

Dedication to Professor Stella Niemierko on the occasion of her 90th birthday

This issue of *Acta Neurobiologiae Experimentalis* is dedicated to Professor Stella Niemierko, the founder of Polish neurochemistry, on the occasion of her 90th birthday, with esteem and admiration for her contributions to science and the community. It contains papers written by her students and coworkers, those who, like the undersigned, have had the privilege to work in the Laboratory created by Professor Niemierko and were introduced by her into the fascinating world of neuroscience, and by others, who in different ways were influenced, inspired and helped by the Professor.

All the long and most fruitful scientific activity of Professor Stella Niemierko has been, except for only short intervals, inseparably connected with the Nencki Institute of Experimental Biology. Here she met her future, beloved husband Professor Włodzimierz Niemierko, a remarkable man and eminent biochemist, whose whole professional life was also connected with the Nencki Institute. Already a third-year student at the Faculty of Natural Sciences and Mathematics of Warsaw University, in 1926 Stella Niemierko entered the Institute to major in animal physiology under the guidance of Kazimierz Białaszewicz, Professor at the University of Warsaw and Director of the Nencki Institute. At the Nencki Institute she performed studies which constituted the ground work for her Ph.D. thesis defended in 1932. She then worked for few years with Dr. Włodzimierz Missiuro (who was collaborating with the Nencki Institute) first at the Research Centre for Aviation Medicine and then, until World War II, in the Department of Physiology of the Academy of Physical Education, dealing with different problems of physiological response of humans to physical effort. During World War II she worked with Dr. Tadeusz Chrapowicki at the Hospital for Children on Kopernika Street, Warsaw. Following the war, after a brief period of work at the University of Warsaw, Stella Niemierko, together with her husband and two other scientists formerly of the Nencki Institute, Jerzy Konorski and Liliana Lubińska, decided to reactivate the Institute. Łódź was chosen as the temporary location for the reactivated Institute since Warsaw had been completely destroyed in the war. This was an extremely difficult task but was met with great courage and enthusiasm. Professor Niemierko writes in her autobiography (*My sixty years in physiology and biochemistry*, *Acta Biochimica Polonica*, 34, 239-252, 1987): "Almost every day brought some progress well remembered: the first balance, the first colorimeter, the first contacts with colleagues from abroad visiting Poland." In autumn 1945 the Institute was reestablished.

Together with their coworkers, Stella and Włodzimierz Niemierko initiated studies in the field of biochemistry of insects. Stella Niemierko became interested in phosphorus metabolism of the wax moth (*Galleria mellonella*). She found that among phosphorus compounds excreted by the larvae of this insect, fed on bee wax, pyrophosphate and tripolyphosphate were predominant rather than organic orthophosphate, the common end product of phosphorus metabolism in most other insects. The results of those early investigations appeared in *Acta Biologiae Experimentalis* (now *Acta Neurobiologiae*

Experimentalis), at that time the only journal in Poland publishing biochemical papers in the English language. Later on, the studies on insect metabolism were extended and became the subject of several dissertations guided by Stella Niemierko. Professor Anna Wojtczak, one of closest collaborators of Professor Niemierko of the "Łódź" times recalls: "Stella Niemierko created a friendly, family-like atmosphere in her group composed mostly of young students of the newly established Łódź University. She has not only taught them biochemistry and laboratory techniques but has also helped them in every day problems so numerous during those difficult post-war times. Most important, however, was the enthusiasm for research work which both Stella and Włodzimierz Niemierko transferred to their young collaborators." The return of the Nencki Institute to Warsaw (1954-56) was a great event for all members of the Institute.

Professor Stella Niemierko writes in her biographical article (*ibid.*): "In the late fifties it occurred to me that it would be important to introduce neurochemistry to the Institute, already well known for its research in neurophysiology, particularly since no other laboratory of functional neurochemistry existed in Poland." Encouraged by Professor Liliana Lubińska she decided to undertake a joint project

on the axoplasmic flow in peripheral nervous system. In 1959 she organized a new neurochemical team, officially established as Neurochemical Laboratory on April 1, 1963, of which she was in charge until her retirement in 1977. For the first few years her team consisted of two students: Barbara Oderfeld and Lucyna Szwarc. Barbara Oderfeld-Nowak recalls now the beginnings: "Professor Stella Niemierko impressed me at the first meeting with her friendly, kind, enthusiastic bearing, her scientific openness and knowledge." Later on the neurochemical group gradually expanded. It was joined by Irena Kłodos, Jolanta Skangiel-Kramaska, Katarzyna Mitros, Andrzej Wieraszkowski, Magdalena Wójcik, Anna Potempska, Małgorzata Skup, Jolanta Ułas, Lech Kiedrowski and others. Professor Niemierko says in her biographical article (*ibid.*): "Barbara Oderfeld-Nowak and Jolanta Skangiel-Kramaska became my closest associates."

The difficult beginnings became smoother due to an invaluable methodological help of Professor Włodzimierz Niemierko. The idea of Professor Stella Niemierko was to use enzyme activities as markers of the movement of axoplasm. It was discovered that, after transection of peripheral nerves of the dog, acetylcholinesterase accumulated not only above the injury which was consistent with the generally accepted view of anterograde axoplasmic flow, but also below the injury. Thus, with the aid of biochemical tools, it was possible to



In front of the Nencki Institute in Warsaw, 1963, soon after official establishment of the Laboratory of Neurochemistry in the Institute. Standing, from right: Professor Stella Niemierko, Lucyna Szwarc, Barbara Oderfeld, Professor Włodzimierz Niemierko, Director of the Institute and Professor W. Chetvierikov, a visiting Russian scientist. Sitting: Professor Liliana Lubińska.

prove the bidirectional transport of axoplasm. Subsequently, various characteristics of that transport have been studied, including its velocity and intensity. Various molecular forms of acetylcholinesterase of different properties were discovered. The effect of transection of the nerve on peritraumatic changes in the behaviour of some components was also investigated, and new and interesting injury-induced changes in metabolism of Schwann cells were discovered. Several original experimental papers and reviews were published and presented at scientific meetings. The theory of bidirectional transport of axoplasm, formulated by Lubińska and Niemierko, was further confirmed by many other laboratories with a variety of different techniques. In recognition for achievements in the studies of axoplasmic flow Professor Liliana Lubińska and Professor Stella Niemierko with her team were awarded the Prize of the Scientific Secretary of the Polish Academy of Sciences.

Around 1972 Professor Stella Niemierko, encouraged by Professor Jerzy Konorski, became interested in the central nervous system, particularly in the neurochemical basis of learning and memory. At that time, Professor Niemierko's first student Barbara Oderfeld-Nowak together with Bolek Srebro and Irena Kłodos initiated studies of the effects of brain lesions upon postinjury repair processes. Another line of investigation of Stella Niemierko and two other members of the team, Jolanta Skangiel-Kramaska and Katarzyna Mitros, in collaboration with Professor Bogusław Żernicki and Małgorzata Kossut, dealt with biochemical changes in the visual system of cat deprived monocularly of light and visually stimulated thereafter. The investigations on visual perception have brought recognition manifested by the State Prize awarded to Professor Niemierko and Professor Żernicki with their teams.

In addition, some experiments in collaboration with Professor Kazimierz Zieliński were carried out by Professor Stella Niemierko and Magdalena Wójcik, which questioned the current view on the role of the then mysterious peptide - scotophobin. Its effect on mobility of animals was discovered. The whole Neurochemical Laboratory has thus become more interested in the central nervous system.

Under the guidance of Professor Niemierko nine investigators have worked for and were awarded Ph.D. degrees in neurochemistry. She has also contributed in shaping the scientific profile in other neurochemical centres which have been established later in Poland. The neurochemical group of the Medical Research Centre in Warsaw recalls her valuable consultations.

Professor Stella Niemierko is a member of several Polish and international societies: Polish Neuroscience Society, Polish Biochemical and Physiological Societies (Honorary Member), International Brain Research Organization and International Society for Neurochemistry.

In addition to her scientific activity Professor Niemierko in the course of her long work at the Institute has always been engaged in various aspects of its life. For nine years (1968-1976) she served as the Deputy Director of the Institute. In various difficult situations she always showed determination and courage. In recognition of her activities she was distinguished with several State decorations.

After the retirement of Professor Niemierko in 1977 Barbara Oderfeld-Nowak took charge of the laboratory. Studies on the repair processes following various brain insults have been further extended. Investigations of functional plasticity of the brain, initiated by Professor Niemierko, are now being carried on by three independent research teams in the Department of Neurophysiology, directed by Jolanta Skangiel-Kramaska, Małgorzata Kossut and Leszek Kaczmarek. Other neurochemically oriented teams, devoted to basic aspects of brain metabolism, led by Jolanta Barańska and by Maciej and Katarzyna Nałęcz have recently been successfully created; undoubtedly their establishment was also inspired by the research initiated and carried out in the Institute by Stella Niemierko.

After her retirement Professor Niemierko has uninterruptedly continued to participate in various activities of the Neurochemical Laboratory. Małgorzata Skup says: "Those of us who began our

adventure with neuroscience in late seventies, like Jolanta Ułas (working at present with Carl Cotman, USA), Lech Kiedrowski (working with Erminio Costa, USA), and myself (who continues the work in the maternal laboratory) met Professor Stella Niemierko late at her scientific career already after her retirement. Although not working at the bench any more, she was continuously present in the laboratory; challenged by her straightforward judgement, we could feel her benevolence and benefit of her scientific and life experience."

In addition to her scientific contributions we have been always intensely exposed to her kindness, consideration, encouragement and support, and the warmth of her personality. Lucyna Szwarz-Biłotyńska, one of the two first collaborators of Professor Niemierko, working for almost 30 years in Hadasha Hospital, Jerusalem, who has recently been in Poland, writes: "Looking back to the time when my personal contacts with Professor Stella Niemierko were as close as they are now, again, after so many years, I find in her the same enthusiasm, sense of humour, warmth and youthful, unforgettable smile."

We are all most happy that Professor Niemierko wrote in her biography (ibid.): "I still feel a member of this Laboratory."

Professor Stella Niemierko is engaged in a remarkable spectrum of scientific activities in the Institute, taking part in seminars and conferences. She is actively participating in the debates of the Scientific Council of the Institute. In 1981-1983 she served as its President, and now is its Honorary President.

In dedicating this issue to Professor Stella Niemierko we wish her long, enjoyable and professionally rewarding years in good health.

Barbara Oderfeld-Nowak
Jolanta Skangiel-Kramaska
Małgorzata Skup

Editorial

On behalf of the Editorial Board of *Acta Neurobiologiae Experimentalis* we take pleasure in dedicating this issue to Professor Stella Niemierko, an outstanding Polish neurochemist and a member of the Board since 1972. We are indebted to Professor Niemierko for her substantial and long-lasting contributions to editing of our Journal.

All original and review articles published in this issue were subjected to the usual rigorous review process by multiple independent referees. We thank all reviewers for their prompt and devoted help. We owe credit for the original idea and the effort to organize this issue to Barbara Oderfeld-Nowak, Jolanta Skangiel-Kramaska and Małgorzata Skup. We express also special gratitude to Małgorzata Skup for her hard work in the editing process.

Andrzej Wróbel
Anna Grabowska
Krzysztof Turlejski