

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. His wife Francesca survives him.

Excerpted from The Lancet 2003: 361: 1231.

About the Award...

Created in 1986, this very distinguished Award of international importance is the highlight of each World Congress of the ISHR. It is conferred in recognition of a lifetime of distinguished scientific achievements in the field of cardiovascular research.



International Society for Heart Research

President

E Murphy, USA

President Elect

T Eschenhagen, Germany

Past President

M Avkiran, UK

Secretary General

L Delbridge, Australia

Treasurer

A Gustafsson, USA

Journal Editor

R John Solaro, USA

Bulletin Editors

L Anderson Lobaugh, USA

T Ruigrok, The Netherlands

Council 2016-2019

H Ardehali, USA

J Backs, Germany

F Del Monte, USA

F Di Lisa, Italy

D Eisner, UK

R Fischmeister, France

L Hool, Australia

E Kranias, USA

D Lefer, USA

G Lopaschuk, USA

T Miura, Japan

T Murohara, Japan

S Pepe, Australia

P Ping, USA

Y Saito, Japan

Y Takeishi, Japan

KK Talwar, India

T Thum, Germany

M Vila-Petroff, Argentina

R-P Xiao, China

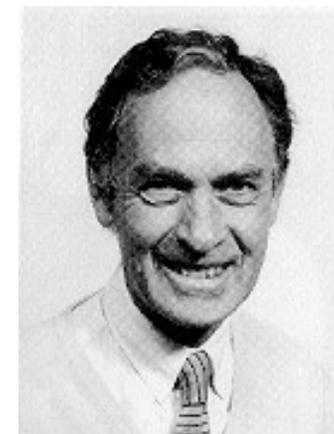
Y Zhu, China



ISHR

International Society for Heart Research

The Peter Harris Distinguished Scientist Award 2018



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

Award Winner

David A Kass, MD

“Leveraging Protein Kinase G
to Treat Heart Disease”

David A Kass, MD

2018 Award Winner Brisbane, Australia



David Kass is the Abraham and Virginia Weiss Professor of Cardiology, Professor of Medicine, Pharmacology and Molecular Sciences, and Biomedical Engineering at the Johns Hopkins University. He received his BA from Harvard College in 1975, where he majored in Applied Physics and Engineering, and in 1980, a Doctor of Medicine degree from Yale University. After completing residency in Internal Medicine at

George Washington University, in Washington DC, he joined the Johns Hopkins Cardiology Division first as a fellow in 1983, and on faculty in 1986; he has remained there since. In addition to his academic appointments, David directs the Institute of CardioScience, and co-directs a decades long post-doctoral NIH-training program in Cardiovascular Disease. Among his honors are the Melvin Marcus Award (1st one), George Brown Lectureship, and Basic Science Award from the American Heart Association, the Inaugural Janice Pfeffer Award from the ISHR, an Outstanding Investigator Award from National Institutes of Health, Pulse of Asia Lifetime Achievement Award, and Mentorship Award, Professor's Award for Distinction in Teaching, and Clinical Innovator and Mentor Award, from Johns Hopkins University. He is a long-time member of the American Society of Clinical Investigation, American Heart Association, and American Association of Physicians, and has served as Associate Editor for *Circulation Research*, and currently for *American Journal of Physiology*, and is editorial boards of *Circulation* and *Circulation Research*. David's work spans from basic molecular and cellular research through to human studies. Many fields can claim a landmark study of his that played a key role and forged a new and important direction for research. All told, David has over 400 original papers, and many more book chapters and reviews, with >56,000 citations and

an H-index of 125. He has directly mentored over 100 students in his laboratory, and many are current academic leaders in cardiovascular research and/or medicine.

David seriously caught the research bug in college while working in the laboratory of Martin Moore-Ede, a circadian rhythm biologist in Harvard's Physiology Department. Here, he melded his applied mathematics with biology to study oscillatory behavior. As Yale required a "medical student thesis", he later returned to the lab, ended up taking a year off to pursue this work, during which time he discovered how the Henry Gauer reflex (central volume receptor regulation – before atrial natriuretic peptide was discovered) fell under potent circadian control. The work received an Annual Award from the Renal Section of the APS, and he knew he'd be a Physician Scientist after that. During residency, he was intrigued with the rapid advances being made in Cardiology and role bioengineering was playing. Once at Johns Hopkins, he joined the laboratory of Kiichi Sagawa, who in the late 1970's had re-invigorated cardiac mechanics thought his landmark work on pressure-volume relationships. David's first project translated this approach *in vivo*, using a newly developed catheter. He soon was using it in patients, and before completing fellowship, became the world's first to implement PV analysis to dissect disease pathophysiology in intact humans. For nearly 15 years thereafter, he used systems physiology and bio-engineering to study intact heart and coronary mechanics, ventricular-arterial interactions, and determine how the heart is disabled by disease and ways to fix it. Highlights of his early studies were the impact of external constraints on diastolic properties, ventricular-vascular stiffening with aging and influence on cardiac mechano-energetics, and pulse-perfusion mechanics and endothelial-mechanosensing. In the late 1990's he pioneered human studies of a pacemaker therapy known as cardiac resynchronization (CRT), used to treat patients with heart failure and conduction delay causing dyssynchronous contraction. This became the first new therapy for heart failure in the 21st century. He then developed a unique animal model for this and spent the next decade elucidating molecular and cellular mechanisms attributable to CRT. Among the many surprising discoveries, was that CRT acts like a myofilament Ca^{2+} sensitizer, by stimulating glycogen synthase kinase-beta phosphorylation of sarcomere proteins. In 2015, he reported in *Science*

Translational Medicine an even more surprising discovery – daily nocturnal exposure to dyssynchrony in otherwise synchronous failing hearts improves their function and structure. The new therapy (called PITA) may help millions of patients who are not CRT candidates, and clinical trials are planned. Another landmark effort from his lab was the discovery in the early 2000's that the reduced protonated form of nitric oxide (HNO) is a positive inotrope and veno/arterial dilator with potential utility to treat heart failure. He co-founded Cardioxyl in 2005, and over the next 10 years, the company developed and tested novel HNO donors leading to Phase II clinical trials. They were purchased by Bristol Meyers Squibb in 2015, and worldwide clinical trials continue.

In the late 1990's, David looked to smaller things, miniaturizing the PV catheter for mice, and applying engineering and molecular cell biology to reveal new heart failure mechanisms and therapies. His work covers broad territory but much was first sparked by studies of PDE5 inhibition, and his lab became a leader in the field of cardiac cyclic GMP and protein kinase G (PKG) signaling. In 2005, they reported in *Nature Medicine* how Viagra benefits hearts by reducing cardiac hypertrophy, fibrosis, and improving function. Ten years later, they reported in *Nature* on PDE9 as a major cGMP-PDE in heart that regulates natriuretic peptide signaling. In between, they revealed many new targets for PKG, including TRPC6 channels and regulator of G-protein signaling, with implications for hypertrophy, heart failure, and muscular dystrophy. The newest work is revealing exciting new links between PKG signaling and protein quality control and mTOR signaling, the latter having major implications for immune-oncology and autoimmune disease therapy. He is revealing new therapeutic opportunities for heart failure with a preserved ejection fraction (HFpEF), which is an internationally major unmet medical need, and also for right heart failure associated with forms of pulmonary hypertension. In between the research, mentoring, and entrepreneurial activities, David is an avid clarinetist, and performs with various chamber groups in the D.C. area.