

BIOGRAPHICAL SKETCH

NAME Scorrano, Luca	POSITION TITLE Director, Venetian Institute of Molecular Medicine		
eRA COMMONS USER NAME	Chair of Biochemistry, Dept. Biology, U. of Padua		
EDUCATION/TRAINING (<i>Begin with baccalaureate or other initial professional education, such as nursing, and include postdoctoral training.</i>)			
INSTITUTION AND LOCATION	DEGREE (if applicable)	YEAR(s)	FIELD OF STUDY
Padova University Medical School (Italy)	M.D.	1996	General Medicine
Padova University (Italy)	Ph.D.	2000	Mitochondrial Pathophysiology (P. Bernardi)
Harvard Medical School, Dana-Farber Cancer Institute, Boston, MA	postdoctoral	2000- 2003	Apoptosis (SJ Korsmeyer)

A. Personal Statement

The work of L. Scorrano 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 Opa1 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 even to correct mitochondrial diseases; identified the first molecular bridge between ER and mitochondria (starting the new field of interorganellar contact sites); 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; discovered that mitochondrial fusion mounts a metabolic defense against the intracellular parasite *Toxoplasma*. His papers are widely cited (146 indexed items, approx. 22,000 citations, average of ~150 cites/item, h-index of 68 on Google Scholar; of his research papers as main author, 3 are cited >1,000 times, 11 >300 times, 21 >100 times). For his research, he received several awards and was elected EMBO Member in 2012. L. Scorrano serves the community by sitting on advisory, steering and evaluation boards in Europe and abroad.

B. Positions and Honors.

Positions and Employment

2014-present Scientific Director, Venetian Institute of Molecular Medicine, Padua, Italy
 2013-present *Chiara Fama* Chair of Biochemistry, Dept. of Biology, University of Padua, Italy
 2007-13 Full Professor, Dept. of Cell Physiology and Metabolism, University of Geneva, Switzerland
 Senior Telethon Scientist, Dulbecco-Telethon Institute
 2003-07 Assistant Telethon Scientist, Dulbecco-Telethon Institute
 2000-03 HFSP Long-Term Postdoctoral Fellow, Harvard Medical School, DFCI, Boston, USA
 1996-2000 Ph.D. Program, Cell and Mol. Biol. and Path., University of Padova, Italy

Fellowships

2000-03 *Long Term Fellowship*, Human Frontier Science Program
 2000 *Special Fellowship*, Leukemia-Lymphoma Society of America (declined) *Long Term Fellowship*, EMBO (declined)
 1999 *Fontana-Lionello* Fellowship, Italian Cancer Research Foundation
 1996-99 Ph.D. Fellowship, Italian Ministry of University and Research

Selected Honors

2014 Chair, Gordon Conference Mitochondria and Chloroplasts
 2013 *ESCI Award for Basic/Translational Science*, European Society for Clinical Investigation
 2012 Elected *EMBO Member*,
 Chair, Keystone Symposium Mitochondrial Dynamics and Function
 2011 *Chiara D'Onofrio Award*, The Chiara D'Onofrio Foundation
 2006 *EMBO Young Investigator*, EMBO;

	<i>European Young Investigator Award, Eppendorf-Nature</i>
2005	<i>Angelo Minich Prize for Medicine, Venetian Institute of Science, Letter and Arts</i>
2004	<i>Career Development Award, Human Frontier Science Program Organization</i>
2003	<i>AICC-Onlus Prize, Italian Association of Cell Culture</i>
2000	<i>G. Capozza Prize, Italian Group of Bioenergetics and Biomembranes</i>

Selected Editorial Boards and Steering Activities

2017-present	ANR Cell Biology panel member (France) SAB, Institut Necker (France) Chair, EMBO Fellowship Committee (Europe)
2016-present	ERC Consolidator LS4 panel member
2014-present	Flanders Science Organization (Belgium), Cancer Biology Panel Fund for Scientific Research-FNRS (Belgium), Reviewing Panel United Mitochondrial Disease Foundation (USA), Grant Readers Panel
2013-present	SAB, FinMit Academy of Finland Center of Excellence (Finland)
2012-present	Editorial Board, Cardiovascular Research; Founding Editorial Board, Biology Open
2010-present	Editorial Board, The EMBO Journal
2008-present	Editorial Board, Cell Death and Differentiation, BBA-Molecular Cell Research

C. Selected peer-reviewed publications from a total of 146 (*equal contribution)

1. L. Scorrano, M. Ashiya, K. Buttle, S. Weiler, S.A. Oakes, C.A. Mannella and S.J. Korsmeyer, *A Distinct Pathway Remodels Mitochondrial Cristae and Mobilizes Cytochrome c during Apoptosis*. **Dev. Cell** 2: 55-67 (2002).
2. L. Scorrano*, S.A. Oakes*, J.T. Opferman, E.H. Cheng, M.D. Sorcinelli, T. Pozzan and S.J. Korsmeyer. *BAX and BAK Regulation of Endoplasmic Reticulum Ca²⁺: A Control Point for Apoptosis*. **Science** 300: 135-9 (2003).
3. S. Cipolat, O. Martins de Brito, B. Dal Zilio and L. Scorrano *OPA1 requires mitofusin 1 to promote mitochondrial fusion* **Proc. Natl. Acad. Sci. U S A.** 101:15927-32 (2004).
4. S. Cipolat*, T. Rudka*, D. Hartmann*, V. Costa, L. Serneels, K. Craessaerts, K. Metzger, C. Frezza, W. Annaert, L. D'Adamio, C. Derks, T. Dejaegere, L. Pellegrini, R. D'Hooge, and L. Scorrano[‡], B. De Strooper[‡]. **‡corresponding authors**. *Mitochondrial rhomboid PARL regulates cytochrome c release during apoptosis via OPA1 dependent cristae remodeling*. **Cell** 126:163-75 (2006)
5. C. Frezza, S. Cipolat, O. Martins de Brito, M. Micaroni, G.V. Beznoussenko, T. Rudka, D. Bartoli, R.S. Polishuck, N.N. Danial, B. De Strooper and L. Scorrano. *OPA1 Controls Mitochondrial Cristae Remodelling Independently from Mitochondrial Fusion During Apoptosis*. **Cell** 126:176-89 (2006)
6. G.M. Cereghetti, A. Stangherlin, O. Martins de Brito, C.R. Chang, C. Blackstone, P. Bernardi and L. Scorrano *Dephosphorylation by calcineurin regulates translocation of Drp1 to mitochondria*. **Proc. Natl. Acad. Sci. USA.** 105:15803-15808 (2008).
7. O. Martins de Brito and L. Scorrano *Mitofusin 2 tethers mitochondria and endoplasmic reticulum*. **Nature** 456:605-10 (2008).
8. V. Costa, M. Giacomello, R. Hudec, R. Lopreiato, G. Ermak, D. Lim, W. Malorni, K.J.A. Davies, E. Carafoli, and L. Scorrano *Mitochondrial fission and cristae disruption increase the response of cell models of Huntington's disease to apoptotic stimuli* **EMBO Mol. Med.** 2:490-503. (2010)
9. L. Gomes, G. Di Benedetto and L. Scorrano *During autophagy mitochondria elongate, are spared from degradation and sustain cell viability* **Nat. Cell. Biol.** 13:589–598 (2011)
10. M. Wasilewski, M. Semenzato, S.M. Rafelski, J. Robbins, A.I. Bakardjiev, and L. Scorrano *Optic atrophy 1-dependent mitochondrial remodeling controls steroidogenesis in trophoblasts*. **Curr. Biol.** 2: 1228-1234. (2012).
11. S. Cogliati, C. Frezza, M.E. Soriano, T. Varanita, R. Quintana Cabrera, M. Corrado, S. Cipolat, V. Costa, A. Casarin, L.C. Gomes, E. Perales-Clemente, L. Salviati, P. Fernandez-Silva, JA. Enriquez and L. Scorrano. *Mitochondrial cristae shape determines respiratory chain supercomplexes assembly and respiratory efficiency*. **Cell** 155:160-71 (2013)
12. A. Kasahara, S. Cipolat, Y. Chen, G.W. Dorn 2nd and L. Scorrano *Mitochondrial Fusion Directs Cardiomyocyte Differentiation via Calcineurin and Notch Signaling*. **Science.** 342:734-7 (2013).

13. V. Debattisti, D. Pendin, E. Ziviani, A. Daga, and L. Scorrano *Reduction of endoplasmic reticulum stress attenuates the defects caused by Drosophila mitofusins depletion*. **J Cell Biol.** 204:303-12 (2014)
14. A Pyakurel, C. Savoia, D. Hess and L. Scorrano *Extracellular regulated kinase phosphorylates Mitofusin 1 to control mitochondrial morphology and apoptosis*. **Mol. Cell.** 58:244-54 (2015)
15. T. Varanita, M.E. Soriano, V. Romanello, T. Zaglia, R. Quintana Cabrera, M. Semenzato, R. Menabò, V. Costa, G. Civiletto, P. Pesce, C. Viscomi, M. Zeviani, F. Di Lisa, M. Mongillo, M. Sandri, and L. Scorrano *The Opa1-Dependent Mitochondrial Cristae Remodeling Pathway Controls Atrophic, Apoptotic and Ischemic Tissue Damage*. **Cell Metab.** 21:834-44 (2015)
16. G. Civiletto*, T. Varanita*, R. Cerutti, T. Gorletta, S. Barbaro, S. Marchet, C. Lamperti, C. Viscomi, and L. Scorrano†, M. Zeviani‡. †**corresponding authors** *Opa1 overexpression ameliorates the clinical phenotype of two mitochondrial disease mouse models*. **Cell Metab.** 21:845-54 (2015)
17. D Naon, M Zaninello, M Giacomello, T Varanita, F Grespi, S Lakshminaranayan, A Serafini, M Semenzato, S Herkenne, MI Hernández-Alvarez, A Zorzano, D De Stefani, GW Dorn, and L. Scorrano. *Critical reappraisal confirms that Mitofusin 2 is an endoplasmic reticulum-mitochondria tether*. **Proc Natl Acad Sci U S A.** 113:11249-11254 (2016)
18. C. Glytsou, E. Calvo, S. Cogliati, A. Mehrotra, I. Anastasia, G. Rigoni, A. Raimondi, N. Shintani, M. Loureiro, J. Vazquez, L. Pellegrini, J.A. Enriquez, and L. Scorrano†, M.E. Soriano‡. †**corresponding authors** *Optic Atrophy 1 Is Epistatic to the Core MICOS Component MIC60 in Mitochondrial Cristae Shape Control*. **Cell Reports** 17: 3024-3034. (2016)
19. Tezze C, Romanello V, Desbats MA, Fadini GP, Albiero M, Favaro G, Ciciliot S, Soriano ME, Morbidoni V, Cerqua C, Loeffler S, Kern H, Franceschi C, Salvioli S, Conte M, Blaauw B, Zampieri S, Salviati L, Scorrano L†, Sandri M‡. **corresponding authors** *Age-Associated Loss of OPA1 in Muscle Impacts Muscle Mass, Metabolic Homeostasis, Systemic Inflammation, and Epithelial Senescence*. **Cell Metab.** 25:1374-1389. (2017)
20. L. Pernas, C. Bean, J.C. Boothroyd, L. Scorrano, *Mitochondria Restrict Growth of the Intracellular Parasite Toxoplasma gondii by Limiting Its Uptake of Fatty Acids*, **Cell Metab.**, 27:886-897 (2018).

D. Current Research Support.

AIRC IG2017-19991

Project title: Enhancing cancer cell death and reducing cancer angiogenesis by Opa1 inhibition

Role: PI

Start-end date 01/01/2018-12/31/2022

Amount of direct funds available/year: 145,200€

EFSD Novo-Nordisk Program

Project title: The role of the mitochondria-shaping protein Opa1 in fat browning and insulin sensitivity

Role: PI

Start-end date: 07/01/2016-06/31/2018

Amount of direct funds available/year: 50,000 €

Fondation Leducq Transatlantic Network of Excellence

Project title: Modulating autophagy to treat CV disease

Role: European Coordinator of multicentric grant (7 units), total grant: 6,000,000€

Start-end date: 01/01/2015-12/31/2021

Amount of direct funds available/year: 160,000€

Telethon GGP15091

Project title: Extending the Optic atrophy 1 dependent cristae remodeling: from models to a therapy of autosomal dominant optic atrophy

Role: PI

Start-end date: 1/1/2016-12/31/2018

Amount of direct funds available/year: 125,000€