

# HUGO MIGUEL DE SOUSA ABREU



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## SUMMARY

- ✓ Early Stage Researcher (ESR) in MSCA ITN PREMUIROSA Project (nº 860462);
- ✓ PhD student (Food, Health and Longevity PhD program) in the Immunomics lab, at UPO-CAAD;
- ✓ Master's degree in Molecular, Comparative and Technological Genetics at the University of Trás-os-Montes and Alto Douro.

## LABORATORY SKILLS:

- Cell isolation from tissue and fluids and characterization;
- Cell culture (stem cells, musculoskeletal system cells, cancer cells);
- Extracellular vesicles (EVs) isolation and characterization;
- Bulk biomaterial preparation (bioactive glasses and Titanium alloys);
- Multiparametric flow cytometry on FACSCanto II, BD Accuri and FACSymphony A5;
- FACSDIVA and FlowJo softwares;
- 3D Bioprinting;
- Fluorescent microscopy;
- PCR and RT-qPCR;
- Western blot;
- ELISA assay;

## PROFESSIONAL EXPERIENCE

**September 2023 – October 2023: Fellowship:** Immunomics laboratory, department of Health Sciences, *University of Piemonte Orientale*.

Original title: “**Valutazione della memoria immunitaria citotossica contro il SARS-Cov-2 mediante l’utilizzo della tecnologia dei dextrameri in pazienti con long-COVID**”.

English title: “**Evaluation of the cytotoxic immunity memory against SARS-CoV-2 through the dextramer technology in Long-COVID patients**”.

Main activities:

- Evaluation of T-cell memory response through flow cytometry using dextramers.

**September 2020 – August 2023: PhD internship:** Immunomics laboratory, department of Health Sciences, *University of Piemonte Orientale*.

Early Stage Researcher (ESR) in MSCA ITN PREMURSA Project (n° 860462), under the supervision of Prof. Annalisa Chiocchetti.

Main activities:

- Biomaterial preparation and characterization;
- Mesenchymal Stem/Stromal Cells' isolation and characterization;
- Extracellular Vesicles' isolation and characterization;
- Evaluation of the interaction of immune and stem cells with biomaterials;
- Biological assays regarding the effect of EVs on MSCs' biological processes;

**October 2018 – February 2020: Master studies internship:** Microenvironments for New Therapies laboratory, *Instituto de Investigação e Inovação em Saúde*, Porto, Portugal.

Topic: non-coding RNAs as molecular biomarkers and therapeutic targets of Multiple Myeloma.

Main activities:

- microRNA isolation from plasma and biomarker research;
- Mesenchymal Stem/Stromal Cells' isolation and characterization;
- Extracellular Vesicles' isolation and characterization;
- Biological assays regarding the effect of EVs on MSCs' biological processes;

**September 2016 – June 2017: Bachelor studies internship:** Cytogenomics and Animal Genomics lab, *University of Trás-os-Montes and Alto Douro, Vila Real, Portugal*.

Topic: Karyotype analysis of *Sus scrofa* individuals.

Main activities:

- Classic and molecular cytogenetics;
- Molecular genetics;
- Fluorescence microscopy.

## EDUCATION

**From November 2020 until the present day: enrolled in Food, Health and Longevity PhD Program**

Location: Center on Autoimmune and Allergic Diseases, University of Piemonte Orientale, Novara.

Thesis: **“Extracellular microvesicles and exosomes (EVs) as biomarkers/mediators of stem cells differentiation, wound healing and tissue regeneration around materials”** (From November 2020 to the present day in the Immunomics lab, UPO-CAAD, Novara, Italy).

The main goals are to evaluate the immune response to optimize biomaterials for musculoskeletal regeneration and to explore the combined therapeutic potential of biomaterials and MSC-derived EVs to enhance wound healing and tissue regeneration in the context of musculoskeletal diseases.

**February 2020: Master’s degree in Molecular, Comparative and Technological Genetics**

Score: **18/20**

Location: University of Trás-os-Montes And Alto Douro - Vila Real, Portugal.

Thesis: **“Bone disease in Multiple Myeloma: non-coding RNAs as molecular biomarkers and therapeutic targets.”** (From October 2018 to February 2020 in the Microenvironments for New Therapies group, i3s, Porto, Portugal).

The main goals were to investigate biologically relevant miRNAs as potential biomarkers of bone disease in Multiple Myeloma (MM) and to address the impact of malignant plasmablast-derived EVs on Mesenchymal Stem/Stromal Cells biological mechanisms.

**June 2017: bachelor’s degree in Genetics and Biotechnology**

Score: **15/20**

Location: University of Trás-os-Montes And Alto Douro - Vila Real, Portugal.

Thesis: “Karyotype analysis of *Sus scrofa* individuals used for breeding by classic and molecular cytogenetics” (From September 2013 to June 2014 in the Cytogenomics and Animal Genomics laboratory, UTAD, Vila Real, Portugal).

The main goal was to evaluate the karyotype of male pig individuals used for breeding, to detect possible chromosomal rearrangements that could impair their fertility.

## COURSES AND SEMINARS

- **September 2022.** “FACSCanto II practical course” – Daniele Manganaro, BD Biosciences (Novara);
- **September 2022.** “Bioprinting Workshop” – RegenHU (Novara);
- **July 2022.** “Flow Jo course” – Dr. Serena Di Cecilia (Novara);
- **July 2022.** PREMUROSA Hands-on Workshop on Biofabrication – AO Research Institute (Davos, Switzerland);
- **July 2022.** “Scientific English writing” course (ABESCHOOL, Novara);
- **June 2022.** “Basic Statistics course” – Prof. Daniela Ferrante (Novara);
- **June 2022.** “The new frontiers of Molecular Cytometry” – BD Biosciences congress (Novara);
- **April 2021.** “Science communication course” – Prof. Saša Novak (online);

## PARTICIPATION IN NATIONAL/INTERNATIONAL CONGRESSES

### ABSTRACTS IN CONGRESSES

- Immunobiocompatibility of metal-doped bioactive glasses for musculoskeletal regeneration. **Abreu H.**, Lalluka M., Miola M., Vernè E., Cappellano G., Chiochetti A. XII IRCAD Day 2022, Novara, Italy (December 2<sup>nd</sup> 2022) (poster presentation).
- Anomaly detection of EV-related protein expression in doped bioactive glasses. Nascimben M., **Abreu H.**, Cappellano G., Manfredi M., Chiochetti A., Rimondini L. 3<sup>rd</sup> International Proteomics and Metabionics Conference, Novara, Italy (2<sup>nd</sup>-3<sup>rd</sup> October 2023) (poster presentation).

## INVOLVEMENT IN NATIONAL AND INTERNATIONAL PROJECTS

**2020.** Early Stage Researcher on “PREMUROSA: **Precision medicine for musculoskeletal regeneration, prosthetics, and active ageing**” funded by the HORIZON 2020 program. Project coordinator: Prof. Lia Rimondini. Task: Investigate the role of extracellular vesicles (EVs) as biomarkers/mediators of stem cells differentiation, wound healing and tissue regeneration around materials.

## AWARDS

- **June 2021.** 2<sup>nd</sup> place in **UPO Science Slam**. Presentation title: “**Welcome to the Hotel Broken Bones**”

## SCIENTIFIC PUBLICATIONS

Co-author of 2 original scientific articles, 2 reviews in indexed journals

(<https://orcid.org/0000-0003-4720-6519>)

**Total IF;** h-index 4 (SCOPUS), 42 citations (SCOPUS), updated as of 10<sup>th</sup> October 2023.

Scientific articles: 2 (\*first co-author in 1 paper)

1. Moura, S. R.\*, **Abreu, H.\***, Cunha, C., Ribeiro-Machado, C., Oliveira, C., Barbosa, M. A., ... & Almeida, M. I. (2021). Circulating microRNAs Correlate with Multiple Myeloma and Skeletal Osteolytic Lesions. *Cancers*, 13(21), 5258. **IF:6.575; Q1 in oncology**
2. Cappellano, G., **Abreu, H.**, Raineri, D., Scotti, L., Castello, L., Vaschetto, R., & Chiocchetti, A. (2021). High levels of circulating osteopontin in inflammatory lung disease regardless of Sars-CoV-2 infection. *EMBO molecular medicine*, 13(5), e14124. **IF 14,26; Q1**

REVIEW: 2 (first author in 1 review)

1. **Abreu, H.**, Canciani, E., Raineri, D., Cappellano, G., Rimondini, L., & Chiocchetti, A. (2022). Extracellular Vesicles in Musculoskeletal Regeneration: Modulating the Therapy of the Future. *Cells*, 11(1), 43. **IF 7,666; Q2**
2. Cappellano, G., **Abreu, H.**, Casale, C., Dianzani, U., & Chiocchetti, A. (2021). Nano-microparticle platforms in developing next-generation vaccines. *Vaccines*, 9(6), 606. **IF:7.76; Q1**

## **LANGUAGE KNOWLEDGE**

- English (C1 level)

## **INFORMATIC SKILLS**

- Office suite (Excel, Word, PowerPoint);
- Windows and OS X operative systems;
- FACSDIVA and FlowJo;
- PRISM (GraphPad);
- FIJI;
- Leica LAS X.

I authorize the processing of my personal data pursuant to Legislative Decree 196/2003

Novara, 26/09/2023

A handwritten signature in black ink, appearing to read 'Hugo Ram'.