

Professor Szilárd Donhoffer

By Miklós Székely

At the University of Pécs, Hungary, Professor Szilárd Donhoffer (1902-1999) was the founder of thermoregulation studies over 60 years ago... By the year 1949 Dr. Donhoffer had already established a highly respected, well-known carrier as probably the best specialist in internal medicine in the city of Pécs. As prime lecturer of the Medical School by the late 30-ies, he already had the title of honorary professor. In his clinical practice, one of his main areas of interest was the topic of abnormalities and regulation of body weight, energy balance and intermediary metabolism. Quite unusual at that time, he coupled his clinical work with experimental analysis of the pathomechanism of metabolic diseases. He spent a year in the laboratories of Professor MacLeod in Aberdeen; later he worked mainly in daily collaboration with the Pharmacology and Experimental Pathology Department of the University; and he was also a leader of the early forms of pathophysiology teaching.

With an enormous clinical experience to support him, he turned to experimental medicine. In 1949 he founded the independent Department of Pathophysiology and became the first professor of this institution. He retired after 25 years, in 1974. Professor Donhoffer intended to present this topic to medical students in a combined way: clinical abnormalities and the (often controversial) experimental approaches and ideas to explain their development. He tried to make his students think, contemplate these controversial approaches and form their own, independent opinions.

In his own experimental work, however, he followed the original line and went on with the analysis of the regulation and abnormalities of energy balance – although with the same attitude of considering different opinions and possible explanations. He combined the rather modest methodological tools available at that time with his brilliant logic, clear thinking, good ideas and well-founded concise conclusions. Best known for his studies in the field of temperature regulation, he emphasized the role of nonshivering thermogenesis already before the concept was generally accepted. After publishing an abstract in *Nature* (1959), he developed an unorthodox idea on the thermoregulatory role of the brain, which idea was detailed in his book “*Homeothermia of the brain*” in 1980. He and his co-workers were particularly interested in the pathogenesis of fever. They conducted several studies of the thermoregulatory effects of pyrogenic substances and contributed to the development of this field. The Thermoregulatory Satellite Symposium to the 1980 Congress of the International Union of Physiological Sciences was organized in Pécs, in appreciation by the scientific community of his works in thermal physiology. Less is known about other areas of his interest: in order to cover the whole field of regulation of energy balance, he set up – while founding the Department – two more study groups besides the thermoregulatory group. One studied the regulation and abnormalities of food intake and body weight (starvation, overfeeding, peripheral and central regulatory factors, nutrient selection behavior, etc.), describing connections between diet and temperature regulation already in 1963 in the *British Journal of Nutrition*. The other group dealt with problems of the regulation of metabolic rate (e.g., analyzing the ways of action of thyroxine) –

some of the related theoretical considerations were published in his last scientific communication in the *Journal of Theoretical Biology* in 1986.

After his retirement in 1974, he spent 25 more years in the Department, supporting the ongoing scientific studies and influencing the ways of thinking of the next generations. He worked until the last days of his life. By 2010, even his youngest co-workers and students, including the author of this note, have retired. Nevertheless, the present young generation – *ceteris paribus* – still tries to follow his idea of complex analysis of neural and non-neural regulation of energy balance in health and disease, including food intake, metabolic rate and, of course, thermoregulation.

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