

# Mariona Colomer Rosell

COMPUTATIONAL BIOLOGY & BIOINFORMATICS MSc STUDENT AND PHYSICS GRADUATE

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## Education

### Master in Computational Biology and Bioinformatics

Zurich, Switzerland

ETH ZÜRICH

2020 - Present

- Joint Master Degree Programme with University of Zürich and University of Basel.
- Interdisciplinary program with core courses in Biosystems, Biophysics, Bioinformatics and Big Data.
- Related courses: *Data Mining, Computational Biology and Computational Systems Biology.*
- UK/DK CBB Master student representative.

### Bachelor in Physics

Barcelona, Spain

UNIVERSITY OF BARCELONA

2016 - 2020

- Member of the Student Council and Student Representative in the Department of Condensed Matter Physics.
- During January 2020 - May 2020 I have studied a semester abroad at KTH Royal Institute of Technology in Stockholm.
- Main courses: *Computational Physics, Informatics, Physics of Continuous Matter, Optics, Research Internship, Image Processing.*
- Bachelor Thesis at ICFO titled Mechanosensitive Single Molecule Dynamics of Myosin II awarded a 95/100.
- Grade: 83/100

### Bachelor in Biochemistry

Barcelona, Spain

UNIVERSITY OF BARCELONA

2015 - 2018

- Two years (120 credits) of the BSc in Biochemistry.
- Honors in: *Chemistry I, Laboratory I, Physics.*
- Grade: 80/100

### International Baccalaureate Bilingual Diploma

Girona, Spain

INSTITUT JAUME VICENS VIVES

2013 - 2015

- International Baccalaureate coursed simultaneously with the Spanish Baccalaureate.
- High level: Physics, Mathematics, Catalan. Standard level: Chemistry, Philosophy, English.
- IB Grade: 40/45
- Spanish Baccalaureate Grade: 92/100

## Research and work experience

### The Institute of Photonic Sciences (ICFO)

Castelldefels, Spain

MARIA YZUEL FELLOW

February 2020 - June 2020

- Study of myosin BTF in the Super-resolution Light Microscopy and Nanoscopy group lead by Dr. Stefan Wieser.
- Batch-processing scripts and data analysis with Python.
- Supported by an ICFO Maria Yzuel Fellowship Award aimed at outstanding women interested in photonics.

### École Polytechnique Fédérale de Lausanne (EPFL)

Lausanne, Switzerland

SUMMER RESEARCH INTERN

July 2019 - August 2019

- Study of mitochondria dynamics in the Laboratory of Experimental Biophysics lead by Prof. Suliana Manley.
- Performed immunostaining imaging experiments using iSIM microscope.
- Development of computational and imaging processing tools for tracking mitochondria and colocalise molecule granules inside mitochondria using MATLAB, Python and Fiji custom scripts.

### The Institute of Photonic Sciences (ICFO)

Castelldefels, Spain

SUMMER FELLOW AND RESEARCH STUDENT

June 2018 - June 2019

- Study of immune cell migration in the Super-resolution Light Microscopy and Nanoscopy group lead by Dr. Stefan Wieser.
- Gained experimental and computational skills including cell culture, manipulation of zebra fish embryos and microscopy imaging.
- Analysis of nucleus membrane ruffling using a custom Python script. Part of the manuscript **Venturini et al, Science, 2020.** [1]

## Skills

<b>Programming</b>	Python, MATLAB, R, Fortran, gnuplot, $\LaTeX$ , Fiji scripting
<b>Microscopy</b>	Bright Field, Confocal, TIRF, iSIM
<b>Software</b>	ImageJ-Fiji, WordPress, InkScape, MO Packages
<b>Others</b>	Data analysis, communication

## Languages

<b>Catalan</b>	Mother tongue
<b>Spanish</b>	Mother tongue
<b>English</b>	Advanced C1
<b>French</b>	Intermediate B1-B2
<b>German</b>	Beginner A1

## Publications

[1] V Venturini, F Pezzano, F Castro, HM Häkkinen, S Jiménez-Delgado, [M Colomer-Rosell](#), M Marro Sánchez, Q Tolosa-Ramon, S Paz-López, MA Valverd ,J Weghuber, P Loza-Alvarez, M Krieg, S Wieser, V Ruprecht. *The nucleus measures shape changes for cellular proprioception to control dynamic cell behavior*, **Science**, doi:10.1126/science.aba2644, 2020

[2] [M Colomer-Rosell](#) *Mechanosensitive single molecule dynamics of myosin II*, **Dipòsit Digital UB**, <http://hdl.handle.net/2445/171220>, 2020

## Schools

### CARLA Camp

*Virtual Event - Barcelona*

STUDENT

*February 2021*

- CARLA camp is a photonics career camp.

### NanoGUNE Winter School

*San Sebastián, Spain*

STUDENT

*February 2019*

- I was selected for participating in the nanoGUNE Winter School where I attended lectures on nanoscience, I attended soft-skills workshops and had a hands-on experience on biomolecular interactions, cleanroom nanofabrication and characterization of organic transistors.

### SMTB - School of Molecular and Theoretical Biology 2016

*Barcelona, Spain*

SUMMER LAB TECHNICIAN

*August 2016*

- Study of the fitness landscapes of proteins and RNAs in the Laboratory of Protein Physics leaded by Dmitriev Ivankov and Dinara Usmanova.

### SMTB - School of Molecular and Theoretical Biology 2015

*Puschino, Russia*

SUMMER STUDENT

*August 2014 and 2015*

- Research on regulatory RNA structures in the Laboratory of Bioinformatics lead by Dr. Mikhail Gelfand (2015).

### SMTB - School of Molecular and Theoretical Biology 2014

*Puschino, Russia*

SUMMER STUDENT

*August 2014*

- Study of duplicated genes in *Schizopyllum commune* in the Laboratory of Evolutionary Genomics lead by Dr. Maria Tutukina and Dr. Margo Meer (2014).

## Honors

### SCHOLARSHIPS

2020 **MOBINT-MIF**, International mobility grant.

2020 **Maria Yzuel Fellowship Award**, Internship scholarship.

2019 **EPFL Summer Research Program**, Summer internship scholarship.

2019 **Santander Erasmus Scholarship**, Mobility student with the highest grades at the Faculty of Physics.

2019 **Fundació Espavila Scholarship**, Scholarship for developing the education scientific project Fisikids.

2018 **ICFO Summer Fellowship**, Fundació Catalunya - La Pedrera · Ignacio Cirac Program Chair at ICFO.

2013 **CiMs-CELLEX Scholarship**, Excellence scholarship for studying the International Baccalaureate.

*Barcelona, Spain*

*ICFO, Castelldefels*

*EPFL, Switzerland*

*Santander, Spain*

*Manresa, Spain*

*ICFO, Barcelona*

*Girona, Spain*

### AWARDS

2015 **Golden Medal**, Catalan Biology Olympiad

2015 **Bronze Medal**, Spanish Chemistry Olympiad

2015 **3rd Award**, Catalan Chemistry Olympiad

2014 **Mention of Honor**, Maths Contest Kangaroo

2015 **Distinction**, Excellence distinction on the University Entrance Exam

*Barcelona, Spain*

*Madrid, Spain*

*Barcelona, Spain*

*Barcelona, Spain*

*Barcelona, Spain*

## Certifications

2019 **IELTS**, Overall band 7.5

2019 **Étudier en France: French intermediate course B1-B2**, Credential ID PCRW482GNS7W

2018 **Laser Safety Course**, Laser safety course

2010 **DELFB1**, Ministère de l'Éducation nationale

*Cambridge*

*Coursera*

*ProCareLight*

*France*

## Conferences and events

2019	<b>Summer Research Programme Poster Symposium</b> , Mitochondria dynamics	EPFL, Switzerland
2019	<b>III Encuentro QuinteScience - Poster</b> , Temperature Dependent Migration of Neutrophils	UB, Barcelona
2018	<b>ICFO Summer Symposium - Flash talk</b> , The immune system feels the heat	ICFO, Castelldefels
2015	<b>4th Event on Chemistry education - Talk</b> , Differences between the International Baccalaureate and the Spanish Baccalurate curriculum on the subject Chemistry	Barcelona, Spain

## Scientific outreach and volunteering

### Ciència Oberta

Barcelona, Spain

COORDINATOR

February 2021 - Present

- Coordinator of the Experiences section at the project Ciència Oberta.
- Ciència oberta aims to approach science to the public.

### Molecular and Theoretical Biology School

Online edition, Russia

MENTOR

July 2020 - August 2020

- I participated in the SMTB as a mentor helping the development of the school.
- Speaker at the seminar "Internships and research projects abroad".

### CARLA - The photonics Career Hub

Barcelona, Spain

STUDENTS AND RESEARCHERS STAKEHOLDERS MEMBER

May 2020

- Carla, The Photonics Career Hub, is creating inclusive pan-European photonics career camps aimed at university students and early-stage researchers.
- I provided insights on the organisation and promotion of the CARLA camps to attract students to photonics.

### FísicsPelMón Project

Barcelona, Spain

CO-CREATOR

March 2020 - Present

- Físics Pel Món is a project created by four physics students which aims to share mobility experiences such as Erasmus studies or research internships abroad.
- We manage a website and an Instagram where we share stories of Physics.

### FisiKids Project

Sant Vicenç de Torelló, Spain

CO-FOUNDER AND CO-CREATOR

March 2019 - Present

- FisiKids is a scientific outreach program that aims to bring the scientific method to primary school kids and allow them to explore their own scientific questions. Website: <https://fisikids.wordpress.com>
- FisiKids was awarded in June 2019 a competitive scholarship from Espavila Foundation. It was fully developed by myself and the education student Aina Bigas.
- More than 200 students participated in the course 2019-2020 edition.

### LaTeX Course for Physics students

Barcelona, Spain

CO-ORGANISER

March 2019

- Co-Organiser of the course "Introduction to LaTeX" at the Facultat de Física UB.
- This course was aimed to physics students who wanted to start using LaTeX.

### Organisation of the student congress III Encuentro QuinteScience

Barcelona, Spain

CO-ORGANISER

March 2019

- Member of the QuinteScience association and co-organiser of the III Encuentro QuinteScience which was held in Barcelona.
- Students from all Spain attended and presented their research in poster and flash-talk format.
- Volunteer in the regional phase of the Spanish IJSO.

### Fisidabo - Teaching physics at the theme park

Barcelona, Spain

VOLUNTEER COORDINATOR

April 2018

- Teaching Physics to high school students in the Tibidabo Theme Park organized by the Polytechnic University of Catalonia.