

Federico Serpe

CURRICULUM VITAE

EDUCATION

PhD – Theoretical and Applied Mechanics

Period: Nov 2020 – Jan 2024

Institute: Department of Mechanical and Aerospace engineering (DIMA) at University of Rome "La Sapienza" in collaboration with Istituto Italiano di Tecnologia – Center for Life Nano- and Neuro-Science (CLN2S)

Thesis title: "Development of a microfluidic-based 3D bioprinting system to create hierarchical in vitro models of human tissues"

Supervisor: Prof. Carlo Massimo Casciola

Master's degree – Biomedical Engineering

Period: Oct 2017 – Mar 2020

Institute: Department of Industrial, Electrical and Mechanical Engineering, Roma Tre University

Thesis title: "A novel platform for live observation of endothelial cells morphodynamics during endothelial barrier formation"

Supervisor: Prof. Gabriella Cincotti

Final mark: 110/110 cum laude

Bachelor's degree – Electrical Engineering

Period: Oct 2014 – Dec 2017

Institute: Department of Industrial, Electrical and Mechanical Engineering, Roma Tre University

Thesis title: "Tecniche colorimetriche per il monitoraggio delle acque"

Supervisor: Prof. Gabriella Cincotti

Final mark: 110/110 cum laude

RESEARCH EXPERIENCE

Nov 2020 – Jan 2024

PhD student

Department of Mechanical and Aerospace engineering (DIMA) at University of Rome "La Sapienza" in collaboration with Istituto Italiano di Tecnologia (IIT) – Center for Life Nano- and Neuro-Science (CLN2S)

Oct 2022 – May 2023

Visiting PhD student

Institute of Physical Chemistry (IChF), Polish Academy of Sciences
Digital manufacturing of biomimetic systems lab, Dr Marco Costantini

Sep 2019 – Mar 2020

Master thesis

Istituto Italiano di Tecnologia (IIT) – Center for Life Nano- and Neuro-Science (CLN2S)

CURRENT RESEARCH INTERESTS

My research interests are focused on the combination of microfluidics and 3D printing for tissue engineering purposes. During my PhD, I developed and characterized different microfluidic printing heads that were integrated in a custom-made bioprinting system. The goal of my PhD project was to create 3D microenvironments with controlled micro- and macro-architecture through the generation of mechanical and biological cues. Specifically, I developed a microfluidic system that combines the production of a foam from biocompatible materials with 3D printing for the realization of foamed constructs with controlled porosity. Finally, cancer and staminal cells have been embedded within the 3D-printed foams to investigate their functionality.

VISITING PERIODS

Oct 2022 – May 2023	Visiting PhD student Institute of Physical Chemistry (IChF), Polish Academy of Sciences, Wasaw, Poland
Aug 2018 – Dec 2018	Digital manufacturing of biomimetic systems lab, Dr Marco Costantini Erasmus+ Norwegian University of Science and Technology (NTNU), Trondheim, Norway

PUBLICATIONS

1. Serpe, F., Casciola, C. M., Ruocco, G., Cidonio, G., & Scognamiglio, C. (2024). Microfluidic fiber spinning for 3D bioprinting: Harnessing microchannels to build macroissues. *International Journal of Bioprinting*, 10(1), 1404. (<https://doi.org/10.36922/ijb.1404>)

ORAL PRESENTATIONS & SCIENTIFIC MEETINGS

Sep 2023	NanoInnovation 2023, Rome (Italy)
Sep 2023	33rd Annual Conference of the European Society for Biomaterials (ESB), Davos (Switzerland)
Jul 2023	Industrial Problem Solving with Physics (IPSP), Edition 2023, Trento (Italy)
Jun 2022	Exhibitor at Maker Faire, X edition, Rome (Italy)
Oct 2022	Tissue Engineering and Regenerative Medicine International Society (TERMIS) European Chapter Conference 2022, Krakow (Poland)
Dec 2020	Exhibitor at Maker Faire, VIII edition, Rome (Italy)

MEMBERSHIP OF SCIENTIFIC SOCIETIES

Sep 2023-present	European Society of Biomaterials (ESB)
Jul 2023-present	International Society of Biofabrication (ISBF)
2022	Tissue Engineering and Regenerative Medicine International Society (TERMIS)