



# Elena Bernabeu, MSc, PhD

✉ elena.bernabeu@genomicsengland.co.uk

🌐 elenabernabeu.github.io

🐙 elenabernabeu

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## Employment

### Bioinformatician - Research Services

#### Genomics England

London, UK (Hybrid) - June 2023 to Present

Research bioinformatician within the Genomics England bioconsulting team, providing cutting-edge research services to industry and academic partners. As part of my role, I have:

- Led large consultancy projects as part of multi-year, multi-million pound deal with industry collaborators
- Leveraged large-scale multi-omic Genomics England and publicly available datasets and resources (UK Biobank, GTEx, eQTLGen, gnomAD, etc), applying cutting-edge computational biology and statistical genetics methods to inform drug discovery pipelines and gain biological insights into complex diseases
- Generated high-quality written reports and oral presentations for a variety of stakeholders and audiences
- Worked both independently as well as embedded in a rich multi-disciplinary team, with the common goal of maximising positive impact for Genomics England participants, facilitating academic research using Genomics England cohort data and computational resources, and helping industry collaborators expand market reach

### Post-doctoral Research Fellow

#### Institute of Genetics and Cancer, The University of Edinburgh

Edinburgh, UK - October 2021 to June 2023

Researching ageing and Alzheimer's disease making use of multi-omics data from Generation Scotland, within Dr. Riccardo Marioni's group. Collaboration with Dr. Catalina Vallejos and Dr. Matthew Robinson. Work funded by Alzheimer's Society.

## Education

### PhD in Genetics and Genomics

#### The Roslin Institute, The University of Edinburgh

Edinburgh, UK - September 2017 to August 2021

Thesis title: *Unraveling the effect of sex on human genetic architecture*

Supervised by Professor Albert Tenesa and Dr. James Prendergast. Funded by The Roslin Foundation's Steve Bishop Scholarship. Worked with large population cohort UK Biobank to find sex differences in genetic programming across human phenotypes using quantitative genetics and bioinformatics pipelines.

### MSc in Bioinformatics

#### The University of Edinburgh

Edinburgh, UK - September 2016 to August 2017

Master's thesis title: *Linking the genome to the immunome: a search for markers of response to immunotherapy*

Graduated with Distinction. Courses included programming and systems management, systems biology, statistics and data analysis, next generation sequencing technologies, and bioinformatics algorithms. Master's thesis supervised by Dr. Nizar Batada. Managed clinical and RNA-seq data from multiple studies in The Cancer Genome Atlas.

### BSc in Biotechnology

#### Universitat Politècnica de València

Valencia, Spain - September 2012 to July 2016

Bachelor's thesis title: *Integration of multi-omics data to describe link between developmental exposure to pesticides and impaired neurodevelopment*

Part of the High-Academic Performance group. Graduated with a 9.1/10 grade average. Highly interdisciplinary degree. Numerous Summer internships. Bachelor's thesis supervised by Dr. Sonia Tarazona and Dr. Ana Conesa. Managed metabolomics, proteomics, transcriptomics, and behavioral data originating from the EU-funded DENAMIC project.

## Teaching

### Intermediate/Advanced Epidemiology

MSc Epidemiology, University of Edinburgh  
(2022/2023)

Helped develop and imparted lesson on prediction modelling, as well as accompanying exercises.

## Introduction to Genetic and Molecular Epidemiology

*MSc Epidemiology, University of Edinburgh (2022/2023)*

Helped impart lesson introducing basic epidemiology and multi-omics concepts at the post-graduate level.

## Introduction to Genomics

*Biomedical AI PhD Programme, University of Edinburgh (2022/2023)*

Lesson part of induction week for Biomedical AI PhD students. Helped develop and imparted lesson on basics of genomics, including basic molecular biology, association modeling approaches/GWAS, linkage disequilibrium, and polygenic risk scores.

## Predicting Age from a DNA Sample: Consultancy Style Dissertation Summer project

*MSc Statistics and Data Science, University of Edinburgh (2021/2022)*

Helped develop and imparted a Consultancy Style Dissertation Summer project titled "Predicting Age from a DNA sample" for the MSc in Statistics and Data Science at the University of Edinburgh, supervising over 30 students.

Demonstrated, marked, and tutored for a number of master's level courses at the University of Edinburgh (over 200 hours), including:

## Bioinformatics Programming and Systems Management

*MSc Bioinformatics (2019-2020)*

## Comparative and Evolutionary Genomics

*MSc Bioinformatics (2019-2020)*

## Statistics and Data Analysis

*MSc Bioinformatics, MSc in Quantitative Genetics and Genomic Analysis (2019)*

## Student supervision

- **Kris Holt** (Co-supervised rotation project for Wellcome Trust Translational Neuroscience PhD programme, Spring 2022)
- **Krystal Laing** (Co-supervised rotation project for Wellcome Trust Translational Neuroscience PhD programme, Spring 2022)
- **Hannah Smith** (Co-supervised rotation project for Wellcome Trust Translational Neuroscience PhD programme, Spring 2022)

## Other Experience

### Freelance Graphic Designer

*February 2020 to Present*

## Post-graduate Student Representative

*April 2018 to August 2021*

- The Roslin Institute's Genetics and Genomics division
- Easter Bush Campus Post-graduate Studies Committee
- Improving Culture Facilitation Committee

## Under-grad Research Intern

*July 2014 to August 2015*

- **Summer 2015:** Dr. Ana Conesa's Functional Genomics Lab, Valencia, Spain.
- **Summer 2014:** Dr. Jordi Perez-Tur's Molecular Genetics Lab, Valencia, Spain.

## Funding and Awards

### Fellowships

- **November 2021 to Present:** Associate Fellow of the Higher Education Academy

### Awards

- **Best Poster:** European Society of Human Genetics Conference (2020)
- **Best Presentation:** Advances in Computational Biology Conference (2019)
- **Best Poster:** Roslin Institute Research Student Day (2019)
- **Runner-up Best Poster:** Roslin Institute Research Student Day (2018)
- **Best Student Presentation:** XIII Symposium on Bioinformatics (2016)
- **Baccalaureate Extraordinary Prize** (2012)

### Scholarships

- **2017-2021** - The Roslin Foundation's Steve Bishop PhD Scholarship
- **2016-2017** - La Caixa International Post-graduate Scholarship

### Travel and Training Funding

- Birrell-Gray Traveling Scholarship (2019) - **£500**
- Genetics Society Travel Grant (2019) - **£750**
- Genetics Society Training Grant (2018) - **£550**

### Other Funding

- Engage @ Roslin Small Grants Fund (2020) - **£500**

## Invited Talks

### UK Conference of Bioinformatics and Computational Biology

*Earlham Institute, Norwich, United Kingdom (Online) - 2022*

### INIA Genetics Seminars

*Instituto Nacional de Investigación y Tecnología Agraria y Alimentaria, Madrid, Spain (Online) - 2022*

## ISCB Academy Webinars

*International Society of Computational Biology (Online) - 2022*

## Social Genomics at the University of Wisconsin

*University of Wisconsin-Madison, Madison, Wisconsin, USA (Online) - 2021*

## Bioinfo4Women and BSC Seminars

*Barcelona Supercomputing Center, Barcelona, Spain (Online) - 2021*

## Computational Genetics Discussion Group

*The Roslin Institute, Edinburgh, UK (Online) - 2021*

## Edinburgh Alliance for Complex Trait Genetics

*Royal College of Physicians of Edinburgh, Edinburgh, UK - 2019*

## Conference Contributions

### Organizing committees

- **Gordon Research Seminar in Quantitative Genetics and Genomics** (2023) - Co-chairing, Ventura, California, USA

### Posters

- **European Society of Human Genetics** (2020), Online
- **Century in Genetics** (2019), Edinburgh, UK
- **Gordon Research Conference in Quantitative Genetics and Genomics** (2019), Lucca, Italy

### Oral Presentations

- **European Conference on Computational Biology** (2021), Online
- **European Society of Human Genetics** (2020), Online - *Poster Pitch*
- **Advances in Computational Biology** (2019), Barcelona, Spain
- **Century in Genetics** (2019), Edinburgh, UK - *Poster Pitch*
- **XIII Symposium on Bioinformatics** (2016), Valencia, Spain

## Publications

Google scholar [here](#).  
ORCID [here](#).

Selected publications:

### Reply to: Genotype by sex interactions in ankylosing spondylitis

**Elena Bernabeu**, Konrad Rawlik, Oriol Canela-Xandri, Andrea Talenti, James Prendergast, and Albert Tenesa  
*Nature Genetics* (2023), doi:  
10.1038/s41588-022-01251-4

### Refining epigenetic prediction of chronological and biological age

**Elena Bernabeu**, Daniel L McCartney, Danni A Gadd, Robert F Hillary, Ake T Lu, Lee Murphy, Nicola Wrobel, Archie Campbell, Sarah E Harris, David Liewald, Caroline Hayward, Cathie Sudlow, Simon R Cox, Kathryn L Evans, Steve Horvath, Andrew M McIntosh, Matthew R Robinson, Catalina Vallejos, and Riccardo E Marioni  
*Genome Medicine* (2022), doi:  
10.1101/2022.09.08.507115

### Sex differences in genetic architecture in the UK Biobank

**Elena Bernabeu**, Oriol Canela-Xandri, Konrad Rawlik, Andrea Talenti, James Prendergast and Albert Tenesa  
*Nature Genetics* (2021), doi:  
10.1038/s41588-021-00912-0

### A multiomic study to unravel the effects of developmental exposure to endosulfan in rats: molecular explanation for sex-dependent effects

Sonia Tarazona, **Elena Bernabeu**, Héctor Carmona, Belén Gómez-Giménez, Javier García-Planells, Pim E. G. Leonards, Stephan Jung, Ana Conesa, Vicente Felipo, and Marta Llansola  
*ACS Chemical Neuroscience* (2019). doi:  
10.1021/acscchemneuro.9b00304

## Relevant Training

### Ed-DaSH Workflows with Nextflow

**The University of Edinburgh, Edinburgh, UK (2022)**  
2 full day course on Nextflow workflows, using The Carpentries platform.

### Edinburgh Teaching Award (EdTA) Cohort

**The University of Edinburgh, Edinburgh, UK (2021)**  
Mentored route to obtain Higher Education Academy accreditation.

### Engage @ Roslin Cohort

**The Roslin Institute, Edinburgh, UK (2020)**  
Series of courses to develop a public engagement activity.

### Advanced Python for Biologists

**Edinburgh Genomics, Edinburgh, UK (2018)**  
Course by Dr. Martin Jones.

### The Search for Selection

**The Roslin Institute, Edinburgh, UK (2018)**  
Course by Professor Bruce Walsh.

### Nature Masterclass

**The University of Edinburgh, Edinburgh, UK (2018)**  
Course by the Nature Publishing Group.

## Skills

### Dry lab

- Python, R, Bash, Unix, HPC systems.
- Statistics, data analysis, and quantitative genetics.
- Bioinformatics and NGS methods and pipelines; familiarity with genomics and transcriptomics data sets.
- Handling of large population cohort data, including health records.

### Wet lab

- Basic wet-lab protocols: PCR, immunoassays, electrophoresis, bacterial culture, etc.

### Other skills

- Extensive knowledge of Adobe Creative Suite and Microsoft Office Suite.
- Strong presentation and writing skills.

## Public Engagement

### Dog Meets Dog - A Population Genetics Game

#### **The Roslin Institute, Edinburgh, UK (2020-2021)**

Population genetics game activity designed for classroom use by high school students. Created in collaboration with Dr. Enrique Sánchez-Molano with the help of the Roslin Institute's Public Engagement team. Supported by Engage @ Roslin Small Grants Fund.

### The Roslin Institute Infographics

#### **The Roslin Institute, Edinburgh, UK (2020)**

Created a set of infographics to communicate main research lines at the Roslin Institute on social media.

## Languages

- English
- Spanish
- Catalan