



LUCA BORRO

Biologist & Researcher | Biomedical Engineer
Medical 3D Printing & 3D Bioprinting Specialist
Patient-Specific 3D Modeling Specialist

Contact

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00049 - Velletri (Rome, Italy)

Education

Master's Degree, Biology of Health — University of L'Aquila, Italy (2024)

- Thesis: 3D reconstruction of thioredoxin reductase tertiary structure from cryo-EM data.

Bachelor of Science, Biomedical Engineering — University UniCusano, Rome, Italy (2021)

- Thesis: 3D bioprinted scaffolds for tracheal tissue regeneration in pediatric subglottic stenoses.

Bachelor of Science — Architectural Sciences Sapienza University of Rome (2013)

- Thesis: Role of 3D modeling and digital representation in architectural design.

State Examination for Professional Qualification as Biologist (Italy)

Licensed Biologist — Section A Register

Professional Summary

Biomedical Engineer and Licensed Biologist with more than a decade of experience in **medical image processing**, **patient-specific 3D anatomical modeling**, and **additive manufacturing for complex clinical applications**. Technical Director of a Bambino Gesù Children's Hospital 3D Printing and 3D Bioprinting Laboratory, supporting surgical teams through advanced 3D reconstruction, rapid prototyping, and translational research.

Interdisciplinary background spanning **biomedical engineering**, **biological sciences**, and **anatomical 3D modeling**, enabling seamless integration between clinical needs, digital modeling, and physical medical device development.

Strong record in clinical innovation, scientific research, technical communication, and multidisciplinary collaboration in high-complexity healthcare environments.

Core Expertise

- Patient-specific 3D modeling from CT and MRI (DICOM segmentation and reconstruction)
- Medical 3D printing for surgical planning and simulation
- 3D bioprinting and biomaterials for regenerative medicine research
- Clinical translation of additive manufacturing technologies
- Digital anatomical modeling and spatial simulation
- Scientific publishing and technical medical writing
- Multidisciplinary collaboration with surgical teams

Professional Experience

IRCCS Bambino Gesù Children's Hospital — Rome, Italy

Researcher (Biologist & Biomedical Engineer)

Technical Director— 3D Printing & 3D Bioprinting Laboratory
2015 – Present

- Manage and coordinate technical operations of the hospital's 3D Printing and 3D Bioprinting Laboratory.
- Develop patient-specific anatomical models from medical imaging for surgical planning and clinical decision-making.
- Support multidisciplinary surgical teams through rapid prototyping and complex anatomical reconstructions.
- Contributed to surgical planning of multiple conjoined twins separation procedures using advanced 3D modeling and printing.

skills

- Proficient in leading software platforms for 3D reconstruction and processing of radiological imaging data (Mimics Suite).
- Hands-on experience with hospital PACS ecosystems for radiology image management and workflow integration (e.g., Carestream Vue Motion, syngo.via).
- Advanced expertise in 3D Printing and Additive Manufacturing, including FFF/FDM, SLA, PolyJet, and 3D Bioprinting, with strong understanding of process selection, constraints, and output quality.
- Strong background in Structural Biology 3D workflows and protein folding analysis, including molecular/structural modeling concepts and interpretation.
- Practical experience with AI tools and AI-assisted programming to support automation, analysis, and productivity in technical workflows.
- Proven capabilities in online communication and scientific outreach, translating complex topics into clear, engaging, and professional content.

- Contributed to surgical planning of multiple neurosurgery , maxillo-facial surgery and cardiac surgery surgical procedures using advanced 3D modeling and printing.
- Participated in design and development of a 3D-printed trachea-bronchi dilation device using biocompatible and resorbable materials for compassionate clinical use.
- Conduct research in regenerative medicine and bioprinting technologies, including scaffold design and gel-based biomaterial systems.

Meteda (Metadieta) – Rome, Italy

Medical Writer (Biology and Nutrition Science & Clinical Technologies)
2024 – Present

Production of scientific and technical content for healthcare professionals and clinical software platforms.

Bioteck S.p.A. – Italy

Medical Writer (Biomaterials & Tissue Regeneration)
2022 – 2024

Technical and scientific communication focused on biomaterials for oral and maxillofacial tissue regeneration.

Mondadori “Focus” Magazine— Italy

Scientific Communicator (3D Biological Visualization)
2022

Creation of scientific content supported by 3D molecular and structural biological modeling.

3D Medical S.r.l. – Rome, Italy

Biomedical 3D Specialist
2013 – 2014

Development of patient-specific anatomical models from CT/MRI and management of medical 3D printing workflows for clinical and research applications.

Grants and Research Collaboration

- Italian Diabetes Federation Research Grant — 3D bioprinting of pancreatic islets (collaboration with IRCCS San Raffaele, Milan).
- Research collaboration with IRCCS Santa Lucia (Rome) on bioprinted scaffolds for in vitro disease modeling.
- Ministerial Research Grant — 3D Regenerative Airway Reconstruction (Preclinical Study) – Principal research contributor in a funded translational project investigating tracheal cartilage regeneration for subglottic tracheal stenosis with 3D printed biopolymer scaffolds.

Scientific Publications

- 24 Publications in impactful scientific journals
- H-Index: 7
- Scopus Author Page ([Link](#))

Invited Talks and Conferences

Speaker and invited contributor at international and national events on medical 3D technologies, including:

- Materialise World Congress (Belgium)
- Italian Digital Biomanufacturing Network National Congress
- Campus Party Milan
- Maker Faire Rome
- Participation as a speaker at numerous national conferences in the fields of orthopedics, otorhinolaryngology, and cardiac surgery.

Languages

Italian — Native

English — B2, Intermediate (professional working proficiency)

Personal Interests

Beyond my biomedical career, my greatest passion is Architecture and Lighting Design, with a particular focus on the architecture of Italy's small historic villages (borghi). I actively study how spatial composition, materials, natural light, and artificial lighting shape human health, experience and identity in these places, exploring the relationship between built heritage, atmosphere, and well-being.

I authorize the processing of my personal data in accordance with EU Regulation 2016/679 (GDPR).

A handwritten signature in black ink, appearing to be 'Luca M.', written in a cursive style.