

Gordon Murray Shepherd (1933–2022)

Gordon Shepherd, Professor Emeritus of Neuroscience at Yale University School of Medicine died peacefully on 9 June. He was born in Ames, Iowa in 1933 to Geoffrey S. and Eleanor M. Shepherd. Known for his wit and sense of humor, he was a scholar whose interests extended far beyond his primary passion — science — to include art, poetry, opera and history. Widely traveled, he treasured the summerhouse that he and Grethe, his wife, built in Denmark, where the family would gather every summer.

Gordon received his B.S. from Iowa State University in 1955 and his M.D. from Harvard in 1959. He then traveled to the University of Oxford, where he earned his D. Phil. in 1962 working with the prominent neurophysiologist Charles Phillips. Following postdoctoral work at NIH, The Karolinska Institute and MIT, he joined Yale in 1967, becoming emeritus in 2019 but remaining fully engaged and active in science and the university — including the development of the Wilfrid Rall Archives and SenseLab, which builds integrated, multidisciplinary models of neurons and neural systems.

During his 52 years at Yale he served in many roles, including Deputy Provost for Science, Director of the Interdepartmental Neuroscience Graduate Program, Faculty in the History of Science and Medicine Program, Member of the Elizabethan Club and a Fellow of Pierson College.

Gordon was the Editor-in-Chief of the *Journal of Neurophysiology* and of the *Journal of Neuroscience* as well as serving on the editorial boards of an extensive and diverse collection of journals. He served on study sections and advisory boards for the National Institutes of Health throughout his career as well as on external advisory boards for both domestic and international science endeavors. He held many visiting professorships and notably was awarded honorary doctorates from the University of Pavia in Italy and the University of Copenhagen in Denmark. He was a founding member of the Society for Neuroscience and the Association for Chemoreception Sciences, for which he later also served as President. He was a former President of the Cajal Club, which awarded him the Lifetime Achievement Award — one of many such recognitions he received throughout his career. He was an elected Fellow of the American Association for the Advancement of Science and the American Academy of Arts and Sciences.

Gordon was a prolific and inspirational scientist. He published more than 300



Credit: Yale University

peer-reviewed papers in leading journals and 8 books that have appeared in multiple editions. Of particular note, his first book, *Synaptic Organization of the Brain*, was published in 1974 with four subsequent editions. Still considered a foundational text, it was the first book to examine the organization of connections comparatively in different regions of the brain using a wealth of physiological, anatomical and computational data. Gordon's insights into common principles of organization in the brain was transformative for many of us in the then nascent field of 'neuroscience'. Subsequent books were equally well received and reflected his commitment to education (*Neurobiology*), his interest in history (*Creating Modern Neuroscience* and *Foundations of the Neuron Doctrine*), and most recently the emerging field of integrative neuroscience (*Neurogastronomy* and *Neuroenology*, both of which captured the attention of scientists, professionals and the general public). His passion for pioneering new areas of study recently led to an endowed lecture series at Yale that was named in his honor, 'The Gordon M. Shepherd Lectureship in Integrative Neuroscience'.

Gordon's career in science began in 1959 when he moved to Oxford. Beginning with the fellowship that supported his early studies, he enjoyed continuous extramural support of his research for more than 60 years and held the same NIH R01 for over 44 years. He recognized early in his career that the olfactory system offered unique

opportunities to understand the organization of the brain. In his seminal work at Oxford he uncovered a novel pattern of excitation–inhibition that led to his discovery of a synaptic circuit, the reciprocal dendrodendritic synapse, that was previously unknown. Characteristic of how Gordon attacked a question, he pursued an understanding of the circuit by recruiting collaborators in electron microscopy to complement his physiology. Subsequently, in the laboratory of Wilfrid Rall, Gordon developed seminal computational strategies that were used to model electrical events in dendrites and at the dendrodendritic synapse. In the years that followed, he continued with his commitment to understanding the mechanisms underlying olfaction, including the molecular mechanisms at the level of the sensory neurons in the nose, the circuitry processing odor information in the olfactory bulb, the representation of odor identity in the bulb and cortical regions (using techniques ranging from 2-deoxyglucose to patch clamping), and the development of computational analyses of neurons and neuronal circuits.

During his career, Gordon welcomed innumerable undergraduate students, 11 graduate students and 48 postdoctoral fellows into his lab for training. Trainees long gone from his lab continued to seek out his counsel; he relished opportunities to connect with them in person at meetings and symposia and was always eager to learn about their most recent studies. His mentorship and support of his trainees, and more generally his colleagues, earned him their unlimited respect, devotion and affection. His guidance will be sorely missed.

Gordon is survived by his wife and partner in all things, Grethe Shepherd, his son Gordon M. G. Shepherd, his daughters Kirsten Shepherd-Barr and Lisbeth Shepherd, three siblings, seven grandchildren and an international network of friends, family, students and colleagues. □

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Published online: 28 July 2022
<https://doi.org/10.1038/s41593-022-01141-2>

Acknowledgements

We thank the Shepherd family for their contributions to this Obituary.