

## Peter Raymond Lewis

1924–2007



Peter Lewis died on 17 December 2007 aged 83 after coping valiantly with Parkinson's disease for over 15 years. He was elected a Member of The Society in 1954, serving on the Editorial Board of *The Journal of Physiology* from 1975 to 1977. Peter's research career reflected his wide interests. He went up to Exeter College, Oxford with an open scholarship to read chemistry, but his subsequent D Phil thesis on the kinetics of bacterial growth led him into biology and ultimately to neuroscience.

In 1948 Peter joined the Cambridge Physiological Laboratory where, financed by a grant from the Rockefeller Foundation, he worked with Richard Keynes on the net movements of sodium and potassium in squid nerves during nervous activity. This was the first effective application of radio activation analysis to biological problems. He then became interested in the role of the CNS in the maintenance of diurnal rhythms in man, a question that had been little studied. In collaboration with Mary Lobban he made two MRC-funded expeditions to Spitzbergen where, in the perpetual summer daylight, their subjects lived on strictly controlled 'days' of 21, 22 or 27 hours. While the fluctuations in body temperature adopted a new rhythm quite rapidly, the effect on peak output of water, sodium and potassium was less consistent leading to the conclusion that more than one mechanism may be involved in controlling diurnal rhythms.

After 4 years as a University Demonstrator, Peter was appointed an Assistant Director of Research in the Department of Anatomy where, with his talent for innovation, he had an enormous formative influence on colleagues and students and, mainly with Charles Shute, he began the important work on cholinesterases that became the core of his research career. His chemical background enabled him to introduce improvements to the histochemical method developed by George Koelle. He also adapted the technique for use in electron microscopy, the thiocholine substrate being far more specific than thiolacetate that had been used for EM histochemistry hitherto. A major study of the distribution of cholinesterase-containing fibres in the rat brain resulted in two landmark papers in *Brain* in 1967. Peter the chemist was always more cautious than Charles the anatomist, in equating cholinesterase-containing with cholinergic. In a collaborative study, I was recruited to measure the level of choline-acetyltransferase proximal and distal to a lesion in the fimbria. The increase in the histochemical reaction for acetylcholinesterase proximal to the lesion, and its disappearance distally, was mirrored by the changes in cholineacetyltransferase. This strengthened the evidence that the cholinesterase-containing fibres in the fimbria did indeed represent a cholinergic input to the hippocampus, probably from the ascending reticular formation. Degeneration of this ascending cholinergic pathway is now widely believed to underlie Alzheimer's disease. In 1970 Peter moved back to The Physiological Laboratory where Charles had been appointed Professor of Histology on the retirement of E N Wilmer.

While the bulk of Peter's work concerned the anatomy of the cholinergic system in the CNS, his research topics included spectral sensitivity curves, monoamines, placental esterases and weeping lubrication in mammalian joints. He will, however, be remembered for more than his range of scientific

interests. Cambridge students, whether medics, vets or natural scientists, benefited from his enthusiasm and skills as a lecturer, demonstrator and supervisor. His breadth of knowledge meant that he contributed to the teaching of biochemistry, cytology and neurology as well as anatomy and physiology. During the early part of his retirement he continued to demonstrate to histology classes often using his Parkinsonian symptoms, and their control, as a teaching aid.

In May 2007 a society was founded in his college, Corpus Christi (where he was a Fellow from 1959 till his death), to bring together all its medical alumni and students (preclinical and clinical). Despite his worsening health Peter played a major role in establishing the society which, by unanimous decision, has been named the Lewis Society of Medicine. A founding member described him as an invaluable source of scientific and general wisdom, while one of his erstwhile technicians described him as a perfect gentleman. These words neatly sum up Peter the scientist and Peter the man. Our sympathy goes to his wife Joyce and children Anne and Mark, and to his friends worldwide.

**Ann Silver**

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## Gertrude Falk

1925–2008

Gertrude came from the University of Washington in Seattle to work with Paul Fatt in the Biophysics Department at UCL in 1961, on a Guggenheim Fellowship. Although her PhD work at Rochester was on diuresis in the rat, she then became one of the early microelectrode electrophysiologists. She had worked as a postdoc with Gerrard in Chicago and studied a wide range of smooth and striated muscle types. She and Paul Fatt tackled the question of the puzzlingly high capacitance of muscle – this was before it was established that the membranes of the transverse tubules were