

Editorial

Memorial Tribute to William Albert Catterall (1946–2024)



William Catterall (1946–2024)
Photo courtesy of Tina Catterall

The relentless pursuit of excellence in research, education, leadership, and service defined the remarkable life of William (Bill) A. Catterall, who died suddenly on February 28, 2024, at the age of 77 years. Bill died while attending the Sixth International Calcium Channel Conference on Boracay in the Philippines soon after presenting his work on the regulation of cardiac calcium channels, doing what he loved and surrounded by scientific colleagues. Bill is survived by his wife, Tina, his daughter, Elizabeth, and his son, Douglas.

Bill Catterall was born in Providence, Rhode Island, on October 12, 1946. He earned a BA degree in chemistry from Brown University and a PhD in physiologic chemistry from Johns Hopkins School of Medicine. He began to pursue the role of marine toxins on ion channels while a postdoctoral fellow in neurobiology and molecular pharmacology as a Muscular Dystrophy Association Research Fellow in the laboratory of Nobel Laureate Dr. Marshall Nirenberg at the National Institutes of Health. Bill was subsequently recruited by Dr. Edward Krebs to the faculty of the Department of Pharmacology at the University of Washington. He rapidly rose through the ranks to become chair of pharmacology, a position he held for 33 years. More than 100 scientists trained in Bill's laboratory, and I am honored to count myself among this wonderful community of ion channel biologists.

Bill's body of work was transformational to our understanding of the molecular basis of neuronal and cardiac excitability. He was the first to isolate and identify voltage-gated sodium and calcium channels, to demonstrate their subunit composition, and to reconstitute their function from purified components. He was one of the first to generate sodium and calcium


channel domain-specific antibodies. He used antibody mapping, photoaffinity labeling, and site-directed mutagenesis to identify the voltage sensors, the ion-conducting pore, and the inactivation gate of sodium channels and from this work developed the sliding helix model of channel activation. He identified multiple ion channel receptor sites for toxins and small molecule drugs as well as sites of channel interaction with G proteins and synaptic proteins. Bill translated his fundamental basic discoveries into significant preclinical data, contributing to the discovery that ion channel genes are targets for genetic variation that result in a broad range of diseases, including epilepsy, intellectual disability, and cardiac arrhythmia. Bill was the first to demonstrate that mice haploinsufficient for *Scn1a*, encoding the sodium channel α subunit Nav1.1, have spontaneous seizures and sudden unexpected death in epilepsy. His *Scn1a* mouse strain became the first preclinical model of Dravet syndrome, a devastating developmental and epileptic encephalopathy with an extraordinarily high rate of sudden unexpected death in epilepsy. Finally, Bill worked with Dr. Ning Zheng at the University of Washington to solve the first structure of a bacterial sodium channel using cryo-electron microscopy.

Bill was honored with many national and international awards throughout his stellar scientific career. His research was recognized with the Passano Foundation Young Scientist Award and Jacob Javits Neuroscience Investigator Award. Bill received the Basic Science Prize of the American Heart Association, the Mathilde Solowey Award in Neuroscience from the National Institutes of Health, the H.B. Van Dyke Award in Pharmacology from Columbia University, the McKnight Foundation Senior Neuroscience Investigator Award, and the Bristol-Myers Squibb Award for Distinguished Achievement in Neuroscience Research. Bill was elected to the National Academy of Sciences where he served as chair of the Section of Physiology & Pharmacology, the National Academy of Medicine, as a Fellow of the American Academy of Arts and Sciences, as a Foreign Member of the Royal Society of London, and as a Fellow of the American Association for the Advancement of Science. He received the Lifetime Achievement Award from the International Union of Pharmacologists and the prestigious Canada International Gairdner Award “for discovery of the voltage-gated sodium channel and calcium channel proteins and the elucidation of their function and regulation.”

Bill was dedicated to the success of ASPET, serving as editor-in-chief of *Molecular Pharmacology* from 1986 to 1990 and as a member of the ASPET Board of Publication Trustees, as well as a founding member of the ASPET Division for Molecular Pharmacology. ASPET honored Bill’s work by bestowing on him the Robert R. Ruffolo Career Achievement Award in Pharmacology in 2016 and electing him to the inaugural class of ASPET Fellows in 2019.

My fellow Catterall laboratory alumni colleagues and I will be forever grateful to Bill for investing in our training and impacting our scientific careers as a role model.

May his memory be a blessing.

 Lori L. Isom, Ph.D.
Maurice H. Seevers Professor and Chair of Pharmacology
University of Michigan Medical School