

Supervisor Project Idea

Supervisor

Insert a brief CV and/or external link, the total number of publications, the ORCID link, 5 of the most significant/recent publications, and a list of funded projects and awards. **max 300 words**

Curriculum vitae of Saverio Marchi

EDUCATION and TRAINING

- March 2010: PhD, Pharmacology and Molecular Oncology. Supervisor: Prof. R. Rizzuto.
- March 2006: BS degree, specialistic school in Biomolecular and Cellular Sciences
- March 2004: BS degree, Biological Sciences

PROFESSIONAL EXPERIENCES

- From December 2021 to present: Marche Polytechnic University. **Associate Professor**
- From December 2018 to December 2021: Marche Polytechnic University. **Assistant Professor**
- From April 2018 to December 2018: University of Ferrara. **U. Veronesi Researcher**
- From January 2015 to March 2018: University of Ferrara. **Post-Doc**. Supervisor: Prof. P. Pinton
- From January 2014 to December 2014: University of Hawaii Cancer Center, Honolulu, Hawaii. **Post-doc**. Supervisor: Prof. M. Carbone.
- From January 2011 to December 2013: University of Ferrara. **FIRC fellowship**. Supervisor: Prof. P. Pinton
- From November 2009 to December 2010: INSERM, Institute Gustave Roussy, Villejuif (Paris), France. **EMBO fellowship**. Supervisor: Prof. Guido Kroemer

AWARDS

- July 2021: Included by Expertscape (<https://expertscape.com/>) in the list of "World Expert" on the topic MITOCHONDRIA (<https://expertscape.com/ex/mitochondria>). Expertscape's PubMed-based algorithms identify the top 0.1% of scholars writing about Mitochondria over the past 10 years, a level labelled as "World Expert".
- September 2019: Best Researcher Under 40, Società Italiana di Anatomia e Istologia (SIAI)
- December 2017: Fondazione Umberto Veronesi Research fellowship
- April 2014: Giovani Ricercatori award, University of Ferrara
- November 2010: FIRC awarded, Fellowship *Lenino Fontana and Maria Lionello*
- October 2009: EMBO awarded

GRANTS

- 2023: Head of Operative Unit, "Progetti di Rilevante Interesse Nazionale" (PRIN_PNRR_2022) of the Italian Ministry of University and Research.
- 2023: Principal Investigator, "Progetti di Rilevante Interesse Nazionale" (PRIN_2022) of the Italian Ministry of University and Research.
- 2023: Head of Operative Unit, PNRR Grant: M6/C2_CALL 2022 of the Italian Ministry of Health.
- 2022: Collaborator, Grant from the European Union - NextGenerationEU through the Italian Ministry of University and Research under PNRR - M4C2-I1.3.
- 2018: Principal Investigator, "Young Researchers Grant" of the Italian Ministry of Health (Ricerca Finalizzata).

PUBLICATIONS

82 publications on "peer-reviewed" journals, **31** as First (or Co-first) Author - Last Author - Corresponding Author (h-index: **43**; n° of citations > **7600**; i10-index: **74**. Source: Scopus).

SCOPUS ID: 23473694600

<https://www.scopus.com/authid/detail.uri?authorId=23473694600>

ORCID: 0000-0003-2708-1843

- **Marchi S**, Guilbaud E, Tait SWG, Yamazaki T, Galluzzi L. Mitochondrial control of inflammation (2022), Nat Rev Immunol, Jul 25:1–15
- **Marchi, S.**, Morroni, G., Pinton, P., Galluzzi, L. Control of host mitochondria by bacterial pathogens (2022) Trends in Microbiology, May; 30(5): 452-465
- Paternani, S., Bonora, M., Ingusci, S., Previati, M., **Marchi, S.**, Zucchini, S., Perrone, M., Wieckowski, M.R., Castellazzi, M., Pugliatti, M., Giorgi, C., Simonato, M., Pinton, P. Antipsychotic drugs counteract autophagy and mitophagy in multiple sclerosis (2021) Proceedings of the National Academy of Sciences of the United States of America, 118 (24), art. no. e2020078118.
- **Marchi, S.**, Zanella, M., Pinton, P., Crafa, S., Boniolo, G. MitopathS: a new logically-framed tool for visualizing multiple mitochondrial pathways (2021) iScience, 24 (4), art. no. 102324.
- **Marchi, S.**, Giorgi, C., Galluzzi, L., Pinton, P. Ca²⁺ Fluxes and Cancer (2020) Molecular Cell, 78 (6), pp. 1055-1069

Research Group Description

Provide the name the reference department and a brief description of the research group, including

The Morphology and Histology Lab (MorpHis lab) is located at the Department of Clinical and Molecular Sciences (DISCLIMO – Section of Histology). Saverio Marchi is Group Leader of the Mitochondrial Unit, which focuses its research to the study of mitochondrial dynamics at both morphological and functional level. Marchi's Team is made up of 4 people, 1 Lab Technician with great expertise in immunohistochemistry and morphological analysis, 1 Post-doc with expertise in mitochondrial biochemistry, and 2 PhD students. An additional junior Post-doc will join the group in May 2024.

The available instrumentations and infrastructures include: 3 Biohazard "class 2" sterile laminar flow hoods for genetically modified organisms, Microtome Microm, Ultra-microtome Ultratome Nova LKB, Time-lapse video microscopy equipment, Real-Time amplification system Rotor-Gene 3000, Spectrophotometer Anthelie Secoman, 2 Optical Microscopy Nikon Eclipse with digital camera, spectrophotometer (Thermo Fisher) with microplate reader for protein quantification (including ELISA kit analysis), Tecan Infinite microplate reader, luminometer for Ca²⁺ and ATP measurements, UVITEC Cambridge digital imaging (Eppendorf) for high-quality WB analysis, Seahorse Bioscience for analysis of cellular metabolism, and Tomographic Microscope 3D Cell Explorer-FLUO (Nanolive) for label-free 4D continuous observation and measurement of cell processes and organelles dynamics. The PI has free of cost access to the other facilities of the Institution, including a system for FACS analysis and microscopy center (confocal and transmission electron microscopies).

Title and goals

Provide the title of the topic and a short summary of the project idea. max 200 words

Lipid droplets – mitochondria contact as a key driver for cancer progression

For cells to function properly, it is necessary for cell organelles to communicate with each other. In this context, mitochondria establish functionally crucial connections with virtually all other intracellular structures. These interactions not only impact mitochondrial behavior and activity but also influence a wide variety of cellular functions. In recent years, it has been showed that mitochondria interact with lipid droplets (LDs) and this association induces a drastic remodelling of the cellular bioenergetics. However, the mechanisms regulating the LDs-mitochondria contacts, or their potential role in driving some pathological conditions (i.e cancer development), are still elusive.

In this project, we aim to elucidate different aspects of the LDs-mitochondria tethering in the context of cancer progression, by providing fundamental clues on the molecular pathways that control contact formation, how the mitochondrial network rearranges, the metabolic changes that occur at these contact sites, and how they affect the tumorigenic potential of cancer cells. We recently collected some interesting preliminary findings on clear cell renal cell carcinoma (ccRCC), ensuring a perfect starting point for a MRSCA post-doctoral fellowship.

Contact details (including email address of the supervisor)

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