

## 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.

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### 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.



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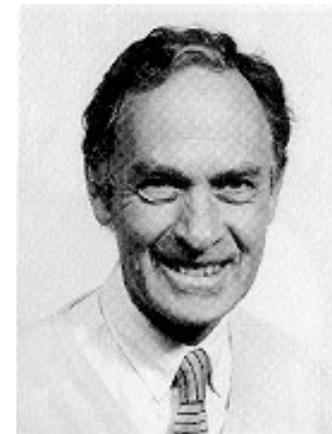
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## The Peter Harris Distinguished Scientist Award 2010



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

Award Winner

**James M. Downey, Ph.D.**

“Protecting the Ischemic Heart”

# James M. Downey, PhD

## 2010 Award Winner Kyoto, Japan



James Downey received a BS degree from Manchester College in Indiana in 1967 and earned a PhD degree in Physiology at the University of Illinois in Champaign-Urbana in 1971 under the direction of Edward S. Kirk. Downey's thesis research focused on factors affecting coronary blood flow. It was known that cardiac contraction compressed the coronary arteries with each

beat throttling the blood flow to the heart muscle. Downey reasoned that if the mechanism of that interaction were understood then an intervention might be identified that could alter this interaction in a way that would increase perfusion of ischemic myocardium. That work resulted in Downey's "waterfall" theory of the extravascular coronary resistance. Dr. Kirk took a leave of absence from the University of Illinois halfway through Downey's thesis research to do a sabbatical in Boston at Peter Bent Brigham Hospital, a Harvard teaching hospital. One of Dr. Kirk's former students Fred Downey (no relation) was a faculty member in the University of Illinois Veterinarian school and generously invited James to finish his thesis experiments in his laboratory. Thanks to Fred Downey's expert guidance the thesis was finished in a timely fashion.

Edward Kirk never returned to Illinois and instead became a staff member at the Peter Bent Brigham laboratory run by Edmund Sonnenblick. After Downey finished his PhD studies, Sonnenblick offered Downey a post-doctoral position in the laboratory working again with Dr. Kirk. Kirk, a brilliant but brash scientist, was an excellent mentor for Downey. Downey and Kirk spent a memorable summer sharing a house at the Woods Hole Marine Biological Institute on Cape Cod where they studied the coronary arteries of sharks and rubbed elbows with many famous scientists of the day. During Downey's time in Boston, the focus of the research gradually shifted from coronary hemodynamics to understanding ischemia and particularly infarction. The Sonnenblick laboratory was a very exciting place in the early 1970's where new ideas like Vmax and infarct size modification were being developed. In those days, the dog was the animal of choice for ischemia studies and

our lab was simply known as the "dog lab". A very significant event in Downey's stay in Boston occurred when Michael V. Cohen, then a young clinical fellow in cardiology with zero interest in research, was assigned a 6-month rotation in the "dog lab". Downey and Cohen worked together on several successful projects in the dog lab. Against all odds, Cohen became hooked on basic research and that formed the basis of a life-long friendship and collaboration between the two scientists.

Kirk and Sonnenblick eventually moved from Boston to the Albert Einstein School of Medicine in New York in the mid seventies where a young Japanese doctor named Masatsuga Hori did a fellowship with them. Sadly, Kirk died of a brain tumor in the early 1980s while still a young man.

Downey left Boston in 1972 to take a position in Physiology at the newly founded University of South Florida in Tampa. But, after only 3 years, Downey was lured away from Tampa to the University of South Alabama, another fledgling medical school, by a former colleague from the Boston laboratory, Charles Urschel, who was the new chairman of physiology. That promising collaboration was not to be, however, as Urschel died suddenly within a year of Downey's arrival. Nevertheless, Downey stayed in Alabama where he is now a full professor in the Department of Physiology.

In 1979 Downey attended his first European meeting in Heidelberg, Germany. In a chance encounter he met Derek Yellon at one of the banquets and that was the beginning of another life-long friendship and collaboration. Yellon was then a junior staff member in David Hearse's laboratory at St Thomas' Hospital in London. Downey collaborated closely with Yellon and Hearse (also a former Peter Harris award recipient) over the next 7 years, exploring factors affecting myocardial infarction. Among other things, they developed several large and small animal models of infarct sizing that are still in wide use today. That transatlantic commuting ended in 1987 when both Downey and Yellon met their respective wives and could no longer justify being away from home for extended periods.

In 1991, Michael Cohen left his position in a New York hospital and joined the Division of Cardiology at the University of South Alabama. He and Downey have been collaborating closely ever since. That year they discovered that adenosine was the trigger for a highly protective, but little understood, phenomenon called ischemic preconditioning. They showed that the protection was due to signal transduction pathways and the bulk of their subsequent studies have concentrated on elucidating those pathways. Their discoveries include the role of: PKC, mitochondrial ATP-sensitive potassium channels as signal transduction elements, redox signaling, adenosine A<sub>2b</sub> receptors, and PKG in preconditioning's

mechanism. Our knowledge of preconditioning signaling pathways has revealed many strategies for preconditioning a patient's heart, some of which are now being evaluated in clinical trials.

Downey has published over 260 full papers. He sits on 4 editorial boards and has served on Circulation Research's editorial board continuously since 1975. He has been active in the governance of the ISHR since the 1980s and served as President of ISHR-International from 2001 to 2004. Downey's involvement with the ISHR brought him in contact with Peter Harris on many occasions to discuss society business. He has also been active in the governance committees of the American Physiological Society and the American Heart Association. In 2006 Downey was awarded a Doctor of Honoris Causa by the National and Kapodistrian University in Athens, Athens Greece. Downey has mentored 5 PhD students and 26 post-doctoral trainees in his Alabama laboratory. Downey has always been a strong supporter of the ISHR's mission of establishing international links among the world's scientists. Accordingly, most of his students have come from abroad. Many were from Japan including Tetsuji Miura. Downey's wife, Yukiko, is from Yamagata, Japan, and she always did her best to make the Japanese students feel at home in Alabama.

### Past Award Winners

**David J. Hearse, UK**

(Bologna, Italy: 2007)

**Arnold M. Katz, USA**

(Brisbane, Australia: 2004)

**Robert J. Lefkowitz, USA**

(Winnipeg, Canada: 2001)

**Lionel H. Opie, South Africa**

(Rhodes, Greece: 1998)

**Howard E. Morgan, USA**

(Prague, Czech Republic: 1995)

**Robert B. Jennings, USA**

(Kobe, Japan: 1992)

**Albrecht Fleckenstein, Germany**

(Ann Arbor, MI, USA: 1989)

**Seturo Ebashi, Japan**

(Melbourne, Australia: 1986)