZA TURY) later joined: GÁBOR BÁLINT M.D., MAGDOLNA SZENTE, ISTVÁN PÓR, IMRE GAÁL, ATTILA BARANYI, JÓZSEF TOLDI, HORST SCHULZ, RÓBERT NOVÁK, MÁRIA FALUDY, FERENC LÁSZLÓ and recently CSABA VARGA. (See the actual staff later).

At the beginning the Electronmicroscope Laboratory functioned as a part of the Department, headed initially by Prof. BERTALAN CSILLIK M.D. and later by FERENC JOÓ M.D. The scientific staff of this laboratory consisted of NORBERT HALÁSZ and ÁRPÁD PÁRDUTZ. The laboratory was supported by the Hungarian Academy of Sciences. Since 1972 the Laboratory has continued its work as the

Group of Molecular Neurobiology in the Biological Research Center of the Academy in Szeged.

In 1973 a new Electron Microscopic Laboratory was established to aid the scientific research of the Biological Departments with the leadership of IMRE ROJIK and with the technical assistance of Mrs. ZSUZSA FEJES.

Until the establishment of the two other new departments: Dept. of Biochemistry and Dept. of Genetics (established in 1974 and 1980), the Department of Animal Physiology gave place for the Group of Genetics (leader was LAJOS ALFÖLDI M.D.) and the Group of Biochemistry (leader was BÉLA MATKOVICS M.D.).

From the beginning until 1977 the Department gave place and other facilities for the work of the biologist-didactician LÁSZLÓ KÖRTVÉLYESSY Ph.D., who until his retirement in 1977 carried out successful educational and scientific activity.

The range of the educational tasks covered by the Department was rather wide already. During the first two decades of the Department's history, students who became teacher of biology and chemistry and students in biology (were altogether about 40 students) attended lectures and practical courses in comparative physiology in the Department. Lectures in school-hygiene and animal husbandary were also delivered by members of the Department. Nowadays however, more than 110 students (who become teachers of biology, researchers in biology, psychologists) attend lectures and practical courses in comparative physiology, molecular physiology, neurophysiology and neuropharmacology, neuroplasticity, psychophysiology.

Training in comparative physiology at the university level started in the ELTE (Budapest) in 1965 (Prof. GYÖRGY ÁDÁM M.D.) then in the Department of Animal Physiology (since 1974 Comparative Physiology) at the JATE (Prof. OTTÓ FEHÉR M.D.). As a first step, a guide book was published by OTTÓ FEHÉR, LAJOS ERDÉLYI, JÓZSEF FAISZT, GÁBOR HOLLÓSI and MIHÁLY KURCZ, with the title „Exercises and Experimental Demonstrations in Comparative Physiology”. In 1975 Academician GYÖRGY ÁDÁM and Prof. OTTÓ FEHÉR published the Textbook „Comparative Physiology”. The book was rewarded with a „Niveau Prize” by the Ministry of Education in 1977. Later, this book was edited and published several times, recently titled as „Physiology for Biologists”.

The Department was the first in Hungary where the teaching of molecular physiology was introduced in the late eighties. The staff of the Department wrote a book entitled: „Molecular Basis of Physiological Processes” (edited by O. FEHÉR). This book was followed by a Compendium: „Voltage- and Ligand Activated Ion Channels” written by LAJOS ERDÉLYI in 1996. Recently published book of the Department is the „Development and plasticity of the mammalian nervous system” written by MAGDOLNA SZENTE and JÓZSEF TOLDI.

During the last 30 years the infrastructure (instrumentation) and in relation with it, the practical programs in the student laboratory has been basically renewed three times: at the beginning, mechanical kymographs (SÁNDOR MOTZWICKLER) served for registration of physiological phenomena, then in the middle eighties, the

common production of the mechanical and electrical workshops (FERENC DOBÓ and FERENC GYULAI) amplifiers, stimulators, transducers and oscilloscopes served for the student laboratory exercises. Very recently (in 1997) student laboratory infrastructure has been completely changed, the students work on full-computerised equipments.

In 1994 the postgraduate (doctoral) program of the Department (entitled: Neurobiology) has been accredited. Nowadays, it is a common program of two departments (Dept. of Comparative Physiology and Dept. of Zoology and Cell Biology). As the first postgraduate student of this doctoral program, GÁBOR TAMÁS got his Ph.D. degree in 1996.

Thus comparative physiology during the last 30 years has gained its proper place in our University as an important discipline in the education and scientific research.

The main objective of the scientific research of our Department is the nervous system. Though the members of the Department changed a lot during the last 30 years, the Department has developed and it is one of the well known institutes of neuronal sciences in Hungary. The main directions of the research are as follows:

1) The mechanism of epileptogenic phenomena in the central nervous system (MAGDOLNA SZENTE).

2) Injury induced neuronal plasticity in peripheral and central nervous system (JÓZSEF TOLDI, ZSOLT KIS and TAMÁS FARKAS).

3) Pharmacological and ionic modulation of membrane and postsynaptic currents in the nervous system of Mollusks (LAJOS ERDÉLYI).

4) Physiological effects of vasopressin analogues (FERENC LÁSZLÓ and CSABA VARGA).

5) Synaptic and autaptic control of excitability by GABAergic neurones in identified cortical networks (GÁBOR TAMÁS).

The repertoire of scientific research methods applied by the Department has become rather wide and is of interdisciplinary character. The most important methods are as follows: stimulation and recording in any part of the central and peripheral nervous system with macroelectrodes, electroencephalography, stereotaxic techniques, intracellular recording and stimulation, labelling and filling of neurones, polarization and conductance measurement, the voltage and patch clamp methodes, extracellular microelectrode techniques, microiontophoresis, standard methods for examination of heart, blood circulation, gel chromatography and gel electrophoresis, HPLC, ELISA, standard electronmicroscopic methods, light- and electronmicroscopic autoradiography, etc.

The members of the staff have participated in several national and international congresses and symposia, published more than 200 full-length articles. Most of the articles have been published in international papers with valuable impact, including e. g. the Nature.

The staff of the Department has a widespread collaboration both in Hungary (SZBK, SZOTE, SOTE, ELTE) and in abroad (USA, Oxford, Paris, Göttingen, Tokio).

In 1996, five out of the seven staff members had the degree Doctor of Biological or Medical Science and two of co-workers had the degree Candidate of Biological Science. Since that time OTTÓ FEHÉR and FERENC LÁSZLÓ retired, and ATTILA BARANYI left the University.

The members of the Department were/are as follows from the beginning:

The heads of the Department: OTTÓ FEHÉR M.D., D.Sc. (1967–1988), LAJOS ERDÉLYI C.Sc. (1988–1994), ATTILA BARANYI D.Sc. (1994–1996), JÓZSEF TOLDI D.Sc. (1996–).

The members of the teaching and research staff who have already left the Department: GÉZA TURY Ph.D. (1967–1977), GÁBOR BÁLINT M.D., Ph.D. (1969–1970), ISTVÁN PÓR Ph.D. (1971–1975), LÁSZLÓ KÖRTVÉLYESSY Ph.D. (1967–1977), IMRE GAÁL Ph.D. (1973–1978), ROBERT NOVAK, FERENC PONGRÁCZ (1975–1983), HORST SCHULZ (1981–1988), OTTÓ FEHÉR M.D., D.Sc. (1967–1996), FERENC LÁSZLÓ M.D., D.Sc. (1988–1996).

The members of technical staff who have already left the Department:

Secretaries: Mrs. ANNA BASCH, Mrs. GABRIELLE VÖRÖS, Mrs. MAGDOLNA FUTO, Mrs. JUDIT MADURKA, Mrs. ERZSÉBET DOBÓ, Mrs. MAGDOLNA OSZTRO-LUCZKY.

Assistants: Mr. GÉZA MRÁZ, Ms. ERZSÉBET DÁNOS, Ms. ANIKÓ VÁGVÖLGYI, Mrs. ANIKÓ SZŰCS, Mrs. ÁGNES VECSENYÉS, Mrs. ZSUZSA FEJES, Ms. GABRIELLA PAP.

Mechanics at the workshop: SÁNDOR MOTZWICKLER, PÉTER TRÁM, FERENC SZŰCS, FERENC DOBÓ.

The active members of the Department:

Head: JÓZSEF TOLDI D.Sc.

Co-professor: MAGDOLNA SZENTE D.Sc.

Assistant professors: LAJOS ERDÉLYI C.Sc.

Assistant lecturer: CSABA VARGA (Ph.D.)

Post doc.: (on ZOLTÁN MAGYARY fellowship): GÁBOR TAMÁS Ph.D., (on post. doc. fellowship of MKM) TAMÁS FARKAS (Ph.D.).

Senior researcher: IMRE ROJIK C.Sc.

Research fellow: Mr. ZSOLT KIS

Electric engineer: Mr. FERENC GYULAI

Secretary: Mrs. MARGIT VEKETY

Assistants: Ms. ANIKÓ BERKÓ, Ms. GABRIELLA MÉSZÁROS, Mr. SÁNDOR HUSZTA.

PhD students: Ms. BARBARA BARNA, Ms. ÉVA MORSCHL, Mr. TAMÁS CSÓTI, Mr. Mrs. VERONIKA ZSIROS, ANDRÁS SZÁSZ, Mr. TAMÁS VIRÁG.

Dr. J. Toldi