
Niels Alexander Lassen, 1926–1997

In Memory: Niels Alexander Lassen December 7, 1926–April 30, 1997

Professor Niels Alexander Lassen died on April 30, 1997. Throughout his professional life, Lassen continually explored new ways to enhance our understanding of the mechanisms that govern the human vascular system. His explorations of the circulation and metabolism of humans were particularly significant to the advancement of nuclear medicine. His keen intellect, unbridled enthusiasm and quick wit will be missed by the many friends he had in nuclear medicine as well as by thousands of others in many disciplines and countries.

Lassen was born in Copenhagen in 1926 and grew up in a home with strong academic traditions. He was introduced early to scientific problems by his father, H.C.A. Lassen, professor of internal medicine, and other leading Danish scientists who visited his home. Of major importance to Lassen was the inspiration to explore the circulation of the brain that he received from Mogens Fog, professor of neurology. Lassen earned his medical degree from the University of Copenhagen in 1951. During his postgraduate training in internal medicine he became increasingly interested in issues related to brain perfusion. From 1957 to 1958 Lassen was a postdoctoral fellow in Seymour Kety's laboratory at the National Institutes of Health. Under the supervision of Drs. Kety, Sokoloff and Freygang, Lassen developed a new in vivo method for recording regional cerebral blood flow (rCBF) in animals. Together, Lassen and Ole Munch applied ^{85m}Kr as a cerebral blood flow tracer. Krypton-85m was, however, soon replaced by ^{133}Xe.

In 1958, Lassen defended his doctor of science thesis, "Cerebral Blood Flow and Oxygen Consumption in Man Determined by the Inert Gas Diffusion Method." He soon established a close friendship and long-lasting collaboration with Professor David Ingvar of the University of Lund, Sweden. Together, they applied Lassen's intracarotid ^{133}Xe injection technique in exploring the regional functional activation patterns of the human cerebral cortex as well as abnormal rCBF patterns in cerebrovascular and psychiatric diseases. One much-quoted work was the delineation of the "luxury perfusion syndrome" in infarcted brain regions published in *Lancet* in 1966. Along with advances in computer technology, Lassen and his coworkers constructed a brain-dedicated, multidetector device consisting of 245 small detectors arranged in banks over one hemisphere. By the mid-1970s, they were able to present the first high-resolution, color-coded cortical activation maps of the working human brain.

In addition to studying brain circulation and function, Lassen also developed methods for the study of muscle, skin and renal blood flow. Along with developing new tracer kinetic methods he also always tried to simplify the algorithms. In 1979, Lassen and William Perl published the still-useful textbook, *Tracer Kinetics*. In the late 1970s and early 1980s, Lassen was one of the key developers of the first brain-dedicated SPECT camera able to measure rCBF quantitatively during ^{133}Xe inhalation as well as acquire high-resolution three-dimensional images of ^{99m}Tc- and ^{123}I-labeled compounds.

Lassen also was a key contributor to the scientific and clinical application of the newly developed "chemical microsphere" rCBF tracers introduced in the 1980s—HMPAO and ECD. He suggested kinetic models for the uptake and distribution of these tracers and was very much responsible for their worldwide use in nuclear medicine. In the later years of his career, Lassen's main interest was radiolabeled receptor ligands for SPECT investigation of the human brain, a field he predicted would become increasingly important because he felt SPECT ligand studies offered many advantages over PET studies, including lower cost, more accessible tracers, longer physical half-life and applications to larger patient populations.

Lassen had friends and collaborators all over the world. He was a highly popular speaker at scientific conferences, and he always guided the scientific discussions toward a deeper understanding of basic issues. He contributed to more than 700 scientific publications and received numerous awards and honorary degrees (including honorary doctorates from the University of Copenhagen, the Danish National Research Council, the University of Lille and the University of Toulouse). He received the Hevesy Award from the Society of Nuclear Medicine in 1990. He loved to work with younger researchers, who always found him friendly, open minded and helpful. In fact, he guided more than three generations of young researchers, including the authors of this memorial article.

In December 1996, Lassen turned 70 and, in accordance with Danish regulations, had to retire from his position as head of the department of clinical physiology and nuclear medicine at Bispebjerg Hospital. He was, however, planning for a very active future as an emeritus professor. Sadly, around the time of his retirement, he discovered that he was seriously ill. He underwent several operations and fought his illness with the same strong spirit that had been his trademark throughout his life. However, in early spring 1997 his condition worsened and he realized the inevitable course of his disease. Even so, Lassen continued to work with his young colleagues until the week before his death. He died peacefully in his home on April 30, 1997, surrounded by his beloved family.

Niels Alexander Lassen's contributions to medical science, particularly to human brain research, are significant and indisputable. His spirit will live on in his many colleagues and friends throughout the world, and his memory will not fade.

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