Peter Harris Research Achievement Award

The Peter Harris Research Achievement Award recognizes a prominent investigator with a sustained and distinguished record of major scientific achievements in the field of cardiovascular research that have had a major impact on our understanding and/or treatment of cardiovascular disease.

The Peter Harris Research Achievement Award is presented annually at either the triennial World Congress, or, in non-Congress years, at the annual meeting of the ISHR Section to which the winner belongs. The awardee will present a major lecture at the meeting and will receive a monetary prize of $5,000 and a plaque. An announcement of this Award, along with a photograph and a biosketch, will be published in *Heart News and Views*, and posted in the ISHR website.

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 ... was dedicated to exploring the cardiovascular system and the origins of heart disease...*

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The Peter Harris Research Achievement Award 2014

Award Winner

Dr. Evangelia Kranias

"Calcium Circuits in the Heart:
A Matter of Life or Death"

2014 Award Winner

Evangelia Kranias, Ph.D.

Miami, FL, USA

Dr. Evangelia (Litsa) G. Kranias is currently a Distinguished University Research Professor, Hanna Professor of Cardiology and Director of Cardiovascular Biology in the Department of Pharmacology & Cell Biophysics at the University of Cincinnati College of Medicine. She is also the co-Director of the Cardiovascular Center of Excellence. She received her BS degree from the University of Chicago (1970) and her Masters and Ph.D. degrees under L. R. Dumas from Northwestern University, Chicago (1974). She served as a postdoctoral fellow under R. A. Jungmann at Northwestern University Medical School, Chicago (1974-77). In 1978, she started her faculty career at the University of Cincinnati Medical Center, where she became a full professor in the Department of Pharmacology & Cell Biophysics in 1988.

Dr. Kranias' internationally recognized research program has provided fundamental insights into the regulatory mechanisms and signaling pathways underlying calcium homeostasis in cardiac physiology and pathophysiology with special emphasis in heart failure. Dr. Kranias has also extended her basic research findings to the clinical arena and has elucidated the functional significance of Ca-handling in the deteriorated function of human failing hearts. She was the first to identify human mutations in calcium cycling genes and show that these may predispose to arrhythmias and heart failure. The overall goal of Dr. Kranias' research program is to build a comprehensive understanding on the role of calcium cycling in cardiac contractility and cell survival.

Early in her scientific career, Dr. Kranias recognized the importance of a small molecule, phospholamban (PLN), in the regulation of calcium cycling through the sarcoplasmic reticulum and the overall regulation of cardiac function. Her biochemical work showed that phospholamban regulates specific steps in the calcium ATPase enzymatic process, implicating this molecule as a regulator of cardiac function. Subsequently, Litsa Kranias with John Solaro were the first to demonstrate (Nature: 1982) that phospholamban is phosphorylated in the heart on a beat-to-beat basis. This was the first evidence of the physiological importance of this protein and its significance in "flight-or-fight" situations.

In parallel studies, the Kranias lab pioneered studies on isolation and characterization of the sarcoplasmic reticulum protein kinases and phosphatases that regulate calcium transport and thus, cardiac relaxation. This provided evidence of a multimeric compartmentalized complex, which reversibly regulates calcium cycling in the cardiomyocyte.

Dr. Kranias' *in vitro*, biochemical studies were then extended to *in vivo* settings and she provided the first evidence that controlling the levels of phospholamban alone, it is possible to fine-tune the heart's pumping action. Dr. Kranias has also extended her basic research findings to the clinical arena and showed that the phospholamban levels are relatively higher in individuals with heart failure, which may contribute to the impaired calcium handling and cardiac function. This led the Kranias lab to a search for human phospholamban mutations that may be associated with heart failure. The first two mutations in the human phospholamban gene were identified in 2003 and both appeared to be deleterious in the human population. This was the first indication that genetic alterations in human calcium cycling genes are also associated with dilated cardiomyopathy.

Over the last decade, Dr. Kranias continued to identify novel regulators of calcium cycling and cell death. One of them is HAX-1, the anti-apoptotic protein, which interacts with PLN and serves as an additional regulator of sarcoplasmic reticulum calcium cycling and apoptosis. The other one is the small heat shock protein 20 (Hsp20), which along with inhibitor-1 attenuates the phospholamban phosphatase activity and protects the heart from apoptosis and remodeling under stress conditions. In addition, the intraluminal histidine-rich Ca-binding protein (HRC) was found to interact with the calcium-ATPase (SERCA) and regulate the enzyme's maximal Ca-transport velocity. Recent studies indicate that this mulitmeric SERCA/PLN-ensemble is involved in heart failure and arrhythmias, as well as apoptosis and cell death. Dr. Kranias has also identified human variants in these calcium-cycling genes that affect their "activity", reflecting aberrant Ca-handling and increased cell death.

Dr. Kranias' research has been funded by the National Institutes of Health (NIH) for the past 3 decades, often with multiple awards. She received both a NIH Research Career Development Award (RCDA) and a Method of Extension in Time (MERIT) Award. Her scientific investigations have been published in over 225 original manuscripts and 75 invited reviews. Dr. Kranias has been invited to organize, chair and speak at numerous National and International scientific meetings. She has also been a dedicated mentor for young scientists: she has graduated 22 Ph.D. students and mentored 47 post-doctoral fellows/research associates. Dr. Kranias has received many National and International awards and honors. These include the Daniel Drake Medal, which is the highest honor of the UC Medical Center, the American Heart Association Samuel Kaplan award, the Janice Pfeffer award from the ISHR and an Honorary Doctorate degree from the University of Athens. In 2009, Dr. Kranias was named an AHA Distinguished Scientist and in 2012, she was elected as a corresponding member of the Academy of Athens. Dr. Kranias served on the National Council of the Biophysical Society, the National Council of the ISHR (International and NA-section) and the AHA Research Committee. She has also served as Associate Editor or an Editorial Board member of several journals and a member of numerous review committees.

In 2014, this award combined the Research Achievement Award and the Peter Harris Distinguished Scientist Award given in previous years.