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**BIOGRAPHICAL SKETCH DO NOT EXCEED FIVE PAGES.**

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NAME: Maria Giovanna Trivieri

eRA COMMONS USER NAME (credential, e.g., agency login): MGTRIVIERI

POSITION TITLE: Assistant Professor of Medicine, Cardiology

EDUCATION/TRAINING (*Begin with baccalaureate or other initial professional education, such as nursing, include postdoctoral training and residency training if applicable. Add/delete rows as necessary.*)

INSTITUTION AND LOCATION	DEGREE (if applicable)	MM/YY	FIELD OF STUDY
University of Pisa Medical School	MD	10/1997	
University of Pisa and University of Toronto	PhD	03/2002	Heart Failure
University of Toronto	PDF	06/2007	Heart Failure
University of Toronto	Specialty Degree	12/2011	Internal Medicine
University of Toronto	Specialty Degree	02/2014	Cardiology
Mt. Sinai Hospital	Subspecialty Degree	06/2017	Heart Failure/Transplant

**A. Personal Statement**

Cardiovascular disease has been the focus of my career since graduating from the University of Pisa and the “Scuola Sant’Anna” Medical School. In 1998, I was awarded a PhD position from the Department of Cardiology and in 2000 I moved to Canada where I initiated a collaboration with the Cardiovascular Division of the University of Toronto. Initially, I studied the effects of taurine supplementation and calcium channel blockers in the setting of iron overload cardiomyopathy. Subsequently I was involved in characterizing a cardiac specific transgenic mouse overexpressing an enzyme involved in the metabolism of thyroid hormone. The research that I conducted resulted in peer-reviewed publications and allowed me to gain expertise in various fields, from integrated physiology in rodents (Echocardiogram, Invasive Hemodynamics, Histopathology, Langhendorff preparation, Telemetry), to calcium imaging and finally molecular biology (Cell cultures, Western/Northern Blotting, Real-time PCR). In 2007, I resumed my clinical training and obtained Canadian and American Board Certifications in Internal Medicine and Cardiology. In 2014, I relocated to Mount Sinai to receive further training in advanced HF and Transplantation. My clinical research centered on the infiltrative cardiomyopathies and in collaboration with the Translational and Molecular Imaging Institute directed by Dr. Z. Fayad’s lab, I was involved in landmark studies on the use of PET/MR for the assessment of cardiac amyloidosis, sarcoidosis and mitral valve diseases.

At the end of my clinical training, I joined the Cardiovascular Research Institute (CVRI) to use cutting edge technologies of stem cell biology and gene editing for the investigation of inherited cardiomyopathies. Since then, I have acquired extensive skills and experience in characterizing induced pluripotent stem cells (iPSC) derived cardiomyocytes (CMs), smooth muscle cells (SMCs), endothelial cells (ECs) and vascular organoids and thanks to the institutional support via a T32 and KL2 mechanism and the Career Development Award from the American Heart Association (AHA), I have had the opportunity to fully commit to developing a career as clinician scientist.

**Most relevant publications**

- a) Miller MA, Adams DH, Pandis D, Robson PM, Pawale A, Pyzik R, Liao SL, El-Eshmawi A, Boateng P, Garg J, Waterford S, Weiner MM, Dukkipati SR, Reddy VY, Fayad ZA, **Trivieri MG**. Hybrid Positron Emission Tomography/Magnetic Resonance Imaging in Arrhythmic Mitral Valve Prolapse. *JAMA Cardiol* 2020;5(9):1000-1005. PMID: 32936270
- b) **Trivieri MG**, Spagnolo P, Birnie D, Liu P, Drake W, Kovacic JC, Baughman R, Fayad ZA, Judson MA. Challenges in Cardiac and Pulmonary Sarcoidosis: JACC State-of-the-Art Review. *J Am Coll Cardiol*. 2020 Oct, 76 (16) 1878-1901. PMID: 33059834
- c) **Maria Giovanna Trivieri MD**, PhD, Marc R. Dweck MD PhD, Ronan Abgral MD PhD, Philip M. Robson PhD, Nicolas A. Karakatsanis PhD\*, Anarahda Lala, MD, Johanna Contreras MD, Gagan Sahni MD, Radha Gopalan MD, Peter Gorevic MD, Valentin Fuster MD PhD, Jagat Narula MD PhD, Zahi A. Fayad

PhD. 18F-sodium fluoride PET/MR for the Assessment of Cardiac Amyloidosis. JACC. Dec 2016; 68(24). PMID: 27978955

- d) Maier A, Liao SL, Lescure T, Robson PM, Hirata N, Sartori S, Narula N, Vergani V, Soultanidis G, Morgenthau A, Kovacic JC, Padilla M, Narula J, Jacobi A, Fayad ZA, **Trivieri MG**. Pulmonary Artery 18F-Fluorodeoxyglucose Uptake by PET/CMR as a Marker of Pulmonary Hypertension in Sarcoidosis. JACC Cardiovasc Imaging. 2021 Jul 8:S1936-878X(21)00488-5. doi: 10.1016/j.jcmg.2021.05.023. Online ahead of print. PMID: 34274283
- e) Rasheed A Bailey, Francesca Stillitano, Irene Turnbull, Kobra Haghigi, Kenneth Fish, Fadi Akar, Nicole Dubois, Nadeera Wickramasinghe, Roger J Hajjar, Bruce D Gelb, Kevin D Costa, Evangelia Kranias, **Maria Giovanna Triveri**. *Mechanisms Underlying Phospholamban L39 Stop (PLN L39X) Cardiomyopathy*. July 2021. **Circulation Research** 127(Suppl\_1). DOI: 10.1161/res.127. suppl\_1.530

Ongoing and recently completed projects that I would like to highlight include:

**AHA Career Development Award** Trivieri (PI) 08/01/2020 – 07/31/2023  
"Mechanisms underlying Phospholamban L39 Stop (PLN L39X)-cardiomyopathy"  
*This proposal aims at investigating a pathogenic Phospholamban mutation in inherited cardiomyopathies.*  
Role: PI

**KL2 TR001435** Moskowitz (PI) 12/01/2017 – 07/31/2021  
Institute for Translational Science, Icahn School of Medicine, Mount Sinai  
The role of Phospholamban in the regulation of Cardiac Function in Humans.  
*The goal of this project is to investigate the role of Phospholamban in human Heart Failure.*  
Role: KL2 Scholar

## B. Positions, Scientific Appointments and Honors

### Positions and Employment

- **2022** NIH Ad-hoc Grant Reviewer; Integrative Myocardial Physiology/Pathophysiology-MPPA Feb 22<sup>nd</sup>, 2022
- **2021-To date** Assistant Professor of Radiology, BMII
- **2017-To date** Assistant Professor of Medicine, Cardiology
- **2017-To date** Medical Director of the Pulmonary Hypertension Program, Division of Cardiology
- **2014-2017** Advanced Clinical and Research Fellow in Heart Failure/Transplant, MSH, New York
- **2011-2014** Resident in Cardiology, University of Toronto
- **2007-2010** Resident in Internal Medicine, University of Toronto
- **2002-2006** Post-doctoral fellow at the Heart and Stroke/ Richard Lewar Center, University of Toronto
- **1997-2002** PhD candidate in the division of Cardiology of the University of Pisa and University of Toronto

### Honors

- 2003**: First Prize, Postdoctoral Fellow Award at "The Annual Frontiers in Physiology (FIP) Research Symposium", University of Toronto.
- 2002**: "Cardiovascular Scientific Day" Award (Heart and Stroke/ Richard Lewar Centre of Excellence).
- 2001**: Ursula Bangs Award for Clinical and Basic Research in Cardiology (University of Toronto).
- 1998**: University Of Pisa Award for having completed successfully the study in Medicine within 6 years and being the youngest graduate of the Class 1991-1992.
- 1997**: Honor Award of the "Scuola Superiore di Studi e Perfezionamento S. Anna", Pisa, Class of Applied Sciences.
- 1992-1997**: National Scholarship-Honor Award at the « Scuola Superiore di Studi e Perfezionamento S. Anna"(3 positions available each year, nationwide)

### Other Experience and Professional Memberships

- **2022-To date** Fellow of the American College of Cardiology (FACC)
- **2022-To date** Fellow of the "Societa' Italiana di Cardiologia" (SIC)
- **2022-To date** Fellow of the Heart Failure Society of America

- **2017-To date** Pulmonary Hypertension Association
- **2011-To date** Fellow of the RCPSC (Royal College of Physician and Surgeon of Canada)
- **2011-To date** ABIM certification
- **2007-To date** OMA (Ontario Medical Association)
- **2007-To date** CMA (Canadian Medical Association)
- **2007-To date** CPSO (College of Physician and Surgeon of Ontario)
- **1998-To date** Fellow of the Italian Medical Association (Albo Medici Chirurghi and Odontoiatri)

### C. Contributions to Science

1. The most formative years of my basic science career centered around the characterization of a transgenic mouse with cardiac specific hyperthyroidism that was resistant to pressure-overload induced heart failure. My work led to the discovery that Sarcoplipin, a protein with structural and functional analogy to Phospholamban, is an important regulator of calcium cycling within the myocyte and skeletal muscle.

- a) Tupling AR, Bombardier E, Gupta SC, Hussain D, Vigna C, Bloemberg D, Quadrilatero J, **Trivieri MG**, Babu GJ, Backx PH, Periasamy M, MacLennan DH, Gramolini AO. *Enhanced Ca<sup>2+</sup> Transport and muscle relaxation in skeletal muscle from sarcoplipin-null mice.* **Am J Physiol Cell Physiol.** 2011 Oct; 301(4): C841-9. PMID: 21697544.
- b) Gramolini AO, Kislinger T, Alikhani-Koopaei R, Fong V, Thompson NJ, Isserlin R, Sharma P, Oudit GY, **Trivieri MG**, Fagan A, Kannan A, Higgins DG, Huedig H, Hess G, Arab S, Seidman JG, Seidman CE, Frey B, Perry M, Backx PH, Liu PP, MacLennan DH, Emili A. *Comparative proteomics profiling of a phospholamban mutant mouse model of dilated cardiomyopathy reveals progressive intracellular stress response.* **Mol Cell Proteomics.** 2008 Mar; 7(3): 519-33. PMID: 18056057.
- c) **Maria Giovanna Trivieri**; Gavin Y. Oudit; Rajan Sah; Benoit-Gilles Kerfant; Hui Sun; Anthony Gramolini; Yan Pan; Alan D. Wickenden; Walburga Croteau; Gabriella Morreale de Escobar; Roman Pekhletski; Donald St.Germain; David H. MacLennan; Peter H. Backx. *Cardiac-specific elevations in thyroid hormone enhance contractility and prevent pressure-overload induced cardiac dysfunction.* **Proc Natl Acad Sci**, 2006 Apr 11; 103(15): 6043-8. PMID: 16595628.
- d) **Maria G. Trivieri**§, Anthony O. Gramolini, Gavin Y. Oudit, Thomas Kislinger, Wenping Li, Mikin M. Patel, Evangelia G. Kranias, Peter H. Backx and David H. MacLennan. *Cardiac-specific overexpression of sarcoplipin in phospholamban null mice impairs myocyte function that is restored by phosphorylation.* **Proc Natl Acad Sci.** 2006 Feb 14; 103(7): 2446-51. § Shared authorship. PMID: 16461894.

2. While at the University of Toronto, I also contributed to seminal work on the pathophysiology of Iron Overload Cardiomyopathies. I was awarded a Grant from the Thalassemia Foundation of Canada and became co-investigator of the CANALI trial, whose aim was to investigate the use of Amlodipine as an adjuvant therapy in iron overload disorders.

- a) Sun H, Kerfant BG, Zhao D, **Trivieri MG**, Oudit GY, Penninger JM, Backx PH. *Insulin-like growth factor-1 and PTEN deletion enhance cardiac L-type Ca<sup>2+</sup> currents via increased PI3Kalpha/PKB signaling.* **Circ Res**, 2006 Jun 9; 98(11): 1390-7. PMID: 16627784.
- b) Oudit GY, **Trivieri MG**, Khaper N, Liu PP, Backx PH. *Role of L-type Ca<sup>2+</sup> channels in iron transport and iron-overload cardiomyopathy.* **J Mol Med.** May 2006; 84(5): 349-64. PMID: 16604332.
- c) G. Y. Oudit, **M. G. Trivieri**, N. Khaper, G. Wilson, P. Liu, M. Sole, P. H. Backx. *Taurine Supplementation Reduces Oxidative Stress and Myocardial Iron Burden and Improves Cardiac Function in Iron-Overload Cardiomyopathy.* **Circulation.** 2004 Apr 20; 109(15): 1877-85. PMID: 15037530.
- d) Oudit GY, Sun H, **Trivieri MG**, Koch SE, Dawood F, Ackerley C, Yazdanpanah M, Wilson GJ, Schwartz A, Liu PP, Backx PH. *L-type Ca(2+) channels provide a major pathway for iron entry into cardiomyocytes in iron-overload cardiomyopathy.* **Nat Med.** 2003 Sep; 9(9):1187-94. PMID: 12937413.

3. During my tenure at Mount Sinai, thanks to the institutional support provided by the KL2, to funding from the Division of Cardiology of the Mount Sinai CVRI and the AHA, I have continued to develop my career as basic scientist. My work, which has been centered on the characterization of a novel Phospholamban mutation known as L39, enabled me to acquire the required skills to launch into a novel, stem cell based, research venture.

- a) Rasheed A Bailey, Francesca Stillitano, Irene Turnbull, Kobra Haghigi, Kenneth Fish, Fadi Akar, Nicole Dubois, Nadeera Wickramasinghe, Roger J Hajjar, Bruce D Gelb, Kevin D Costa, Evangelia Kranias,

**Maria Giovanna Triveri.** *Mechanisms Underlying Phospholamban L39 Stop (PLN L39X) Cardiomyopathy.* July 2021. **Circulation Research** 127(Suppl\_1). DOI: 10.1161/res.127. suppl\_1.530.

- b) **Maria G. Trivieri,** Francesca Stillitano, Delaine Ceholski, Irene Turnbull, Kenneth Fish, Kevin Costa, Evangelia Kranias, Roger J. Hajjar. *Cellular and molecular mechanisms of heart failure: toward an understanding of the role of Phospholamban in the regulation of cardiac function in humans.* Association for Clinical and Translational Science (ACTS) Washington-May 2019: **Basic/Translational Science/Team Science**, 26-3213.

4. In addition to the contributions detailed above, during my HF training I became a member of the Molecular and Translational Institute led by Dr. Zahi Fayad and have built clinical expertise on the use of the Cardiac PET/MR for the diagnosis of infiltrative and inflammatory diseases such as cardiac amyloidosis, sarcoidosis and valvular heart disease.

- a) **Maria Giovanna Trivieri,** MD,PHD, Paolo Spagnolo,MD,PHD, David Birnie,MD,Peter Liu, MD, Wonder Drake, MD, Jason C. Kovacic, MD, PHD, Robert Baughman, MD, Zahi A. Fayad, PHD, Marc A. Judson, MD. *Challenges in Cardiac and Pulmonary Sarcoidosis.* **JACC.** Vol. 76, NO.16, 2020. PMID: 33059834.
- b) Marc A. Miller, MD, David H. Adams, MD, Dimosthenis Pandis, MD, Philip M. Robson, PhD, Amit Pawale, MD, Renata Pyzik, MS, Steve L. Liao, MD, Ahmed El-Eshmawi, MD, Percy Boateng, MD, Jalaj Garg, MD, Stephen Waterford, MD, Menachem M. Weiner, MD, Srinivas R. Dukkipati, MD<sup>1</sup>, Vivek Y. Reddy, MD, Zahi A. Fayad, PhD, **Maria G. Trivieri,** MD, PhD. *Hybrid Positron Emission Tomography/Magnetic Resonance Imaging in Arrhythmic Mitral Valve Prolapse.* **JAMA Cardiol.** 2020;5(9):1000-1005. PMID: 32936270.
- c) Alexander Maier, Steve Lin Liao, Thomas Lescure, Philip M. Robson, Naoki Hirata, Samantha Sartori, Navneet Narula, Vittoria Vergani, Georgios Soultanidis, Adam Morgenthau, Jason C. Kovacic, Maria Padilla, Jagat Narula, Adam Jacobi, Zahi A. Fayad, **Maria G. Trivieri.** *Pulmonary Artery 18F-Fluorodeoxyglucose Uptake by Position Emission Tomography/Magnetic Resonance Imaging as a Marker of Pulmonary Hypertension in Sarcoidosis.* **JACC Cardiovasc Imaging.** 2022 Jan, 15 (1), 108–120. PMID: 34274283.
- d) **Maria Giovanna Trivieri MD, PhD,** Marc R. Dweck MD PhD, Ronan Abgral MD PhD, Philip M. Robson PhD, Nicolas A. Karakatsanis PhD\*, Anarahda Lala, MD, Johanna Contreras MD, Gagan Sahni MD, Radha Gopalan MD, Peter Gorevic MD, Valentin Fuster MD PhD, Jagat Narula MD PhD, Zahi A. Fayad PhD. *<sup>18</sup>F-sodium fluoride PET/MR for the Assessment of Cardiac Amyloidosis.* **JACC.** Dec 2016; 68(24). PMID: 27978955.

**Complete List of Published Work in My Bibliography (39 Publications):**

<https://www.ncbi.nlm.nih.gov/pubmed/?term=trivieri+m>