Cátia Filipa Rodrigues Monteiro

Ph.D. Biotechnology, Junior Researcher

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Cátia Monteiro holds a BSc (2016) and an MSc (2018) in Biotechnology from the University of Aveiro (UAveiro), recently receiving her PhD (2024, *summa cum laude*) in Biotechnology from the same institution, in collaboration with the University of Tübingen (Germany). In her PhD, she was deeply involved in solidifying a research line focused on human protein materials for biomedical purposes, validating their use to develop complex 3D bone tumor models. During her PhD, she was a visiting researcher at the Faculty of Pharmacy of University of Strasbourg (2020), and more recently, at the Faculty of Medicine of University of Tübingen (2023). She is currently a Junior Researcher at CICECO - Aveiro Institute of Materials, Chemistry Department, UAveiro, where she is developing her research in COMPASS Research Group, focusing on Organ-on-a-Chip systems and cell-sculpted platforms, being recently awarded with an Individual Scientific Contract by FCT.

Cátia's efforts in academic research have led to notable scientific outputs. So far, Cátia has published 11 peer-reviewed research papers, 7 as first author and 1 as first and corresponding author, published in high-ranking international journals (all Q1), such as the prestigious *Advanced Functional Materials*, *ACS Nano*, and *International Materials Reviews*. Cátia has submitted a provisional national patent application for the development of a human biomaterial, highlighting her commitment to translational research. She has contributed to 1 book chapter and participated in 10 national and 12 international conferences, 3 workshops/summer schools, and other outreach events (e.g. TechDays Aveiro, European Researchers' Night). At these scientific events, Cátia delivered 9 oral presentations (+7 by co-authors) and 15 poster presentations (+7 by co-authors), showcasing her dedication to promoting her groundbreaking achievements to scientific community and general public. She was also invited to give a workshop at the TheraTools Mid-Term Meeting (2024) and the SupraLife Workshop (2025). She was jury of 2 BSc thesis (2024, 2025) and has taught at Transferable Competencies I (2024-present) and Advanced and Biomimetic Materials (2024), at DQUA.

During her scientific path, she has been deeply involved in the preparation of several competitive proposals such as ERC/EIC grants, FCT projects, HOP-ON proposals, La Caixa Foundation, Le Cancéropôle, and other European proposals. In the framework of the ERC-PoC grants (MicroBone, Amniogel, HumanINK) and ERC-Adv grant (REBORN), the candidate has contributed to the projects' execution and is involved in the coordination and management of REBORN. Currently, she is supervising 2 MSc students, 2 PhD students, 1 MSc research fellow, and 1 Post-doc. She is tutoring other 5 PhD students and, during her PhD, she tutored 3 MSc and 2 PhD students.

Publications

- M.P. Santos, M. Carreira, B.P. Morais, F.G. Perfeito, M.B. Oliveira, C.F. Monteiro, S. Nadine, J.F. Mano. Single-Cell Liquid-Core Microcapsules for Biomedical Applications, *Adv. Healthc. Mater.*, **2025**, 14, 2403808. DOI: 10.1002/adhm.202403808
- C.F. Monteiro, I.A. Deus, C.A. Custódio, J.F. Mano. Biomaterials meet organ-on-a-chips – a perspective on tumor modeling, *Int. Mater. Rev.*, **2024**, 1. DOI: 10.1177/09506608241303436
- J.P.M. Sousa, I.A. Deus, C.F. Monteiro, C.A. Custódio, E. Stratakis, J.F. Mano, P.A.A.P. Marques. Comparative analysis of aligned and random amniotic membrane-derived cryogels for neural tissue repair, *Biomater. Sci.*, **2024**, 12, 4393. DOI: 10.1039/D4BM00364K
- J.P.M. Sousa, C.F. Monteiro, I.A. Deus, A. Completo, E. Stratakis, J.F. Mano, P.A.A.P. Marques. Magnetoresponsive anisotropic fiber-integrating hydrogels for neural tissue regeneration, *Small Struct.*, **2024**, 5, 2400213. DOI: 10.1002/sstr.202400213
- C.F. Monteiro, C.R. Almeida, C.A. Custódio, J.F. Mano. Modeling 3D tumor invasiveness to modulate macrophage phenotype in a human-based hydrogel platform, *Macromol. Biosci.*, **2024**, 24, 2400227. DOI: 10.1002/mabi.202400227
- J.P.M. Sousa, I.A. Deus, C.F. Monteiro, C.A. Custódio, J. Gil, L. Papadimitriou, A. Ranella, E. Stratakis, J.F. Mano, P.A.A.P. Marques. Amniotic membrane-derived multichannel hydrogels for neural tissue repair, *Adv. Healthc. Mater.*, **2024**, 13, 2400522. DOI: 10.1002/adhm.202400522
- C.F. Monteiro, M.C. Gomes, P. Bharmoria, M.G. Freire, J.A.P. Coutinho, C.A. Custódio, J.F. Mano. Human platelet lysates-derived nanofibrils as building blocks to produce free-standing membranes for cell self-aggregation, *ACS Nano*, **2024**, 18, 15815. DOI: 10.1021/acsnano.4c02790
- C.F. Monteiro, I.A. Deus, I.B. Silva, I.F. Duarte, C.A. Custódio, J.F. Mano. Tumor-on-a-chip model incorporating human-based hydrogels for easy assessment of metastatic tumor inter-heterogeneity, *Adv. Funct. Mater.,* **2024**, 34, 2315940. DOI: 10.1002/adfm.202315940.
- C. F. Monteiro, C. A. Custódio, J. F. Mano, Bioengineering a humanized 3D tri-culture osteosarcoma model to assess tumor invasiveness and therapy response, *Acta Biomaterialia*., **2021**, 134, 204. DOI: 10.1016/j.actbio.2021.07.034
- C. A. Custódio, S. C. Santos, C. F. Monteiro, I. A. Deus, M. C. Gomes, J. F. Mano, Chapter 26, Soft Matter for Biomedical Applications, *Royal Society of Chemistry*, **2021**. DOI: 10.1039/9781839161124-00660
- C. F. Monteiro, S. C. Santos, C. A. Custódio, J. F. Mano, Human Platelet Lysates-Based Hydrogels: A Novel Personalized 3D Platform for Spheroid Invasion Assessment, *Adv. Sci.*, **2020**, 7, 1902398. DOI: 10.1002/advs.201902398
- C. F. Monteiro, C. A. Custódio, J. F. Mano, Three-Dimensional Osteosarcoma Models for Advancing Drug Discovery and Development, *Adv. Therap.*, **2019**, 2, 1800108. DOI: 10.1002/adtp.201800108

- C. F. Monteiro, C. A. Custódio, J. F. Mano, Three-Dimensional Osteosarcoma Models for Advancing Drug Discovery and Development, *Adv. Therap.*, **2019**, 2, 1800108. DOI: 10.1002/adtp.201800108

190 citations (Google Scholar) **6** H-index (Google Scholar)

Oral communications

- J. Fuentes, C.F. Monteiro, A. Beloqui, C.A. Custódio, J.F. Mano. Ionic Liquid-Assisted Assembly of Platelet Lysate-Based Nanoparticles for Antibody Encapsulation, **SupraLife Final International Conference**, Aveiro, Portugal, September 29th - October 3rd, 2025.
- C.F. Monteiro, M.P. Santos, M.C. Gomes, P. Bharmoria, M.G. Freire, J.A.P. Coutinho, C.A. Custódio, J.F. Mano. Human protein-based nanofibrils assemble into ultrathin membranes to generate cell-sculpted 3D bone microtissue, **34th Annual Conference of the European Society for Biomaterials (ESB)**, Turin, Italy, September 7th – 11th, 2025.
- J. Fuentes, C.F. Monteiro, A. Beloqui, C.A. Custódio, J.F. Mano. Ionic Liquid-Assisted Assembly of Platelet Lysate-Based Nanoparticles for Antibody Encapsulation, **NanoBio - 3rd International Conference on Nanotechnologies & Bionanoscience**, Crete, Greece, September 8th-12th, 2025.
- M.P. Santos, C.F. Monteiro, J.F. Mano. Human protein-based ultrathin membranes toward the development of self-assembled cell aggregates for bone tissue regeneration, **TERMIS European Chapter Meeting 2025**, Freiburg, Germany, March 19th-23rd, 2025.
- J. Fuentes, C.F. Monteiro, A. Beloqui, C.A. Custódio, J.F. Mano. Human Platelet Lysate-Derived Nanoparticles: A Novel Drug Delivery Platform, **TERMIS European Chapter Meeting 2025**, Freiburg, Germany, March 19th-23rd, 2025.
- C.F. Monteiro, M.C. Gomes, P. Bharmoria, M.G. Freire, J.A.P. Coutinho, C.A. Custódio, J.F. Mano. Free-standing membranes made of human platelet lysates-derived fibrils enable cell self-aggregation, **Supralife Third School "Supramolecular Multifunctional Biomaterials"**, Aveiro, Portugal, March 9th-14th, 2025.
- C.F. Monteiro, I.A. Deus, I.B. Silva, P. Menezes, I.F. Duarte, C.A. Custódio, J.F. Mano. Advancing tumor modeling and drug screening with a dynamic system integrating a 3D human-based hydrogel to support spheroid invasion, **33rd Annual Conference of the European Society for Biomaterials (ESB)**, Davos, Switzerland, September 4th – 8th, 2023.
- J.P.M. Sousa, I.A. Deus, C.F. Monteiro, C.A. Custódio, E. Stratakis, J.F. Mano, P.A.A.P. Marques. An anisotropic magneto-responsive fibre-based hydrogel for spinal cord guided regeneration, **TEchMA2023 – 6th International Conference on Technologies for the Wellbeing and Sustainable Manufacturing Solutions**, Aveiro, Portugal, May 25th-26th, 2023.
- J.P.M. Sousa, A. Oliveira, C.F. Monteiro, A. Completo, E. Stratakis, J.F. Mano, P.A.A.P. Marques. Magneto-responsive fibre-based anisotropic hydrogel for spinal cord regeneration, **TERMIS European Chapter Meeting 2023**, Manchester, United Kingdom, March 28th-31st, 2023.
- C.F. Monteiro, C.A. Custódio, J.F. Mano. Bioengineering humanized 3D osteosarcoma models for therapy development – moving from static to dynamic modelling, **Research Summit – University of Aveiro**, Aveiro, Portugal, July 13th-15th, 2022.

- C.F. Monteiro, C.A. Custódio, J.F. Mano. An engineered human osteosarcoma-on-a-chip for tumor invasion modelling in a dynamic system, **6th Tissue Engineering and Regenerative Medicine International Society (TERMIS) World Congress**, Maastricht, The Netherlands, November 15th-19th, 2021.
- C.A. Custódio, C.F. Monteiro, I.A. Deus, S.C. Santos, J.F. Mano, Human protein based platforms for 3D cell culture – a new era for personalized engineering tissues, **6th Tissue Engineering and Regenerative Medicine International Society (TERMIS) World Congress**, Maastricht, The Netherlands, November 15th-19th, 2021.
- C.F. Monteiro, C.A. Custódio, J.F. Mano. Bioengineering humanized 3D co-culture osteosarcoma models for therapy development moving from static to dynamic modelling, **Jornadas do CICECO**, Aveiro, Portugal, October 6th-7th, 2021.
- C.A. Custódio, C.F. Monteiro, I.A. Deus, S.C. Santos, J.F. Mano, Accelerating drug development with human protein based platforms for in vitro 3D cell culture and disease modelling, **31st Annual Conference of the European Society for Biomaterials (ESB)**, Porto, Portugal, September 5th-9th, 2021.
- C.F. Monteiro, C.A. Custódio, J.F. Mano. Bioengineering humanized 3D co-culture osteosarcoma models in static and dynamic microenvironment for therapy development, **Research Summit – University of Aveiro**, Aveiro, Portugal, July 7th-9th, 2021.
- C.F. Monteiro, S.C. Santos, C.A. Custódio, J.F. Mano. Human platelet lysates-based hydrogels as 3D platforms for tissue engineering and disease modelling applications, **2nd Aveiro-Osaka Universities joint symposium**, Aveiro, Portugal, March 17th, 2021.
- C.F. Monteiro, C.A. Custódio, J.F. Mano. A 3D human-based hydrogel to support spheroid invasion for disease modelling and drug screening applications, **11th World Biomaterials Congress (WBC)**, Glasgow, Scotland, May 19th-24th, 2020.
- C.F. Monteiro, C.A. Custódio, J.F. Mano, Human platelet lysate-based hydrogels – a humanized 3D platform for disease modelling guided by tissue engineering, **TERMIS EU Chapter**, Rhodes, Greece, May 27th-31st, 2019.
- C.A. Custódio, S.C. Santos, C.F. Monteiro, J.F. Mano, Designing humanized hydrogels toward tissue engineering and disease modeling, **13th International Chemical and Biological Engineering Conference (CHEMPOR 2018)**, Aveiro, Portugal, October 2nd-4th, 2018.
- F.A. e Silva, T.E. Sintra, S.N. Rocha, C.F. Monteiro, S.P.M. Ventura, J.A.P. Coutinho, Separation of mandelic acid enantiomers using chiral ionic liquids-based aqueous biphasic systems, **3rd International Conference on Ionic Liquids in Separation and Purification Technology**, Malaysia, January 8th-11th, 2017.

Poster presentations

- M.P. Santos, C.F. Monteiro, J.F. Mano. Human protein-based ultrathin membranes toward the development of self-assembled cell aggregates for bone tissue regeneration, **Jornadas do CICECO**, Aveiro, Portugal, October 9th, 2025.
- R.S. Ferreira, E.A.G. Martins, C.A. Custódio, C.F. Monteiro, J.F. Mano. Bioengineering a humanized bone-on-a-chip model with 3D porous scaffolds, **Jornadas do CICECO**, Aveiro, Portugal, October 9th, 2025.

- M.P. Santos, C.F. Monteiro, J.F. Mano. Human protein-based ultrathin membranes toward the development of self-assembled cell aggregates for bone tissue regeneration, **Supralife Final International Conference**, Aveiro, Portugal, September 29th - October 3rd, 2025.
- R.S. Ferreira, E.A.G. Martins, C.A. Custódio, C.F. Monteiro, J.F. Mano. Bioengineering a humanized bone-on-a-chip model with 3D porous scaffolds, **Supralife Final International Conference**, Aveiro, Portugal, September 29th - October 3rd, 2025.
- E.A.G. Martins, C.F. Monteiro, L.P.G. Monteiro, C.A. Custódio, J.F. Mano. Guiding Cells Through Directional Freeze Casting of Human Placental Chorionic Membrane, **34th Annual Conference of the European Society for Biomaterials (ESB)**, Turin, Italy, September 7th – 11th, 2025.
- C.F. Monteiro, M.C. Gomes, P. Bharmoria, M.G. Freire, J.A.P. Coutinho, C.A. Custódio, J.F. Mano. Human protein-based nanofibrils assemble into ultrathin membranes to generate cell-sculpted 3D bone microtissue, **CICECO&I3N - Materials Processing and Nanofabrication WORKSHOP**, Aveiro, Portugal, June 12th, 2025.
- M.P. Santos, C. F. Monteiro, J.F. Mano. Human protein-based ultrathin membranes toward the development of self-assembled cell aggregates for bone tissue regeneration, **Supralife Third School "Supramolecular Multifunctional Biomaterials"**, Aveiro, Portugal, March 9th-14th, 2025.
- C.F. Monteiro, M.C. Gomes, P. Bharmoria, M.G. Freire, J.A.P. Coutinho, C.A. Custódio, J.F. Mano. Human platelet lysates-derived fibrils as building blocks to produce free-standing membranes for cell self-aggregation, **Jornadas do CICECO**, Aveiro, Portugal, October 10th, 2024.
- C.F. Monteiro, I.A. Deus, I.B. Silva, I.F. Duarte, C.A. Custódio, J.F. Mano. Advancing tumor-on-a-chip by integrating a 3D human-based hydrogel to study invasive and metastatic tumor inter-heterogeneity, **European Organ-on-Chip Society (EUROoCs) 2024 Conference**, Milan, Italy, July 3rd-5th, 2024.
- C.F. Monteiro, M.C. Gomes, P. Bharmoria, M.G. Freire, J.A.P. Coutinho, C.A. Custódio, J.F. Mano. Human platelet lysates-derived fibrils as building blocks to produce free-standing membranes for cell self-aggregation, **SupraLife Second School "Bioinspired Supramolecular Self-Assemblies"**, Aveiro, Portugal, March 10th-15th, 2024.
- C.F. Monteiro, I.A. Deus, I.B. Silva, P. Menezes, I.F. Duarte, C.A. Custódio, J.F. Mano. A tumor-on-a-chip incorporating human-based hydrogels for easy assessment of tumor invasion and metastasis, **Jornadas do CICECO**, Aveiro, Portugal, October 12th, 2023.
- J.P.M. Sousa, I.A. Deus, C.F. Monteiro, C.A. Custódio, E. Stratakis, J.F. Mano, P.A.A.P. Marques. An anisotropic magneto-responsive fibre-based hydrogel for spinal cord guided regeneration, **33rd Annual Conference of the European Society for Biomaterials (ESB)**, Davos, Switzerland, September 4th-8th, 2023.
- C.F. Monteiro, I.A. Deus, I.B. Silva, P. Menezes, I.F. Duarte, C.A. Custódio, J.F. Mano. A tumor-on-a-chip incorporating human-based hydrogels for easy assessment of tumor invasion and metastasis, **2nd Microphysiological Systems (MPS) World Summit**, Berlin, Germany, June 26th-30th, 2023
- C.F. Monteiro, C.A. Custódio, J.F. Mano. Bioengineering humanized 3D osteosarcoma models for therapy development – moving from static to dynamic modelling, **Jornadas do CICECO**, Aveiro, Portugal, October 12th, 2022.

- C.F. Monteiro, C.A. Custódio, J.F. Mano. A human-based 3D platform to support osteosarcoma spheroid invasion in a tri-culture environment for disease modelling and drug screening applications, **6th Tissue Engineering and Regenerative Medicine International Society (TERMIS) World Congress,** Maastricht, The Netherlands, November 15th-19th, 2021.
- C.F. Monteiro, C.A. Custódio, J.F. Mano. Human platelet lysates-based hydrogels to assess osteosarcoma spheroid invasiveness in a tri-culture model for drug screening applications, **31st Annual Conference of the European Society for Biomaterials (ESB)**, Porto, Portugal, September 5th-9th, 2021.
- C.F. Monteiro, C.A. Custódio, J.F. Mano. Bioengineering humanized 3D co-culture osteosarcoma models in static and dynamic microenvironment for therapy development, **Jornadas do CICECO**, Aveiro, Portugal, November 19th-20th, 2020.
- C.F. Monteiro, C.A. Custódio, J.F. Mano. A platelet lysates-based 3D platform for humanized cancer invasion modelling for preclinical research, **EACR-AACR Basic and Translational Research Conference: Tumor Microenvironment**, Lisboa, Portugal, March 2nd-4th, 2020.
- C.F. Monteiro, C.A. Custódio, J.F. Mano. Human platelet lysates based hydrogels – a novel personalized 3D platform for spheroid invasion assessment, **Jornadas do CICECO**, Aveiro, Portugal, June 11th-12th, 2019.
- C.F. Monteiro, C.A. Custódio, J.F. Mano. Human platelet lysates based hydrogels – a novel personalized 3D platform for spheroid invasion assessment, **3rd EACR Conference - Goodbye Flat Biology: In Vivo Inspired Cancer Biology and Therapy**, Berlin, Germany, September 9th-12th, 2018.
- C. A. Custódio, C. F. Monteiro, J. F. Mano. Humanized In-Vitro 3D Models Of Human Osteosarcoma For Drug Screening And Validation, **3rd EACR Conference - Goodbye Flat Biology: In Vivo Inspired Cancer Biology and Therapy**, Berlin, Germany, September 9th-12th, 2018.
- C.F. Monteiro, C.A. Custódio, J.F. Mano. Platelet lysates-based hydrogels for the development of in vitro disease models for osteosarcoma, **Jornadas do CICECO**, Aveiro, Portugal, June 11th-12th, 2018.
- C.F. Monteiro, C.A. Custódio, J.F. Mano. Platelet lysates-based hydrogels for the development of in vitro disease models for osteosarcoma, **X Biochemistry Day**, Aveiro, Portugal, April 18th, 2018.

Awards & Recognitions

Julia Polak European Doctorate Award 2025 - Best PhD thesis

Prestigious EDA Julia Polak Award, granted by the European Society for Biomaterials (ESB), in recognition of young researchers whose contributions have proven particularly relevant in the field of biomaterials.

Supralife Third Summer School 2024 - Best Oral Presentation (1st prize)

C.F. Monteiro, M.C. Gomes, P. Bharmoria, M.G. Freire, J.A.P. Coutinho, C.A. Custódio, J.F. Mano. Free-standing membranes made of human platelet lysates-derived fibrils enable cell self-aggregation.

EUROoCS / MPS World Summit 2023 - Travel Award

Travel award to support Cátia's participation in the joint event of the European Organ-on-a-Chip Society Annual Meeting and the Microphysiological Systems World Summit.

Research Summit 2022 - Best Pitch Award (1st prize)

C.F. Monteiro, C.A. Custódio, J.F. Mano. Bioengineering humanized 3D osteosarcoma models for therapy development – moving from static to dynamic modelling.

TERMIS World Congress 2021 - Best Oral Presentation SYIS Awards (3rd prize)

C.F. Monteiro, C.A. Custódio, J.F. Mano. An engineered human osteosarcoma-on-a-chip for tumor invasion modelling in a dynamic system.

Jornadas do CICECO 2021 - Best Oral Presentation (3rd prize)

C.F. Monteiro, C.A. Custódio, J.F. Mano. Bioengineering humanized 3D co-culture osteosarcoma models for therapy development – moving from static to dynamic modelling.

Innovation Award Bluepharma | University of Coimbra 2019 (1st prize)

J.F. Mano, C.A. Custódio, S.C. Santos, C.F. Monteiro, I.A. Deus. Human Protein-based platforms for 3D cell culture and development of microtissues for drug screening.

X Biochemistry Day 2018 - Best Poster (1st prize)

C.F. Monteiro, C.A. Custódio, J.F. Mano. Platelet lysates-based hydrogels for the development of in vitro disease models for osteosarcoma.