The President's Lecture

In October 2004, the International Council created a new distinguished lecture, named The President's Lecture, which is a highlight of ISHR World Congresses and Section meetings.

The President's Lecture is held at each World Congress of the ISHR and, in non-Congress years, at the annual meeting of one of the 3 largest ISHR Sections on a rotating basis. This lecture is intended to be a high profile event and is scheduled as a keynote plenary lecture. The International Council selects the speaker. **The topic of the lecture is in the field of molecular biology, genetics, genomics or proteomics, but the content should be chosen to be of broad interest to the cardiovascular community.** The speaker is reimbursed for travel expenses, and receives a plaque and a $1,000 honorarium. A photograph and biosketch of the speaker is published in *Heart News and Views*, and is posted in the ISHR website.

The President's Lecture enhances the content of the ISHR scientific meetings by providing a high-quality presentation in a topical area that is not covered by other distinguished lecture awards, and reflects the continuing growth of the ISHR as a professional Society.

*This award is funded by a generous donation from **Roberto Bolli, MD**, Winner of the ISHR 2004 Research Achievement Award, who declined to collect the monetary prize associated with the Award and requested that it be used for this purpose.*

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The President's Lecture 2010

Honored Speaker

Issei Komuro, M.D. Ph.D.

"A novel molecular mechanism and regeneration therapy for heart failure"

Issei Komuro, M.D., Ph.D.

2010 Honored Speaker
Kyoto, Japan

Dr. Komuro started his research career by purifying cardiac myosin heavy chain (MHC) isoforms in Dr. Yoshio Yazaki's laboratory at the University of Tokyo in 1985. He first showed differences in the protein structure and enzymatic activity between α and β MHC. Based on the hypothesis that similar mechanisms are involved in cell hypertrophy and proliferation, he examined the expression of protooncogenes during the course of hypertrophy. He also first cloned SERCA2 from the heart and demonstrated its downregulation at mRNA and protein levels in hypertrophied hearts. In 1987, he developed the procedure to stretch cultured cardiomyocytes and extensively studied signal transduction processes involved in the development of cardiac hypertrophy induced by mechanical stress. He first applied molecular biology and biochemistry to analyze the molecular mechanism of mechanical stress-induced biological events. In 2004, he demonstrated a novel mechanism of mechanical stress-induced cardiac hypertrophy; mechanical stress itself can activate angiotensin II type 1 receptor without the involvement of angiotensin II by changing its conformational structure. From 1989 to 1993, he was a postdoctoral fellow in Dr. Izumo's laboratory at Beth Israel Hospital/Harvard Medical School in Boston. He succeeded in isolating the cardiac homeobox protein Csx/Nkx2.5, a transcription factor essential for cardiac development. The discovery of Csx/Nkx2.5 greatly stimulated the study of cardiac development, and Csx/Nkx2.5 has been used world-wide as an early marker of the heart.

After returning to Japan, he isolated human Csx/Nkx2.5 and determined the locus of this gene, which later led to the discovery that Csx/Nkx2.5 is one of the genes responsible for various heart diseases such as atrial septal defect, ventricular septal defect, Tetralogy of Fallot, Epstein anomaly and atrio-ventricular block. He clarified the molecular mechanism of Csx/Nkx2.5 involvement in cardiac development by isolating proteins which associate with Csx/Nkx2.5, and the role of bone morphogenetic proteins in cardiac development by establishing a cardiomyocyte differentiation system. In 2001, he became a professor and chairman of cardiovascular medicine at Chiba University where he led over 100 doctors in clinical work as well as research. He started the study of vascular biology and he reported the crucial role of skeletal muscle in mononuclear cell-induced angiogenesis. He also proposed a novel hypothesis that inhibition of angiogenesis by p53 induces transition from cardiac hypertrophy to heart failure. He elucidated the biphasic role of wnt in cardiac development and identified a novel cardiomyocyte differentiation factor IGFBP-4, which is critical for cardiac maturation during embryonic stage. In 2009, he became a professor and chairman of cardiovascular medicine at Osaka University, where there are many severe heart failure patients and his interest is now how to establish novel treatments for heart failure.

Dr. Komuro is a pioneer in, and has made great contributions to, the research fields of cardiac hypertrophy and development. His work has provided valuable insights into the pathophysiology of cardiac diseases; for example, elucidation of the molecular mechanism of mechanical stress-induced cardiac hypertrophy and heart failure. In the future, insights gained from the study of cardiac development will prove to be even more important to the burgeoning fields of gene therapy and regenerative medicine. Originality is a feature of Dr. Komuro's research and he is also a highly productive man. He has published over 450 original articles, many of which have appeared in leading journals including *Nature* and *Nature Medicine*. He has also published 50 book chapters/review articles, is a regular speaker at national and international meetings, and serves as an associated editor of *Circulation Research* and an editorial board member of *Journal of Clinical Investigation* and *Journal of Molecular & Cellular Cardiology.*

Previous Award Winners……

Dr. R. John Solaro Baltimore, MD, 2009

"Integration of Cardiac Sarcomeric Control Mechanisms with EC Coupling and Metabolism"

Dr. Gerd Hasenfuss Yokohama, 2008

"Stem Cells for Cardiac Regeneration - Dream or Therapeutic Option"

Dr. Jeffrey Robbins Bologna, 2007

"Genetic Manipulation of the Mammalian Heart: What Have We Learned?"

Dr. Mark Sussman Toronto, 2006

"Akt/PKB and Me: Our Nuclear Relationship"