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Born on 13/01/1997,
Trieste (Italy)

ABOUT ME

I am a process engineer specializing in mechanical engineering and cell-ECM interactions. My research focuses on how mechanical forces within 3D biomaterials influence cellular behavior, with applications in tissue regeneration and cancer therapies.

EDUCATION

2020 - 2024

ETH — Zurich, Switzerland

Ph.D, Mechanical and Process Engineering (Prof. Tibbitt & Prof. Mazza)
Dissertation: *3D biomaterials to study cell mechanotransduction*

2018 - 2020

ETH — Zurich, Switzerland

MSc in Process Engineering - graduated with distinction, GPA 5.85/6
Dissertation: *An injectable senolytic drug delivery system to eliminate senescent cells*

09/2017 - 03/2018

EPFL — Lausanne, Switzerland

Academic Exchange in Material Science Engineering, GPA 5.25/6

2015 - 2018

University of Trieste — Trieste, Italy

Bachelor Degree in Process Engineering and Material Science
Graduated with 110/110 cum laude (1st class honors)

PROFESSIONAL EXPERIENCE

01/2025 - 03/2025

ETH Zurich

Postdoctoral Researcher — Macromolecular Engineering Lab
(Prof. Tibbitt)

Research on fibroblast mechanobiology. 3D in vitro models

11/2020 - 12/2024

Doctoral student — Macromolecular Engineering Lab & Experimental continuum mechanics

3D skin mechanotransduction

- Functionalization/synthesis collagen and PEG-peptide hydrogels as ECM-like platforms for 3D skin engineering
- Understanding synergistic effect of artificial ECM and mechanical stresses on dermal fibroblast homeostasis

Local elimination of senescent cells

- Inflammation based model of senescence for HUVECs
- Development of an injectable drug loaded hydrogel

2019-2020

Roche Basel

Intern in Pharmaceutical Technical Development & Supplies, PTD
Biologics Europe

- 3D bioprinting of antibodies based drugs
- Aseptic connector development

2016-2018

AIIESEC, Trieste

Marketing manager and team leader

- Online and offline marketing campaigns
- market strategy

GRANTS & AWARDS

- 2024 **Swiss National Science Foundation Postdoc Mobility (CHF 135'800)**
Senescence drivers in breast microenvironment
- 2024 **Best oral talk, Gordon research seminar STEEM**
- 2023 **Young investigator award, Fusion conferences (\$ 500)**
- 2023 **Best oral talk, SSBRM annual meeting (CHF 500)**
- 2018 **Erasmus scholarship EPFL (CHF 1800)**
- 2011 **MIUR albo nazionale delle eccellenze italiane (EUR 500)**

TEACHING EXPERIENCE

- 2024-2025 **Process design and safety, ETH Zurich**
Exercise session
- 2020-2024 **Mechanics 1, ETH Zurich**
Exam preparation, exam correction, exercise session
- 2023-2024 **Networks and gels, ETH Zurich**
Tissue Engineering lecture

Project supervision

- 4 Master thesis
- 2 Bachelor thesis
- 2 semester projects

SCIENTIFIC CONTRIBUTIONS

- **L. Garau Paganella**, A. Badolato, G. Fischer, C.S. Sanger, A. Martyts, A. Kouriouklis, C. Labouesse, C. Giampietro, S. Werner, E. Mazza, M.W. Tibbitt, Variations in fluid chemical potential induce fibroblast mechano-response in 3D hydrogels, **Biomaterials Advances 163 (2024): 213933.**
- G. Da Silva Andre*, **L. Garau Paganella***, A. Badolato, S. Sander, C. Labouesse, J. Dengiel, C. Giampietro, E. Mazza, M.W. Tibbitt, Protein isolation from 3D scaffolds, **Current Protocols 4.1 (2024): e966**
- C.S. Sanger, M. Cernakova, M.S. Wietecha, **L. Garau Paganella**, C. Labouesse, O. Dudaryeva, C. Roubaty, M. Stumpe, E. Mazza, M.W. Tibbitt, J. Dengjel, S. Werner, Serine protease 35 regulates the fibroblast matrisome in response to hyperosmotic stress, **Science Advances 9(35) eadh9219, 2023.**
- A.P. Kourouklis, A. Wahlsten, A. Stracuzzi, A. Martyts, **L. Garau Paganella**, C. Labouesse, D. Al-Nuaimi, C. Giampietro, A. E. Ehret, M.W. Tibbitt, E. Mazza, Control of hydrostatic pressure and osmotic stress in 3D cell culture for mechanobiological studies. **Biomaterials Advances, 145, 213241, 2023**
- **L. Garau Paganella***, G. Bovone*, F. Cuni, C. Labouesse, C. Giampietro, E. Mazza, M.W. Tibbitt, Injectable senolytic hydrogel depot for the clearance of senescent cells, **Biomacromolecules, 2025.**

Language Skills:

- Italian native
- English fluent
- German intermediate

Research Skills:

- **Biological skills:**
mammalian cell culture
2D and 3D, Tissue cell
extraction, Protein and
Nuclei acid extraction
2D/3D, Western blotting,
RT-qPCR,
Immunofluorescence
and Microscopy
- **Material skills:**
Collagen, Alginate, PEG
- **Mechanical skills:**
Rheology,
Nanoindentation,
Osmometer, Swelling
experiments
- **Machinery skills:**
Bioreactors, 3D printing,
pressure pumps

- G. Bovone, S. Bernhard, G. Jacquot, V. Mittelheisser, C. Mirjolet, E. A. Guzzi, **L. Garau Paganella**, L. Liebi, O. Lefebvre, J. Goetz, L. Charbonnière, S. Harlepp, X. Pivot, M. W. Tibbitt, A. Detappe, Reinforced polymer-nanoparticle hydrogels for subcutaneous and sustained delivery of trastuzumab, preprint
- M. Cattaneo, G. Guerriero, G. Shakya, L., A. Krattiger, **L. Garau Paganella**, M., L. Narciso, O. Supponen, Cyclic jetting enables microbubble-mediated drug delivery, **Nature Physics, 2024**
- **L. Garau Paganella**, C. Labouesse, C. Giampietro, E. Mazza, M.W. Tibbitt, **Dermatologica helvetica, 2025**

EXTRACURRICULAR ACTIVITIES

Young Scientist SSBRM - finances

- Organize scientific symposia and summer school
- Organization of finances

BioMed@MAVT founder

- Biomedtech community for the mechanical and process engineering department at ETH
- Organization yearly symposium

Running club (half marathon competitions)

Swimming club (open water swimming)