

ANA LUÍSA CASTRO

PostDoctoral Researcher



GENERAL INFORMATION

Date of birth: 11 Nov 1995

Affiliation: i3s, University of Porto, Portugal

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EXPERIENCE

PostDoctoral Fellowship (PhD)

i3s – Institute for Research and Innovation in Health, University of Porto

Oct 2024 – present

Research Fellowship (MSc)

i3s – Institute for Research and Innovation in Health, University of Porto

Mar 2024 – Sep 2024

PhD Student

i3s – Institute for Research and Innovation in Health, University of Porto

Jan 2020 – Sep 2024

Visiting PhD Student

DWI Leibniz Institute for Interactive Materials, Aachen, Germany

Aug 2020 – Dec 2021

Research Fellowship (MSc)

i3s – Institute for Research and Innovation in Health, University of Porto

Oct 2018 – Dec 2019

Master Thesis Internship

i3s – Institute for Research and Innovation in Health, University of Porto

Oct 2017 – Jul 2018

Erasmus + Internship (MSc)

MERLIN Institute, University of Maastricht, The Netherlands

Feb – Jul 2017

EDUCATION

International Doctoral Programme in Molecular and Cellular Biotechnology Applied to Health

Sciences Instituto de Ciências Biomédicas Abel Salazar and Faculdade de Farmácia, University of Porto Jan 2020 – Sep 2024

Integrated Master in Bioengineering Specialization: Molecular Biotechnology

Faculdade de Engenharia and Instituto de Ciências Biomédicas Abel Salazar, University of Porto Sep 2013 – Jul 2018

GRANTS

Exploratory Research Project Jan 2026– Jun 2027 (provisional)

Awarded in Aug 2025 to AL Castro by Fundação para a Ciência e Tecnologia (FCT)

Histochemical Society's Graduate Medical Trainee and Graduate Student Cornerstone Grant Sep 2023– Dec 2024

Awarded in Aug 2023 to AL Castro by The Histochemical Society

Programme for Cooperation in Science between Portugal and Germany Mar 2022 – Mar 2025

Awarded in Mar 2022 to RM Gonçalves and AL Castro by the Fundação para a Ciência e Tecnologia (FCT) and Deutscher Akademischer Austauschdienst

PhD Fellowship Jan 2020 – Feb 2024

Awarded in Aug 2019 AL Castro by the Fundação para a Ciência e Tecnologia (FCT)

PUBLICATIONS

Impact of transient versus continuous IL–1 β -driven inflammatory 3D models on annulus fibrosus cells

AL Castro, E Vliet, P Pereira, MA Barbosa, RM Gonçalves, Acta Biomaterialia, doi: 10.1016/j.actbio.2025.06.041.

Decoding Intervertebral Disc Cell Populations: Challenges in Isolation and Phenotype Definition

JR Ferreira, ML Moura*, S Pilão*, **AL Castro***, M Fiordalisi*, C Leite-Pereira*, J Caldeira, RM Gonçalves, (*, these authors contributed equally to this work), Tissue Engineering Part B: Reviews, doi: 10.1089/ten.teb.2024.0350.

Enhanced collagen deposition in chondrogenic inflammation with Ibuprofen-specifically loaded chitosan/poly-gamma-glutamic acid nanoparticles

B Ribeiro, **AL Castro**, S Pilão, C Ribeiro, MA Barbosa, SG Santos, RM Gonçalves, International Journal of Pharmaceutics. doi:10.1016/j.ijpharm.2025.125591

Trends and considerations in annulus fibrosus in vitro model design

AL Castro, RM Gonçalves, Acta Biomaterialia, doi:10.1016/j.actbio.2025.01.060

Engineering Anisotropic Cell Models: Development of Collagen Hydrogel Scaffolds with Magneto-responsive PEG microgels for Tissue Engineering Applications

AL Castro, S Vedaraman, T Haraszti, MA Barbosa, RM Gonçalves, L De Laporte, Advanced Materials Technologies. doi:10.1002/admt.202301391

Fibrotic alterations in human annulus fibrosus correlate with progression of intervertebral disc herniation

AL Castro, C Ribeiro-Machado, C Oliveira, GQ Teixeira, C Neidlinger-Wilke, P Pereira, R Vaz, MA Barbosa, RM Gonçalves, Arthritis Research & Therapy. doi:10.1186/s13075-021-02690-w

SCIENTIFIC CONTRIBUTIONS

ORAL PRESENTATIONS

In vitro modelling of Annulus Fibrosus using ECM-derived approaches

AL Castro, M Macedo, RM Gonçalves; Sep 2025, ECLS 25 Symposia Biomaterials Engineering, Porto, Portugal

Understanding Temporal and Spatial Dynamics of Inflammation in the Annulus Fibrosus Through 3D In Vitro and Ex Vivo Models

AL Castro, S Pilão, R Monteiro, P Pereira, MA Barbosa, RM Gonçalves; May 2025, Tissue Engineering and Regenerative Medicine International Society Congress (TERMIS2025); Freiburg, Germany

Investigation of intervertebral disc herniation through a human Annulus Fibrosus pro-inflammatory model

AL Castro, MA Barbosa, RM Gonçalves; Sep 2023, 31st Annual Meeting of the European Orthopaedic Research Society (EORS 2023); Porto, Portugal

Decellularized nucleus pulposus-based hydrogel: from decellularization scale-up to biocompatibility evaluation

I Sousa, M Fiordalisi, AL Castro*, MA Barbosa, RM Gonçalves, J Caldeira; Sep 2023, 33rd Annual Conference of the European Society for Biomaterials (ESB 2023); Davos, Switzerland **presenting author*

Deepening the knowledge on Annulus Fibrosus Extracellular Matrix: dissecting fibrosis in intervertebral disc herniation

AL Castro, C Ribeiro-Machado, C Oliveira, GQ Teixeira, C Neidlinger-Wilke, P Pereira, R Vaz, MA Barbosa, RM Gonçalves; Jun 2022, Interrogations at the Biointerface - 8th Advanced Summer School; Porto, Portugal

Chitosan/poly-gamma-glutamic acid nanoparticles for delivery of non-steroidal anti-inflammatory drugs in articular cartilage

BC Ribeiro, K Chattahy, J Oliveira, AL Castro, MA Barbosa, SG Santos, RM Gonçalves; Jun 2022, Interrogations at the Biointerface - 8th Advanced Summer School; Porto, Portugal

Dissecting fibrosis in human annulus fibrosus after intervertebral disc herniation

AL Castro, C Ribeiro-Machado, C Oliveira, GQ Teixeira, C Neidlinger-Wilke, P Pereira, R Vaz, MA Barbosa, RM Gonçalves; Nov 2021, 6th World Congress 2021 Tissue Engineering and Regenerative Medicine International Society (TERMIS2021); Virtual

Exploring human placenta-derived hydrogels as a microenvironment for 3D cell culture

AL Castro, A Sousa, S Neves, CC Barrias; Mar 2019, VII AEICBAS Biomedical Congress; Porto, Portugal

AL Castro, A Sousa, S Neves, CC Barrias; Feb 2019, Encontro de Investigação Jovem da Universidade do Porto; Porto, Portugal

POSTER PRESENTATIONS

Bioengineering an inflammatory model of AF failure in 3D collagen type I hydrogels

AL Castro, MA Barbosa, RM Gonçalves, Sep 2023, 33rd Annual Conference of the European Society for Biomaterials (ESB 2023); Davos, Switzerland

Pro-Chondrogenic anti-inflammatory biomaterial-based therapy for Articular Cartilage: Ibuprofen vs Diclofenac loaded Chitosan/Poly-gamma-glutamic Acid Nanoparticles

BC Ribeiro, AL Castro*, C Couto, S Pilão, C Ribeiro, MA Barbosa, SG Santos, RM Gonçalves, Sep 2023, 33rd Annual Conference of the European Society for Biomaterials (ESB 2023); Davos, Switzerland; **presenting author*

Insight into the repercussions of magnetically oriented PEG microgels regarding structure, fiber properties and cell behavior in collagen hydrogels

AL Castro, S Vedaraman, MA Barbosa, RM Gonçalves, L De Laporte, Sep 2022, 32nd Annual Conference of the European Society for Biomaterials (ESB 2022); Bordeaux, France

Towards fiber orientation in collagen hydrogels for annulus fibrosus tissue engineering

AL Castro, S Vedaraman, DF Duarte Campos, MA Barbosa, RM Gonçalves, L De Laporte, Sep 2021, 31st Annual Conference of the European Society for Biomaterials (ESB 2021); Virtual

Bioengineering of a fibrotic 3D study model of annulus fibrosus

AL Castro, C Ribeiro-Machado, C Oliveira, GQ Teixeira, C Neidlinger-Wilke, P Pereira, R Vaz, MA Barbosa, RM Gonçalves, May 2021, JRC Summer School on Non-Animal Approaches in Science The Three R...evolution; Virtual

Towards an Annulus Fibrosus 3D in vitro model: an extracellular matrix fibrotic characterization of human intervertebral disc herniation

AL Castro, C Ribeiro-Machado, C Oliveira, GQ Teixeira, C Neidlinger-Wilke, P Pereira, R Vaz, MA Barbosa, RM Gonçalves; Dec 2020, 11th World Biomaterials Congress (WBC 2020); Virtual

Extracellular matrix characterization of human intervertebral disc degeneration/herniation: a biochemical and biomechanical evaluation

AL Castro, P Pereira, R Vaz, MA Barbosa, RM Gonçalves; Sep 2019, 30th Annual Conference of the European Society for Biomaterials (ESB 2019); Dresden, Germany

AL Castro, P Pereira, R Vaz, MA Barbosa, RM Gonçalves; Jun 2019, Interrogations at the Biointerface - 7th Advanced Summer School; Porto, Portugal

AWARDS

ON Education Grants for the EORS 2023

Awarded in Aug 2023 to AL Castro by ON Foundation

Best Oral Presentation SYIS Awards

Awarded in Nov 2021 to AL Castro by TERMIS Student and Young Investigator Section