

Curriculum vitae di *Gianluca Cidonio*

Sottosettori ERC primari (max 3): *PE11_1, PE8_13*

PERSONAL DETAILS

Family name, First name: Cidonio, Gianluca

Birthdate: 26/06/1990

Researcher unique identifier(s): ORCID ID: 0000-0002-9445-6994, Scopus Author ID: 57195404284, ResearcherID: 1786-2019

URL for web site: <https://sites.google.com/uniroma1.it/more3dlab/home?authuser=0>

• **Education and key qualifications**

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|------------|--|
| 19/12/2018 | PhD in Engineering (major in Tissue Engineering)
Faculty of Engineering and the Environment, University of Southampton, UK
Prof. Richard O.C. Oreffo |
| 2013-2014 | Global Fellow Program
Bioengineering Department, Temple University, Philadelphia, PA, USA |
| 2012-2014 | Master (Biomedical Engineering)
Faculty of Civil and Industrial Engineering, Sapienza University of Rome, Italy |
| 2009-2012 | Bachelor (Clinical Engineering)
Faculty of Civil and Industrial Engineering, Sapienza University of Rome, Italy |

• **Current position(s)**

- | | |
|----------------|---|
| 2026 - present | Associate Professor (Bioengineering)
Faculty of Civil and Industrial Engineering, Department of Mechanical and Aerospace Engineering, Sapienza University of Rome, Italy |
| 2024 - 2026 | Researcher Tenure-Track
Faculty of Civil and Industrial Engineering, Department of Mechanical and Aerospace Engineering, Sapienza University of Rome, Italy |
| 2024 - present | Junior Fellow at Sapienza Advanced Superior School (SSAS)
Sapienza Advanced Superior School (SSAS), Sapienza University of Rome, Italy |
| 2022 - present | Senior Affiliated Researcher
Center for Life Nano- & Neuro- Science, Italian Institute of Technology, Rome, Italy |
| 2019 - present | Visiting Researcher
Faculty of Medicine, Institute of Developmental Sciences, Centre for Human Development, Stem Cells and Regeneration, University of Southampton, UK |

• **Previous position(s)**

- | | |
|-------------|---|
| 2022 - 2024 | Team Leader (Bioprinting Lab)
Center for Life Nano- & Neuro- Science, Italian Institute of Technology, Rome, Italy |
| 2020 - 2022 | Postdoctoral Fellow (AIRC Fellow + PNRR Spoke 3 Fellow)
Center for Life Nano- & Neuro- Science, Italian Institute of Technology, Rome, Italy |
| 2019 - 2020 | Postdoctoral Fellow
Center for Life Nano- & Neuro- Science, Italian Institute of Technology, Rome, Italy |
| 2019 - 2020 | EPSRC Postdoctoral Fellow
Faculty of Medicine, Institute of Developmental Sciences, Centre for Human Development, Stem Cells and Regeneration, University of Southampton, UK |

Le seguenti sezioni devono avere lunghezza totale compresa fra 2 e 4 pagine.

RESEARCH ACHIEVEMENTS AND PEER RECOGNITION

Research achievements

Bibliometric indicators:

Scopus

Publications: 36 - H-index: 13 - Citations: 1278

Most relevant first author papers:

1. Y.-H. Kim*, G. Cidonio*, J.M. Kanczler, R.O.C. Oreffo & J.I. Dawson

Human bone tissue-derived ECM hydrogels: Controlling physicochemical, biochemical, and biological properties through processing parameters. Bioactive Materials, 43, 114–128 (2024) <https://doi.org/10.1016/J.BIOACTMAT.2024.09.007>

I have decellularised and demineralised human femoral head tissue to isolate skeletal biomatrix rich in native growth factors and proteins. I have found a significant difference in biological response depending on the size of bone fragments during digestion process.

2. G Cidonio, M Glinka, Y-H Kim, J Kanczler, SA Lanham, T Ahlfeld, A Lode, JI Dawson, M Gelinsky, R O C Oreffo, Nanoclay-based 3D printed scaffolds promote vascular ingrowth ex vivo and generate bone mineral tissue in vitro and in vivo. Biofabrication, 12 035010 (2020) <https://doi.org/10.1088/1758-5090/ab8753>

I have fabricated a new nanoclay-based system to regenerate skeletal tissue both ex vivo and in vivo. Critically, the new biomaterial ink was found ideal for the sustain of HBMSCs viability and functionality

3. G Cidonio, M Cooke, M Glinka, J I Dawson, L Grover, R

O C Oreffo. Printing bone in a gel: using nanocomposite bioink to print functionalised bone scaffolds Materials Today Bio 4, 100028 (2019) <https://doi.org/10.1016/j.mtbio.2019.100028>

I have designed a new extrusion approach of nanosilicate inks within a fluid gel bath for the agile fabrication of skeletal constructs that support stem cell differentiation and vascular infiltration ex vivo in a CAM model

Most relevant corresponding author papers:

4. F Serpe, L Iafrate, M Bastioli, M Marcotulli, C Sanchini, V de Turris, M D'Orazio, B Palmisano, A Mencattini, E Martinelli, M Riminucci, C M Casciola, G Ruocco, C Scognamiglio, G Cidonio, 2025, Engineering a microfluidic-assisted 3D bioprinting approach for the hierarchical control deposition and compartmentalisation of graded bioinks. Biofabrication. <https://doi.org/10.1088/1758-5090/adf35b>

I have designed, supervised and curated the seminal study for the engineering of a novel microfluidic chip printhead. I have guided an original work on the use of a new microfluidic-assisted. 3D bioprinting approach for the fabrication of hierarchically structured functionally graded skeletal tissue substitutes.

5. Y Kim, J M Kanczler, S Lanham, A Rawlings, M Roldo,, G Tozzi, J I Dawson, G Cidonio* & R O C Oreffo*. Biofabrication of nanocomposite-based scaffolds containing human bone extracellular matrix for the differentiation of skeletal stem and progenitor cells, Bio-Design and Manufacturing, 7, 121-136 (2024) <https://doi.org/10.1007/s42242-023-00265-z>

I have conceptualised and supervised the engineering of a new bioink for skeletal regeneration. A nanocomposite blend of decellularized and demineralised human bone tissue was 3D bioprinted for the first time and studied ex vivo.

6. S Mohammadi, S D'Alessandro, F Bini, F Marinozzi, G Cidonio, Development of a microfluidic-assisted open-source 3D bioprinting system (MOS3S) for the engineering of hierarchical tissues, *HardwareX*, 18, 527, (2024) <https://doi.org/10.1016/j.ohx.2024.e00527>

I have conceptualised and supervised the engineering of a unique open-source 3D microfluidic-assisted bioprinting platform for the fabrication of hierarchical structures. The 3D bioprinter assembly files have been made fully available online <https://doi.org/10.17632/s8bpwp2ryb.1>

7. M Marcotulli, M C Tirelli, M Volpi, J Jaroszewicz, C Scognamiglio, P Kasprzycki, K Karnowski, W Świążkowski, G Ruocco, M Costantini*, G Cidonio*, and A Barbetta*, Microfluidic 3D printing of emulsion ink for engineering porous functionally graded materials, *Advanced Materials Technologies*, 8, 2201244 (2023) <https://doi.org/10.1002/admt.202201244>

I have conceptualised and supervised a novel study on the engineering of a microfluidic printhead for the agile fabrication of functionally-graded material (emulsion) inks patterned in fluid-gel suspension support for the fabrication of complex hierarchical constructs in 3D.

8. S Mohammadi, G Cidonio. Unravelling hierarchical patterning of biomaterial inks with 3D microfluidic-assisted spinning: a paradigm shift in bioprinting technologies, *Frontiers in Biomaterials Science*, 2 (2023) <https://doi.org/10.3389/fbiom.2023.1279061>

I have supervised and curated a study on the current advancements of 3D microfluidic-assisted approaches for the fabrication of hierarchical structures, focusing on novel possibilities for disease modelling.

9. M. Marcotulli, A. Barbetta, E. Scarpa, F. Bini, F. Marinozzi, G. Ruocco, C.M. Casciola, C. Scognamiglio, D. Carugo* & G. Cidonio* Jingle Cell Rock: Steering Cellular Activity With Low-Intensity Pulsed Ultrasound (LIPUS) to Engineer Functional Tissues in Regenerative Medicine. *Ultrasound in Medicine and Biology*, 0(0), 1–14, (2024) <https://doi.org/10.1016/j.ultrasmedbio.2024.08.016>

I have supervised and curated a study on the use of ultrasound stimuli for tissue engineering and regenerative medicine purposes. We have reported that ultrasounds can be used in combination with cultured cells to stimulate their differentiation and drive their tissue commitment – particularly towards bone.

10. L Iafrate, M C Benedetti, S Donsante, A Rosa, A Corsi, R O C Oreffo, M Riminucci, G Ruocco, C Scognamiglio, G Cidonio. Modelling skeletal pain harnessing tissue engineering. *In vitro models* 1, 289–307 (2022) <https://doi.org/10.1007/s44164-022-00028-7>

I have supervised and curated the study of existing skeletal models, particularly related to the mimicry of bone pain. Currently, the sole models are relying on living animals. Thus, we proposed a new in vitro approach for bone pain modelling.

Peer recognition

FUNDING

Ministry of Health funding (€399,850)

Skin Health Investigation and Evaluation of Long-term Damage (SHIELD)

European Research Council (ERC) Starting Grant 2025 (€1,991,831)

Bioprinting with Real-time Imaging and cell-biomaterial Density for Growth Enhancement (BRIDGE)

LAV ETS (€79,000)

Studio del dolore umano tramite la modellizzazione con biostampa 3D finalizzata a rendere disponibile un'alternativa all'animale, al momento, modello di riferimento.

Royal Society International Exchange (co-PI w/ Prof Francesco Del Giudice)

Viscoelasticity-Driven 3D Printing of Single-Cell Encapsulated Microgels

Bando Coordinamento progetti Horizon Europe (Sapienza, €10,000)

SKELEtal repair Through Regenerative-assisted artificial Intelligence Arthroplasty (SKELETRIA)

Template CV Soci Accademia di Ingegneria e Tecnologia

MTF BIOLOGICS (\$75,000)

OSTEOMimetic 3D MICROfluidic bioprinting of 4ecellularized human bone and vascular allograft ink for skeletal regeneration (OSTEOMIMIC)

ON Kick-Starter Grant (CHF 10,000)

Bioprinting meniscus implants harnessing microfluidic biofabrication technology to pattern density gradient porosity and biologics (BUBBLES)

FELLOWSHIPS

AIRC “ALDI” Fellowship (€50,000) first AIRC on 3D bioprinting for disease modelling 3D bioprinted model for the study of proliferation, migration and homing of metastasising breast cancer to bone tissue (3D breast-to-bone)

Center for Life Nano- & Neuro- Science, Italian Institute of Technology, Italy

EPSRC DP Fellowship (£50,000)

TOWARDS PRINTABLE LIVING BONE: Development and application of innovative natural and nanocomposite-based cell-laden scaffolds for in vivo skeletal regeneration

Institute of Developmental Science, Faculty of Medicine, University of Southampton, UK

AWARDS

11/2025 Foresight Institute Fellowship 2026

10/2025 Energy for Rome Prize – for the scientific contribution to healthcare research in Rome

10/2022 GISM Young Investigator Award for best oral/poster at the annual GISM meeting

09/2019 Italy Made Me 2019 Award for scientific merit working in the UK

01/2019 TCES Travel Award

10/2018 TCES Adam Curtis Collaboration Award

02/2018 International Society for Biofabrication (ISBF) Travel Award

INVITED SPEAKER

03/2026 - Third International StemNet Meeting, Bologna (Italy)

Advancing with 3D bioprinting beyond the horizon of current clinical practice for skeletal regeneration and modelling

06/2025 - Gordon Research Conference (GRC), Physics and Chemistry of Microfluidics, Microscale Systems Spanning Physical Phenomena to Biological Applications

It Takes Two to Print: Microfluidic-Assisted 3D Bioprinting for the Functional Assembly of Human Tissues

11/2024 - Next-Generation 3D Bioprinting for Disease Modeling and Personalized Medicine, 12th ibiTea Seminar

10/2023 - AUS Bioprint Workshop (Sydney, Australia)

12/2022 - University of New Hampshire Lecture (Manchester, USA)

Microfluidic 3D Bioprinting: shaping new ways to fabricate physiologically-relevant tissue substitutes 21st

10/2022 - Vienna Ludwig Boltzmann Lecture series (Vienna, Austria)

Emerging platforms in 3D Bioprinting: Harnessing microfluidic technology to shape the biofabrication of physiologically-relevant tissues

JOURNAL BOARD MEMBER

2024 – present Editorial Board member for International Journal of Bioprinting and BMC Methods

2022 – present Early Career Board Member for In vitro models, Frontiers in Medical Technology and Frontiers in Biomaterials Science (Frontiers).

SCIENTIFIC SOCIETIES

Membership

Template CV Soci Accademia di Ingegneria e Tecnologia

(2016 – present) Tissue Engineering and Regenerative Medicine International Society (TERMIS)
(2019 – present) International Society of Biofabrication (ISBF)
(2023 – present) European Society for Biomaterials (ESB)
(2015 – 2018) Tissue and Cell Engineering Society (TCES)

Contribution

(2023 – present) Early Career Researchers Committee – ISBF
(2023 – present) Communications Officer (Communications & Outreach Committee) TERMIS EU
(2020 – 2023) Communications Officer (Communications & Outreach Committee) TERMIS EU Student and Young Investigator section (SYIS)

ORGANISATION OF SCIENTIFIC CONFERENCES

2026 Tissue Engineering for Disease Modelling (TE4DM) conference, Rome, Italy
2024 Biomaterials novel technologies for healthcare (BIOMAH) organizing committee, Rome, Italy
2015-2016 Future Investigators in Regenerative Medicine (FIRM) organizing committee, Girona, Spain

ADDITIONAL INFORMATION

Other contributions to the research community

ACADEMIC SUPERVISION

2023 - present

As a project leader, I manage two (2) Research Fellows (Italy and Cuba) developing new fabrication approaches for skeletal substitutes in tissue regeneration and disease modelling Department of Mechanical and Aerospace Engineering, Sapienza University of Rome, Italy

2022 - present

As a team leader, I supervised four (4) PhD students at the Sapienza University of Rome, two (2) exchange students, six (6) MSc students Center for Life Nano- & Neuro- Science, Italian Institute of Technology, Italy

2019 - 2022

As a Postdoctoral Fellow I co-supervised two (2) PhD and five (5) MSc students at the Sapienza University of Rome, one (1) exchange student from Temple University (USA) Center for Life Nano- & Neuro- Science, Italian Institute of Technology, Italy

2018-2019

As a Postdoctoral Fellow I co-supervised two (2) Med students Faculty of Medicine, University of Southampton, UK

TEACHING ACTIVITIES

2024 - present Lecturer - Biomechanical properties of scaffolds Medicine High-Technology (MedHT), Sapienza University of Rome, Italy

2022 - present Lecturer - Engineering for Regenerative Medicine Biomedical Engineering, Sapienza University of Rome, Italy

2016 - 2018 Lead Demonstrator - 3D printing in Engineering and Medicine Southampton 3D Printing Workshop, University of Southampton, UK

ACADEMIC ACTIVITIES AND THIRD MISSION

09/2025 - COST Action member for SNOOPY (CA23111) and NetwOArk (CA21110)

01/2025 - Board member of the PhD in Life Science at Sapienza University of Rome

03/2026 – Keynote at UniStem Day at University of Teramo

10/2021-02/2022 - Show at Palazzo delle Esposizioni (The science of Rome)

07/2017 - Southampton Roadshow, Thomas Hardy School (Dorchester, UK); Winchester Science Festival (Winchester, UK)

2022, 2023, 2024, 2025 Maker Faire Rome - The European Edition

Bioprinting tissues one cell at a time: science communication event to engage with the general public