Barile Lucio

Scopus Author ID: 7003465027 http://orcid.org/0000-0002-5827-0439

Total publications 120 Total Citations: 10877 Scopus h-index: 37 Google Scholar i10-index: 89

PERSONAL INFORMATION

Prof Dr. LUCIO BARILE

Professional Address: Cardiovascular Theranostics Group,
Institute for Translational Research (IRT), USI-EOC
Via Chiesa 5, 6500 Bellinzona (CH)

E-mails: lucio.barile@eoc.ch;
lucio.barile@usi.ch

EMPLOYMENT HISTORY& CURRENT POSITION

July 2025-present	**Head of Division and Coordinator, Institute for Translational Research (IRT),** USI-EOC Bellinzona, Switzerland https://www.irt.usi-eoc.ch/
Dec 2021-present	**Adjunct Professor, Faculty of Biomedical Science,** Università Svizzera italiana (USI), Lugano, Switzerland https://usi.to/5gc
Jan 2019- present	**Principal Investigator Cardiovascular Theranostics Group,** Istituto Cardiocentro Ticino Lugano, Switzerland
May 2019- Dec 2021	**Privatdozent, Faculty of Biomedical Sciences,** Università Svizzera italiana (USI), Lugano, Switzerland
Sett. 2011- Dec. 2018	**Senior Research Scientist, Cellular and Molecular Cardiology Lab** Istituto Cardiocentro Ticino, Lugano, Switzerland
Jan. 2009- Sett. 2011	**Assistant Professor at Department of Biotechnology and Biosciences,** University of Milano-Bicocca. Milano, Italy

EDUCATION AND TRAINING

Feb 2015	**Certification for Animal Science FELASA Category B** Certification License LTK2872, *University of Zurich, Zurich, Switzerland*
Jan. 2008- Jan. 2009	**Post-doctoral Fellow** at Department of Molecular Medicine ICGEB Trieste Component. Trieste, Italy *Projects: Homologous recombination by AAV-mediated gene targeting.*
Oct. 2004-Feb. 2008	**PhD Student**, Department of Experimental Medicine University of Rome "La Sapienza", Rome, Italy
Sept.2004- Feb.2006	**Research Fellow,** Institute of Molecular Cardiobiology Johns Hopkins University, Baltimore, USA *Projects*: In vivo functional evaluation of cardiospheres-derived cells in infarcted mice
Sept.1998- Jul.2003	**Master's in Pharmacy** University of Rome "La Sapienza", Rome, Italy Dissertation on "Effects of IMPDH inhibitors on human neuroblastoma cell lines."

FELLOWSHIPS, DISTINGUISHED MEMBERSHIPS

2025–Present: Member, ESC Working Group on Cellular Biology of the Heart
2024–Present: Vice-President, Life Sciences Switzerland – Cardiovascular Biology
2024–Present: Member, Scientific Committee, Swiss Heart Foundation
2024-Present: Swiss Member SENESCENCE2030 – COST Action CA23119
2023–Present: Academic Guest, Centre for Molecular Cardiology, University of Zurich
2022–Present: Expert Evaluator, European Innovation Council (EISMEA)
2020–Present: Affiliate Professor, Scuola Superiore Sant'Anna, Pisa, Italy
2018: ESC Best Cardiovascular Research Paper Award

REPRESENTATIVE MEETINGS INVITED SPEAKER:

- University of Zurich (2026), CTEC Webinar: Extracellular Vesicles as Inflammatory Biomarkers in Cardiovascular Disease
- King's College London (2025), School Seminar Series 2025: Role of extracellular vesicles in cardiovascular diseases
- Italian National Conference on Cytometry (2024): EV surface markers in liquid biopsy

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- University of Texas Rio Grande Valley (2022) Research Seminar Speaker Series: EVs as therapeutic tools and biomarkers
- Cardiovascular Grand Rounds Maastricht (2021): EVs in cardiovascular diseases
- American Heart Association Scientific Sessions (2016): Exosomes in cardiac repair
- ISEV Annual Meeting (2015): EV-mediated cardiac protection after MI

Scientific Achievements

SCIENTIFIC CONTRIBUTION IN THE FIELD OF CELL-BASED APPRACH FOR CARDIAC REGENERATION: During my time as a visiting PhD student at Johns Hopkins University in Baltimore, USA, I was a part of a research team that developed a method for isolating adult human resident progenitor cells, specifically "cardiosphere-derived cells" (CDCs), from endomyocardial biopsy specimens **[1-2]**. Under the guidance of leading American scientist in the field, Professor Eduardo Marbàn, we worked to expand these cells ex vivo for subsequent autologous transplantation back into the heart. Our method laid the foundation for a GMP-grade cellular product that is currently being testedin Phase-II clinical trials. Such research topic was further explored during my time at the Department of Biotechnology and Biosciences, University of Milano-Bicocca, where I provided novel insights into the electrophysiological properties of CDCs compared to adult cardiac functional cells **[3]**.

[1] Circulation. 2007 Feb 20;115(7):896-908. doi: 10.1161/CIRCULATIONAHA.106.655209.
[2] Nat Clin Pract Cardiovasc Med. 2007 Feb;4 Suppl 1:S9-S14. doi: 10.1038/ncpcardio0738.
[3] Basic Res Cardiol. 2010 Nov;105(6):737-49. doi: 10.1007/s00395-010-0111-6.

SCIENTIFIC CONTRIBUTION IN THE FIELD OF SECRETED EXTRACELLULAR VESICLES: Working at Istituto Cardiocentro Ticino (ICCT) since 2011, I established a research focus on extracellular vesicles (EV) derived from cardiac progenitor cells (CPC), which resulted in the publication of one of the first reports on this topic **[1].** In 2018, a second manuscript was published that provided mechanistic insights into the effects of EV on cardiac cells **[2]**. This paper was recognized by the senior Editorial team of the Cardiovascular Research Journal (the official journal of the European Society of Cardiology) as the "Best Basic Research Paper Award 2018." We developed a protocol for the isolation and purification of a clinical-grade EV-based therapeutic product called Exo-GMP **[3]**. Exo-GMP has been tested in a large animal preclinical study **[4]**. The scale-up process of producing Exo-GMP has resulted in a deposited and approved patent. Our laboratory is one of the few in Switzerland using cutting-edge techniques to profile biofluids-derived EV with the aim of exploiting their potential as a reliable and sensitive diagnostic tool to stratify cardiovascular risk in patients **[5-7]** . We have demonstrated that plasma-derived EV can play a role in detecting and staging cardiac allograft rejection **[8-9]**. Additionally, we conducted a study in COVID-19 patients, which showed that SARS-CoV-2 infection results in a systemic inflammatory response that leads to the release of substantial amounts of procoagulant EV. These EVs may act as clotting initiation agents, contributing to disease severity **[10]**.

[1] Cardiovasc Res. 2014 Sep 1;103(4):530-41. doi: 10.1093/cvr/cvu167.
[2] Cardiovasc Res. 2018 Jun 1;114(7):992-1005. doi: 10.1093/cvr/cvy055.
[3] Methods Mol Biol. 2023;2668:69-98. doi: 10.1007/978-1-0716-3203-1_7.
[4] Eur Heart J. 2024 Mar 1;45(9):728-732. doi: 10.1093/eurheartj/ehad636.
[5] Transl Res. 2022 Jun;244:114-125. doi: 10.1016/j.trsl.2022.02.005.
[6] NPJ Aging. 2024 Dec 19;10(1):63. doi: 10.1038/s41514-024-00189-7.
[7] Eur J Prev Cardiol. 2025 Sep 5:zwaf561. doi: 10.1093/eurjpc/zwaf561.
[8] J Heart Lung Transplant 2020 Oct;39(10):1136-1148. doi: 10.1016/j.healun.2020.06.011.
[9] *Commun Med (Lond). 2025 Jul 11;5(1):288. doi: 10.1038/s43856-025-00999-0*
[10] EBioMedicine. 2021 May;67:103369. doi: 10.1016/j.ebiom.2021.103369. Epub 2021 May 7.

INDUCED PLURIPOTENT STEM CELLS: We have established the technology of induced pluripotent stem cells (iPS) to derive and culture in-vitro human cardiomyocytes (CM) to be used as "human based" platform for modelling cardiac diseases. This platform was recently used to study cellular mechanisms stress-induced senescence in CM **[1]**. Very recently, we developed an automated approach to improve translational relevance of the hiPSC-CM model for studying mechanisms underlying inherited or acquired atrial arrhythmias in human CM, and for screening anti-arrhythmic agents **[2]**.

[1] Theranostics. 2022 Jul 4;12(11):5237-5257. doi: 10.7150/thno.70884. eCollection 2022.
[2] Communications Biology, 6(1). https://doi.org/10.1038/s42003-023-04674-9.

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