In Memoriam

Harry A. Fozzard, MD
1931–2014

Timothy J. Kamp, Craig T. January

Dr Harry A. Fozzard, Otho S.A. Sprague Distinguished Service Professor Emeritus in the Department of Medicine at the University of Chicago and former editor-in-chief of Circulation Research, passed away in his sleep on December 9, 2014 at the age of 83. Dr Fozzard’s career and life reflected the emergence and evolution of cardiac electrophysiology as research and clinical disciplines. It is remarkable to reflect on the advances that have occurred in cardiac electrophysiology and the interwoven role Fozzard played in those advances.

Dr Fozzard attended medical school at Washington University in St. Louis where he had the good fortune of having his first serious research experience in the laboratory of Earl Sutherland, a future Nobel Prize winner for the discovery of adenylyl cyclase and cAMP as a second messenger system. This triggered Fozzard’s interest in the cell membrane and associated signaling pathways. He subsequently did his internship at Yale University before serving in the US Navy Medical Corps. He returned to Washington University where he completed his internal medicine residency and cardiology training. Dr Fozzard’s research on membrane proteins initially focused on the Na/K ATPase which resulted in 1964 in his first Circulation Research publication.

Dr Fozzard wanted to pursue cardiac electrophysiology research, but he felt poorly prepared. It was an exciting time as Hodgkin and Huxley had just been award the Nobel Prize in Medicine in 1963 for their work defining ionic currents underlying neuronal excitability. Thus, he traveled to Bern, Switzerland, in 1963 to work in the laboratory of Silvio Weidmann, the scientist credited with first recording the cardiac action potential and one of the fathers of cardiac electrophysiology. During his time in Bern, he designed a voltage clamp allowing him to perform a detailed study of the membrane capacitance properties of the Purkinje fiber. The Purkinje fiber was an early favorite of cardiac electrophysiologists given its defined geometry and small size enabling the first voltage clamp studies of cardiac muscle.

In 1964, Fozzard returned to Washington University and was appointed assistant professor of medicine and physiology, and he established and directed the first coronary care unit at Barnes Hospital. With the advent of the coronary care unit, he realized the importance of real-time arrhythmia monitoring and collaboratively developed a digital computer system for this purpose.

In 1966, he was recruited to the University of Chicago to join an outstanding group of cardiovascular researchers led by Hans Hecht, another pioneer in cardiac electrophysiology. Dr Fozzard spent the rest of his remarkable career at the University of Chicago; however, his research reflected no geographical boundaries as he readily collaborated with and exchanged trainees and ideas with researchers from around the world including Europe, Russia, Japan, and Uruguay among other places. He published nearly 250 original papers, reviews, editorials, and book chapters. He earned continuous National Institutes of Health funding for greater than 4 decades. At the same time, he remained active as a clinical cardiologist with many devoted patients.

Dr Fozzard’s research primarily examined the roles of the Na/K ATPase, Na/Ca exchanger, Na channels, and Ca channels in cardiac physiology. His group perfected ion sensitive microelectrodes and used them to determine intracellular concentrations of Na, K, Ca, and Cl in cardiac preparations and how those concentrations changed in response to stimulation, development, and pharmacological intervention such as cardiac glycosides. As methodology to isolate single cardiomyocytes emerged in the early 1980s, Fozzard’s group isolated single canine Purkinje cells and went on to provide detailed characterization of Na and Ca currents in those cells as well as taking advantage of the new patch clamp technique.
to measure single channel properties of Na channels in Purkinje cells. After the cloning of the voltage-gated Na channel, Fozzard and colleagues made major advances spanning 20 years in structure function studies of the channel helping to define the sites of local anesthetic block and well as toxin modulation of the channels. In addition, Fozzard and colleagues provided detailed studies of L-type and T-type Ca channels in cardiac muscle and provided one of the first studies defining the effect of phosphatases on L-type Ca channels. Thus, Fozzard performed pioneering research impacting many aspects of cardiac electrophysiology, arrhythmias, and the regulation of contraction in heart muscle.

Perhaps Fozzard’s greatest impact was as a leader and mentor. He served as vice president for research for the American Heart Association and was editor in chief of Circulation Research from 1986 to 1991. In addition, over the years he served both as a clinical division Chief of Cardiology and later as a basic science Chair of the Department of Pharmacological and Physiological Sciences. He mentored greater than 60 PhD and MD/PhD candidates, postdoctoral fellows, and other visiting scientist during his career. He was an inspiring teacher and supported the career development of many young scientists in his laboratory and beyond it. For example, a first year medical student sitting in his lecture on cardiac physiology who had planned a career in internal medicine suddenly became hooked on the heart and remarkable proteins called ion channels. For many, Dr Fozzard pointed us in new and exciting directions to unmask the mysteries of cardiac excitation and tachyarrhythmias. Dr Fozzard is survived by his wife Lyn, their 2 sons Richard and Peter, 4 grandchildren, and his brother George.

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Disclosures
None.

References
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