

# Pertti Neuvonen

\* 25.8.1943 † 14.5.2020



**PROFESSOR PERTTI NEUVONEN** died on 14th May 2020 in Helsinki at the age of 76. He was born on 25th August 1943 in Kirvu on the Karelian Isthmus in former Finnish territory.

Having been evacuated from Kirvu, his family relocated to Orimattila in Southern Finland, where Neuvonen grew up and completed his upper secondary school in 1962. He studied medicine at the University of Helsinki and graduated as a licentiate of medicine in 1970. He became interested in drug research already during his medical studies, and successfully defended his doctoral thesis in 1971. After his dissertation, he received a postdoctoral fellowship from the Alexander von Humboldt Foundation in 1971, and was thereby able to work as a postdoctoral fellow at Hanover Medical School in Hanover, Germany. Thus, he was among the first to create an active research network between German and Finnish pharmacologists. Today, the network is maintained by Neuvonen's students.

After returning from Hanover to Helsinki, Neuvonen focused strongly on research related to practical pharmacotherapy, as well as on the development of the role of clinical pharmacology in health-

care. He graduated as a specialist in clinical pharmacology in 1977. During the 1970s and 1980s, his determined and productive scientific career progressed well, and he was elected Professor of Pharmacology at the University of Turku in 1988. Four years later, in 1992, he was elected Professor of Clinical Pharmacology and Chief Physician at the University of Helsinki and Helsinki University Central Hospital. After working for 20 years in this position, he retired in 2011. Even thereafter, until the end of his life, Neuvonen maintained his enthusiasm for science, publishing frequently, and several of his writings will be published posthumously.

Neuvonen's scientific achievements were exceptionally impressive and changed treatment practices worldwide. During his early career, he was particularly interested in the absorption of drugs. As early as the 1970s, he gained international reputation by characterizing the clinically significant interactions of tetracyclines with iron and other divalent cations. His studies of oral activated charcoal in the 1970s and 1980s consolidated his international reputation. His work played a central role in the expansion of the use of activated charcoal in the treatment of

poisonings in the 1990s, whereby activated carbon displaced emetics (ippecac) and gastric lavage as gastrointestinal decontamination methods. For these merits, he was awarded The Drug Absorption Foundation Lecturer (Edinburgh) in 1993.

In the early 1990s, Pertti Neuvonen focused his research efforts on the roles of the inhibition and induction of cytochrome P450 (CYP) enzymes in drug interactions. Soon he became one of the most actively followed scientists in this field. Several of his research ideas were based on practical clinical problems, enabling his team to identify dozens of harmful interactions involving commonly used drugs, such as lipid-lowering drugs, cardiovascular drugs, glucocorticoids, antimicrobial agents, antidiabetic drugs, antiasthmatic drugs, analgesics and psychotropic drugs. His findings paved the way for understanding the mechanisms of drug interactions related to the absorption, biotransformation and transport of drugs and for predicting these interactions from *in vitro* studies. A particular strength in his clinical research was the effective use of the study design, a sufficiently powered cross-over study in healthy volunteers, with the administration of the inhibitor or inducer drug under study in multiple doses over several days. In addition to directly improving patient care and being commonly cited in textbooks, drug interaction databases and treatment guidelines, the conclusions based on Neuvonen's systematic research also advanced research methods, facilitating the discovery and prediction of adverse drug interactions already at an early stage of drug development.

In total, Neuvonen published more than 500 original scientific articles, as well

as numerous review articles, mostly in high-quality scientific journals. The outstanding scientific value of his work is reflected in the high number of citations to his articles in scientific literature. These articles have made him one of the best-known researchers in medicine in Finland and in pharmacology worldwide. For his scientific achievements, he was awarded the first BCPT Nordic Prize in Basic & Clinical Pharmacology & Toxicology in 2011, and the European Association for Clinical Pharmacology (EACPT) Lifetime Achievement Award in 2017. Neuvonen has been a member of the Finnish Academy of Science and Letters since 1998.

On a national level, Neuvonen worked tirelessly to develop the specialty of clinical pharmacology and actively trained specialists in the field. He was highly active with regard to the Finnish Poison Information Center, which worked in close collaboration with the Department of Clinical Pharmacology in Helsinki. This symbiotic relationship enriched specialist training in clinical pharmacology but also boosted the development of the Poison Information Center particularly during the 1980s and 1990s. He also advanced the therapeutic drug monitoring laboratory in the Helsinki University Hospital, ensuring, for example, that the laboratory had access to specialist expertise in clinical pharmacology.

One of the areas that Neuvonen highly valued was education in clinical pharmacology and drug research. He was the main architect and editor-in-chief of the Finnish clinical pharmacology textbook published in 1994, 2002 and 2011, and one of the founding members of the Finnish Society of Clinical Pharmacology, established in 1994. Following his retirement, he was in-

vited to become the first honorary member of the Society. One of the Society's key goals is to develop specialist and scientific training in the field. Neuvonen himself was also a highly active and successful supervisor; he supervised nearly 50 PhD dissertations, and founded the national Graduate School in Clinical Drug Research, which was active in 1995–2011. For his exceptionally meritorious work in educating medical researchers in Finland, he received the Lauri Saxén Prize in 1997 and the Maud Kuistila Award in 2003.

Pertti Neuvonen was characterized by a logical and creative mind, determination, constant enthusiasm for new knowledge and an effort to put knowledge into practice. In addition, his success was based on his ability to create conditions that gave his students equal opportunities to develop and fully engage in productive scientific work. He had a unique ability to

be both encouraging and demanding of his students: he himself was a perfect role model who always did his part judiciously and without delay. Neuvonen also carefully tended the collective spirit of his group, and regularly organized spring or summer trips and other joint events where the main emphasis was on relaxing together, often with a touch of science. He also cherished traditions. For example, he made sure that each doctoral candidate received a Finnish doctoral hat as a dissertation gift.

Pertti was easily approachable, fair and encouraging. He maintained a positive attitude to life until his last days. The summer cottage at Lake Lehmijärvi in Lohja and nature were important places for Pertti to relax and conceive new research ideas. Pertti ("Jaska") is survived by his wife Irma ("Impu") and his children Kati, Jussi, Mikko, Maija and Matti and their families.

*Obituary by Janne Backman,  
Mikko Niemi and Heikki Vapaatalo*