

ISHR Research Achievement Award

This Award recognizes an internationally prominent scientist with a sustained and distinguished record of major scientific achievements in the field of cardiovascular research. Awardees will have already had, and are expected to continue to have, a major impact on our understanding and/or treatment of cardiovascular disease. While both the Outstanding Investigator Award (OIA) and the Research Achievement Award (RAA) recognize established investigators, the OIA is targeted at more junior individuals (at least Assistant/Associate Professor or the equivalent), while the RAA is targeted at more senior individuals (full Professors or the equivalent).

The Research Achievement Award is presented at the triennial ISHR World Congress or, in non-Congress years, at one of the ISHR Section meetings on a rotating basis. The Award consists of a plaque and a monetary prize of \$1,500. 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.



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for Heart Research**

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The Research Achievement Award 2024



Award Winner

Dr. Luca Scorrano

“Keeping mitochondria in shape: at
the heart of cell life and death ”

Luca Scorrano, MD, PhD

2024 Award Winner

Toulouse, France

Luca Scorrano, MD PhD is Professor of Biochemistry at the Department of Biology, University of Padua (Italy). He completed his Medical Degree (1996) and his PhD in Molecular and Cellular Biology and Pathology (2000) at the University of Padua with Paolo Bernardi. From 2000 to 2003 he was Human Frontier Science Program (HFSP) postdoctoral fellow at Dana-Farber Cancer Institute, Harvard Medical School in Boston (USA), in the lab of the late Stanley J. Korsmeyer, a founding father of the field of apoptosis. In 2003 he was awarded an Assistant Scientist position at the Dulbecco-Telethon Institute, and in 2006 he was recruited as Full Professor at the University of Geneva (Switzerland). In 2013 he moved to the University of Padova as Professor of Biochemistry (appointed by *chiara fama*, equivalent to an Endowed Chair) and from 2014 to 2020 he served as Scientific Director of the Veneto Institute of Molecular Medicine.

Luca's work addresses the central question of form-function relationship at the molecular level. During his career, he has changed classical tenets in the fields of apoptosis and mitochondrial pathophysiology. His work on cristae remodeling paved the way for the new field of mitochondrial dynamics. In the following years, his lab discovered that Opal works as a molecular staple holding cristae junctions tight, deficient in dominant optic atrophy, targeted during apoptosis and essential *in vivo* to control tissue damage and to correct mitochondrial diseases, as well as a key factor in angiogenesis that can be pharmacologically targeted to curtail tumor growth; showed that mitochondria change shape to control autophagy, or to produce progesterone during pregnancy; demonstrated that cristae shape

dictates assembly of proteins and efficiency of respiration; discovered a novel pathway of Notch1 signaling controlled by mitochondrial fusion and Ca²⁺ essential during heart development; and discovered that mitochondrial fusion mounts a metabolic defense against *Toxoplasma*. Luca's discoveries on the role of cristae remodeling and Opal in heart ischemic damage, of mitochondrial dynamics in differentiation of cardiomyocytes and of Opal in angiogenesis showcase how he has extended basic tenets of mitochondrial biology discovered in his lab to cardiovascular science. In addition to his discoveries on mitochondrial shape, Luca has been a father for the field of membrane contact sites. He identified mitofusin 2 as the first tether between ER(SR) and mitochondria. This discovery has been a turning point, allowing researchers to molecularly modulate ER-mitochondria contact sites and to therefore address their role in pathophysiology. His very recent discovery of Ermit2, the product of mitofusin 2 alternative splicing that localizes at the ER to tether it to mitochondria, will predictably have a very similar impact on the field, allowing the precise tuning of contact sites without affecting mitochondria, in the context, for example, of heart ischemia-reperfusion.

Luca has published more than 120 research papers, several of which appeared in prominent journals such as *Nature*, *Cell*, *Science*, *Cell Metabolism*, *Nature Metabolism*, *Nature Cell Biology*, *Molecular Cell*, *Developmental Cell* etc. He is regularly invited to speak internationally on his research on mitochondria and on membrane contact sites.

Luca received several Prizes and Awards (including the 2006 Eppendorf European Young Investigator, the 2011 Chiara D'Onofrio Award and the 2013 European Society for Clinical Invest-

igation Award). He was elected EMBO Member in 2012 and Member of the *Academia Europaea* in 2019 and he is among the Clarivate Highly Cited researchers in 2021 and 2022. He sits on several Scientific Advisory Boards, on reviewing panels, and he chaired the EMBO Fellowship Committee until 2020. He is/served an Editorial Board member of several Journals including *EMBO Journal*, *Cell Death and Differentiation*, *Cardiovascular Research*, and *Current Opinion in Physiology*.

Luca takes extreme pride in mentoring his junior coworkers. Since 2004, he supervised 37 postdoctoral fellows (including 11 current) and 32 graduate students (including 7 current). Of the 11 current postdoctoral fellows, 8 are supported by competitive national and international fellowships. Seventy-three percent of the past postdoctoral fellows obtained a Faculty position at academic institutions in the US, Canada, Japan, Germany, Belgium, Spain, and Italy, where they are often supported by the most competitive national and international grants.

Past Award Winners...

2023: Zoltan Arany, MD, PhD

2022: Douglas Lewandowski, PhD

2020: Livia Hool, PhD; Walter Koch, PhD

2019: Issei Komuro, MD, PhD

2018: Joseph Hill, MD, PhD

2017: Rong Tian, PhD

2016: Heping Cheng, PhD

2015: Mark Anderson, MD, PhD

2013: Eric Olson, PhD

2010: Jeffrey Robbins, PhD

2007: Martin Lohse, MD

2004: Roberto Bolli, MD

2001: Eduardo Marban, MD