

Joan Muñoz Biosca



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ABOUT ME

I am a highly resilient and responsible person, who takes responsibility for tasks and completes them with proper organisation. With a proven track record of adapting to and overcoming tough challenges, I am able to handle complex problems with ease. My excellent capacity for comprehension and communication enables me to foster a collaborative teamwork atmosphere, consistently combined with constant improvement in my work methods. Drawing on my strong computational background and scientific knowledge of physics and biosciences, I am skilled at efficiently collecting and analysing research data.

EDUCATION

2021 – 2022	Master in Nanoscience and Nanotechnology <i>University of Barcelona (UB), Spain</i>
2017 – 2021	Bachelor's degree in Physics <i>University of Barcelona (UB), Spain</i>
2013 – 2017	Bachelor's degree in Mathematics <i>Polytechnic University of Catalonia (UPC), Spain</i>
2011 – 2013	Scientific A levels FINISHED WITH HONORS <i>High-performance sports centre of Amposta, Spain</i>

WORK EXPERIENCE

KU Leuven

PhD in Bio-science Engineering

This project is split up into two differentiated parts and another one focused on education tasks:

Computational research:

Developing and implementing a novel computational model that couples a continuum description of the cell's extracellular matrix and the cell deformation during tissue differentiation. This fluid-structure interaction is carried out with Mpacts (Python based) for the cell and OpenFOAM (C++ based) for the fluid phase. On the other hand, I was responsible for generating media results for the research group in Paraview.

Experimental research:

Designing and performing In vitro experiments to calculate visco-elastic properties of bone tissue samples. Leveraging the expertise I acquired with some microscopy techniques, such as Atomic Force Microscope, I extracted valuable information from experiments which will be used to tune up biomedical applications for bone regeneration.

Mentoring activities:

Responsible for Mentoring MSc students in their Master's thesis and supervising and guiding bachelor students for the course "Project Work Biosystems Engineering" (Bioscience Engineering Faculty)

Rheo Diagnostic S.L *Research Assistant*

In addition to maintaining the previous responsibilities, I was also

tasked with presenting the significant advances at various conferences (see Conferences section). This project was fully developed in Python language and was part of my master thesis, which was awarded a 99% grade and will be applied in a novel lab-on-a-chip platform. Additionally, I am currently formalising my work to be submitted as a journal article.

FROM FEB 2021 TO AUGUST 2021

Rheo Diagnostic S.L *Research Internship*

The work that I conducted in Rheo Diagnostics (RheoDx), which is a company aimed at improving the quality of life of haematology patients, was entirely computational (Python) and consisted of studying how to couple a phase-field model with an incompressible fluid to study red blood cell rheological behaviour. Once the theory was implemented, one important task was also generate the media to present relevant 3D results. This project was part of my bachelor thesis, which was awarded a 96%.

SKILLS

BEGINNER	COMSOL Multiphysics, CSS, JavaScript, Traction Force Microscopy, Inkscape
INTERMEDIATE	HTML, Matlab, Matplotlib, C++, Linux, OpenFOAM, Atomic Force Microscopy, GFortran
EXPERT	Python, Paraview, L ^A T _E X

LANGUAGES

CATALAN	Native
SPANISH	Native
ENGLISH	Fluid

CONFERENCES

Physics of Life Summer School 2022 (Edinburgh)

Participation with poster: *Modelling membranes in a flow with a stream function formulation*. Andreu F. Gallen, Joan M. Biosca, and Aurora Hernandez-Machado.

XXIII Conference on statistical physics: FisEs 2022 (Zaragoza)

Participation with poster: *Modelling membranes in a flow with a stream function formulation*. Andreu F. Gallen, Joan M. Biosca, and Aurora Hernandez-Machado.

PUBLICATIONS

Joan M. Biosca, Andreu F. Gallen, & Aurora Hernandez-Machado. RBC in flow: Role of shape and rigidity through 3D Vector Potential. *In preparation.*

FROM SEP 2021 TO JUL 2022