



FEDERICO DI TOLLA

Date of birth: 25/10/1998

Place of birth: Turin, Italy

Address: Via Buonconvento 58, Rome

ACADEMIC CURRICULUM VITAE

PROFESSIONAL SUMMARY

Biomedical Engineering Master's student with a multidisciplinary background in mechanical engineering, biomechanics, tissue engineering and regenerative medicine, strengthened by international research experience at the Heart Research Institute (Sydney, Australia) and University of Technology Sydney (Sydney, Australia). Experienced in tissue engineering, biomaterials, cell culture, biomechanical characterization and advanced microscopy, with solid skills in experimental research, quantitative data analysis and computational modeling.

LANGUAGES

Italian: Native speaker

English: Fluent (C1 – Advanced)

Spanish: Professional proficiency

CONTACTS

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EDUCATION

Master's Degree in Biomedical Engineering (in progress)

Sapienza University of Rome — Rome, Italy

2023 – Present

Currently pursuing a Master's Degree in Biomedical Engineering, focusing on tissue engineering, biomechanics, and regenerative medicine.

Bachelor's Degree in Mechanical Engineering

Roma Tre University — Rome, Italy

2017 – 2021

Graduated with a solid foundation in mechanics, materials science, and applied physics.

SCIENTIFIC WRITING AND PUBLICATIONS

FIRST-AUTHOR RESEARCH ARTICLE

GelMA Microgels as a Novel Platform to Promote Pathophysiological Vascularization in Cardiac Organoids

Manuscript in preparation

Leading the preparation of a research manuscript describing the development of biomimetic GelMA-based microgels as an innovative platform for engineering vascularized cardiac organoids. The study integrates biomaterials engineering, droplet microfluidics, endothelial cell biology and mechanical characterization to investigate strategies for physiological and pathological vascularization. As first author, I am responsible for the experimental design, data analysis, scientific interpretation and manuscript preparation.

FIRST-AUTHOR REVIEW ARTICLE

Comprehensive Analysis of the Strategies for the Vascularisation of Tissue Organoids

Manuscript in preparation

First author of a comprehensive review critically examining current vascularization strategies for tissue organoids, with particular emphasis on biomaterials, microfluidic technologies, organ-on-chip systems and advanced biofabrication approaches. Responsible for literature analysis, manuscript development and synthesis of emerging trends and future perspectives in the field.

ACADEMIC AND RESEARCH EXPERIENCE

CARDIOVASCULAR REGENERATION GROUP – HEART RESEARCH INSTITUTE (HRI), UNIVERSITY OF TECHNOLOGY SYDNEY (UTS), SYDNEY, AUSTRALIA
SUPERVISOR: A/PROF. CARMINE GENTILE | JAN 2026 – SEPT 2026

- **Core Research:** Conducted a 9 months international placement focused on cardiovascular tissue engineering and regenerative medicine.
- **Technical Expertise:** Gained hands-on experience in mammalian cell culture, hydrogel fabrication, microfluidics, and biomechanical characterization.
- **Imaging & Analysis:** Performed advanced fluorescence and confocal microscopy, coupled with quantitative image analysis.
- **Academic Development:** Enhanced independent skills in experimental design, scientific writing, and critical data interpretation within a multidisciplinary team.

REGENERATIVE MEDICINE PROJECTS AND NUMERICAL METHODS LABORATORY, LA SAPIENZA UNIVERSITY OF ROME, ITALY | 2023 – 2025

Participated in multidisciplinary research activities spanning biomechanics, tissue engineering and computational modeling. Developed solid expertise in MATLAB for numerical simulations, biomedical data analysis and mathematical modeling, while strengthening analytical thinking and problem-solving skills applied to biomedical research.

TECHNICAL AND RESEARCH SKILLS

LABORATORY TECHNIQUES

Cell Culture	Biomaterials & Microfluidics	Imaging & Microscopy
• Mammalian cell culture • Sterile cell culture techniques • Cell seeding and maintenance • Live/Dead viability assays • Fluorescence staining (Hoechst, Calcein-AM, Propidium Iodide)	• GelMA hydrogel preparation • Hydrogel photocrosslinking • Swelling and degradation assays • Rheology analysis • Microfluidic chip operation • Monodisperse microgel production • Microgels cells coating	• EVOS fluorescence microscopy • Confocal laser scanning microscopy • Brightfield microscopy • Fluorescence image acquisition • Quantitative image analysis (ImageJ/Fiji)

REFERENCES

A/Prof. Carmine Gentile: Group Leader, Cardiovascular Regeneration Group Heart Research Institute (HRI) & University of Technology Sydney (UTS)
Email: CArmine.Gentile@uts.edu.au
Relationship: Academic and project supervisor during the research placement in Sydney.

Prof. Gianluca Cidonio Associate Professor Sapienza University of Rome
Email: gianluca.cidonio@uniroma1.it
Relationship: Thesis supervisor and academic facilitator at Sapienza University.

TECHNICAL & COMPUTATIONAL SKILLS

- MATLAB
- ImageJ/Fiji
- GraphPad Prism
- Microsoft Excel
- Photoshop
- Rheo Compass
- CAD

SCIENTIFIC SKILLS

- Experimental design
- Data analysis
- Scientific writing
- Literature review
- Multidisciplinary collaboration