Peter Harris, M.D., Ph.D.
1923 - 2002

Peter Harris was an influential international statesman in cardiology. A science scholar at King’s College, London, UK, Harris trained in medicine at Kings College Hosp., qualifying in 1946. During house appointments at King’s and the Brompton Hosp., he obtained his MD in 1951, winning the university gold medal and a PhD in 1955. He was appointed lecturer, in 1957, and reader in medicine, in 1962, at Birmingham University. In 1966, he was appointed the first Simon Marks’ Professor of Cardiology at the Cardiothoracic Institute and Director of the Institute of Cardiology, in the Univ. of London.

His career, which was dedicated to exploring the cardiovascular system and the origins of heart disease, can be viewed as three chapters. During the 1950’s and early 1960’s, he was in the mainstream of research, and used established methods of haemodynamic measurements to explore cardiac output and pulmonary blood flow and the metabolism of the heart muscle. [During]…the second stage of his career …his research into the heart muscle turned to experiments at the cellular and molecular level. In 1970, Harris organized a meeting of …an international study group for research in cardiac metabolism, which resulted in the publication of one of the most influential works on cardiology: Calcium and the Heart. The third element to Harris’s career involved his fascination with the evolution of the cardiovascular and related systems. In a series of essays in 1983, he traced the way that the origins of clinical heart failure might lie in ancient reflexes. His study of the right ventricle of the heart and the blood flow to the lungs of yaks showed they had adapted genetically to high altitude by eliminating the vasoconstrictor response due to reduction of oxygen.

Away from the laboratory, he was a talented musician and artist, and he showed a leaning toward satirical writing.

Rodolphe Fischmeister, Ph.D.  Berlin, Germany

Rodolphe Fischmeister says he “never learned biology!” He studied maths and physics instead, and graduated as an electrical engineer (1978). He obtained his PhD in 1980 at the University of Paris-Sud in Orsay, France, on mathematically modelling of cardiac electrical activity with Guy Vassort, and then performed a first postdoc with Magda Horačkova at Dalhousie in Halifax, Canada (1981-1982), where he developed a theoretical model of the L-type Ca\(^{2+}\) current (I\(_{\text{Ca,L}}\)) and intracellular calcium diffusion in heart cells. His desire to move to the experimental field was fulfilled when Robert L. DeHaan offered him a postdoc position in his lab at Emory, Atlanta (1982-1983). There, together with the group of Louis J. DeFelice, he developed an original double patch-clamp method to simultaneously measure in chick embryonic heart cells, single channel currents at the surface membrane while simultaneously recording intracellular spontaneous action potentials. With William Clusin, he explored the effect of caffeine on ion currents and provided the first evidence a current in cardiac cells due to the activity of the Na\(^+/\text{Ca}\(^{2+}\) exchange.

In 1983, Dr. Fischmeister returned to France and joined the lab of Guy Vassort at the University of Paris-Sud in Orsay, after obtaining a permanent position as research associate at INSERM. He has been faithful to INSERM since then and walked up the steps of the ladder to become Director of Research '2nd class' in 1989, '1st class' in 1997 and 'exceptional class' in 2011. He left the lab of Guy Vassort in 1992 to build his own lab at the Faculty of Pharmacy of the University Paris-Sud (now University Paris-Saclay), which is located in Châtenay-Malabry. His lab, which started with 10 people in 1992 now includes more than 50 people, has been continuously funded by INSERM since then. In addition, his lab has regularly raised additional funds from several foundations and funding agencies (ANR, AFM, FRM, Fondation Leducq and others) as well as from pharmaceutical industries. In 2015, he stepped down to give the head of the lab to Ana Maria Gomez and he is now acting as deputy director. Meanwhile, in 2010, Dr Fischmeister founded an interdisciplinary laboratory, called “The Laboratory of Excellence in Research on Medication and Innovative Therapeutics” (LERMIT) which received a €19Mn budget and involves 16 different labs with high-profile biologists, chemists and physico-chemists joining their forces to collectively explore new therapeutic avenues.

The main focus of the group of Dr Fischmeister is the neurohumoral regulation of cardiac function and the adaption and remodelling processes taking place during pathophysiological situations, such as hypertrophy and heart failure. Using cellular models (frog, rat, mouse, and Human cardiomyocytes), they develop original approaches to dissect the mechanisms involved in the sympathetic and parasym pathetic regulation of I\(_{\text{Ca,L}}\). Combining patch-clamp with intracellular perfusion of a single myocyte via the patch clamp pipette, they discovered in 1986 the cGMP/cAMP antagonism on I\(_{\text{Ca,L}}\). Using a millisecond external perfusion system, they were able to determine the sequence of events in the β-adrenergic cascade leading to positive inotropic response. A double barrelled micropipet of a single cardiomyocyte led in 1996 to the first demonstration in a living cell of an intracellular compartmentation of cAMP. Combining patch-clamp with FRET-based fluorescence imaging led to the first real time measurements of intracellular cAMP in an intact cardiomyocyte. Expression of cyclic nucleotide gated channels from olfactory neurons in cardiomyocytes allowed for the first time real time monitoring of cAMP and cGMP at the sarcolemmal membrane.

Dr Fischmeister has published over 170 papers in peer-reviewed international journals, accumulated >10000 citations, with 24 papers cited >100 times and an H-index of 58. He has been invited to 170 scientific meetings and >110 seminars around the world. He has served as external referee for NIH, NSF, MRC, Wellcome Trust, CNR, Telethon, Government of Canada, etc. He has reviewed papers for >20 different journals and has been Associate Editor in Journal of Physiology and Cardiovascular Research. He has been President of an INSERM Study Section (2008-2012). He is an elected member of a number of professional organisations, member of the Academia Europaea, and former president of the European Section of the ISHR (2016-2018). He has received several prizes and awards (Jeanne-Philippe Beziat Cardiology Prize 2012, Alain Castaigne Prize 2014, La Monica 2016). He has also trained >35 young postgraduate researchers, half of them coming from foreign countries.

Rodolphe Fischmeister has been a leader in the field of cardiac cellular physiology since its inception. He has studied Ca\(^{2+}\) channels and signalling in the heart and the pathways that stimulate production of the second messengers cGMP, cAMP, and NO. He showed how these pathways impact on normal heart contraction and on the diseased heart. He performed the initial studies that carried the concept of compartmentalized CAMP signalling from an obscure hypothesis to demonstrated fact. He discovered the determinant role of cyclic nucleotide phosphodiesterases in this process and showed that a loss of compartmentation occurs during pathological cardiac hypertrophy. Together with his long-term collaborators Grégoire Vandecasteele and Jérôme Leroy, he is currently exploring strategies to restore cAMP compartmentation by activation of specific phosphodiesterases as a novel therapeutic approach in heart failure. His background in engineering has given him the edge needed to bypass traditional thinking in physiology and create new methodologies that have pushed the field forward.