



Prof. Mirosław Mossakowski (1929-2001)

Professor Mirosław Mossakowski was a neuropathologist of international format, a key animator of neuroscience in Poland and abroad, a brilliant manager and highly respected statesman.

Mirosław Jan Mossakowski was born in 1929 in Bereza Kartuska, eastern Poland. He graduated with distinction from the Medical School in Gdańsk in 1953. A year later he moved to Warsaw to obtain Ph.D. training at the Department of Histopathology of the Central Nervous System of the Polish Academy of Sciences under the guidance of Prof. Adam Opalski, an internationally recognized expert in the pathomorphology of glial cells. The department was soon to evolve to the Department of Neuropathology, a research unit which a few years later became the nucleus of the Medical Research Centre of the Polish Academy of Sciences, an institute he founded and headed for more than a quarter of the century.

In the early years of his career he also worked at the Neurological Clinic of the Medical School under the guidance of Prof. I. Hausmanowa-Petrusewicz where he acquired the I and then the II degree specialization in neurology. Evidently bound to remain in touch with the “cream of the crop” of the neuroscience community, in 1959 Professor Mossakowski left for Montreal to get a one-year training at the Montreal Neurological Institute, then headed by William Penfield, the father of modern neuropathology. Back home in 1960, after having presented a thesis entitled “Astrocytomas of cerebrum and cerebellum”, he obtained his Ph.D. degree of the Warsaw Medical School. At the same time he organized a CNS Tissue Culture Laboratory, the first unit of this kind in Poland. In 1966 the Medical Academy of Warsaw granted him the Second Doctorate (“doctor habilitatus” title) for a thesis entitled “Pathomorphology and histochemistry of spontaneous and experimental hepatic encephalopathies”. The years 1966-1967 were marked by another scientifically rewarding visit overseas, this time at the NINDB in Bethesda, in the laboratory of Professor Igor Klatzo, at that time one of the most creative investigators of the pathomechanism of cerebral ischemia.

The year 1967 saw the foundation of the Medical Research Centre of the Polish Academy of Sciences, and this event was to become a milestone in the professional career of Mirosław Mossakowski. Although his function at this moment was nominally confined to being the Head of the Department of Neuropathology, he was the instigator, the genuine *spiritus movens* of most of the research areas conducted in the institute. His nomination a few years later to the position of Director was just a formal confirmation of an obvious *status quo*.

For more than three decades Professor Mossakowski has remained creative in various areas of the pathobiology of the CNS, most of them rooted in his early ventures. From the beginning of his research career he has shown a remarkable talent for perceiving the paths investigations in neuropathology would take. This is best illustrated by his contribution to the understanding of the pathomechanism of hepatic encephalopathy (HE), a complex neurological disorder associated with acute or chronic liver dysfunction, but morphologically manifested by profound changes confined to astrocytes surrounding the neurons. Until very recently, astrocytes were perceived as passive bystanders of neurons, at its best their physical support

or fuel reservoir. In this context, the functional (neuronal) and morphological (astrocytic) manifestations of HE were interpreted to reflect two pathogenetically unrelated phenomena. It was as recently as in the mid 80s when the newly acquired knowledge of the active role of astrocytes in neural transmission paved way to the understanding of the contribution of damaged astrocytes to the neurological manifestations of HE. However, there is a consensus that seeing the role of astrocytes this way originates from the seminal observation Professor Mossakowski and his colleagues made in 1971; addition of serum from HE patients to CNS cell in culture produced morphologic changes in astrocytes strikingly resembling those seen in HE patients. A link between HE symptoms and energy impairment in the brain has been suspected for decades: however, Professor Mossakowski was the first to demonstrate by histochemical methods that, the HE-induced decrease of activity of energy-metabolizing enzymes is confined to astrocytes. His studies on the pathomechanism of cerebral ischemia brought about one of the first demonstrations of imbalance between glycogen synthesis and metabolism in the CNS: this was two decades before we learned that astrocytic glycogen is the “last chance” energy reservoir for neurons in hardship. The above observations gave impetus to the studies on cerebral anoxia, ischemia and HE in the Medical Research Centre: these lines of investigations are conducted with remarkable success by his scholars.

His creative roles in the national and international scientific communities went very far beyond his own research activities, reflecting his inexhaustible energy and untiring devotion to propagating positive thinking. He was a Founding Member, Honorary Member and/or President of numerous learned societies, such as Association of Polish Neuropathologists, Polish Neuroscience Society, Polish Society of Cytochemistry and Histochemistry. At the international level he served two terms as a Vice-President of the International Society of Neuropathology, was a member of the American Association of Neuropathologists, International Brain Research Organization (IBRO) and many others. Professor Mossakowski served on the editorial boards of many journals including *Acta Neurobiologiae Experimentalis* and *Clinical Neuropathology*. His managerial skills and abilities to integrate the activities of scientists working in different fields for the good of science as a whole have become apparent during his many active years in the Polish Academy of Sciences: he was the President of the Academy since 1999 until his last days.

Professor Mossakowski received many prestigious awards and nominations; he was a member of Istituto Mexicano di Cultura, Russian Academy of Medical Sciences, European Academy of Arts, Sciences and Humanities, *Doctor Honoris Causa* of the Medical Academies in Lublin, Gdańsk, Białystok and Collegium Medicum of the Jagiellonian University in Cracow.



The most outstanding publications:

[Upregulation of bax protein levels in neurons following cerebral ischemia.](#)

Krajewski S, Mai JK, Krajewska M, Sikorska M, **Mossakowski MJ**, Reed JC.
J Neurosci. **1995** Oct;15(10):6364-76. (the number of citations - **369** according to Web of Science)

[Early blood-brain barrier changes in the rat following transient complete cerebral ischemia induced by cardiac arrest.](#)

Pluta R, Lossinsky AS, Wiśniewski HM, **Mossakowski MJ**.
Brain Res. **1994** Jan 7;633(1-2):41-52. (the number of citations - **84** according to Web of Science)

[Reassessment of a new model of complete cerebral ischemia in rats. Method of induction of clinical death, pathophysiology and cerebrovascular pathology.](#)

Pluta R, Lossinsky AS, **Mossakowski MJ**, Faso L, Wisniewski HM.
Acta Neuropathol. **1991**;83(1):1-11 (the number of citations - **73** according to Web of Science)

[Complete cerebral ischemia with short-term survival in rat induced by cardiac arrest. II. Extracellular and intracellular accumulation of apolipoproteins E and J in the brain.](#)

Kida E, Pluta R, Lossinsky AS, Golabek AA, Choi-Miura NH, Wisniewski HM,
Mossakowski MJ.
Brain Res. **1995** Mar 20;674(2):341-6 (the number of citations - **72** according to Web of Science)

[Complete cerebral ischemia with short-term survival in rats induced by cardiac arrest. I. Extracellular accumulation of Alzheimer's beta-amyloid protein precursor in the brain.](#)

Pluta R, Kida E, Lossinsky AS, Golabek AA, **Mossakowski MJ**, Wisniewski HM.
Brain Res. **1994** Jun 27;649(1-2):323-8. (the number of citations - **59** according to Web of Science)