

Mireia Ramos-Rodríguez

POSTDOCTORAL RESEARCHER

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Research Statement

Throughout my research career, I have dedicated my focus to **unraveling the cis-regulatory networks of β cells** within the context of diseases, particularly T1D. Building upon this foundation, I have recently expanded my investigations to encompass neoplastic malignancies, including insulinomas (manuscript in preparation). Notably, my doctoral thesis emphasized the pivotal role of β cells in the development of T1D, thereby highlighting the indispensable nature of studying this component to fully elucidate the pathophysiology of the disease. As a result, my current research is centered around acquiring invaluable insights into the **mechanisms by which β cells contribute to T1D** and identifying **strategies to safeguard them against autoimmune destruction**. Given my training as a computational biologist, I am uniquely positioned to address these questions, leveraging cutting-edge technologies that require extensive bioinformatics knowledge, all while considering the essential biological aspects involved.

Education

PhD in Biomedicine (Bioinformatics research area)

UNIVERSITAT DE BARCELONA

Barcelona, Spain

2016 - 2020

MSc in Bioinformatics

UNIVERSIDAD DE MURCIA

Murcia, Spain

2014 - 2015

BSc in Biomedical Sciences

UNIVERSITAT AUTÒNOMA DE BARCELONA

Barcelona, Spain

2009 - 2014

Work Experience

Postdoctoral Researcher

ENDOCRINE REGULATORY GENOMICS, MELIS - UPF

Barcelona, Spain

NOV 2020 - Present

- Processing and analysis of transcriptome and epigenome data, in bulk (RNA-seq, ATAC-seq, CUT&TAG, ChIP-seq) and single cell (scRNA-seq, scATAC-seq)
- Analysis and development of software for querying 3D chromatin structure (UMI-4C)
- Integration of omics data to decipher cis-regulatory networks that drive gene expression

Predoctoral Researcher

ENDOCRINE REGULATORY GENOMICS, INSTITUT GERMANS TRIAS I PUJOL (IGTP)

Badalona, Spain

DEC 2015 - NOV 20

- Processing and analysis of ATAC-seq, RNA-seq and ChIP-seq
- Integration of gene expression information with chromatin landscape
- Software development (R packages & web applications)

Maths4Life Fellow

BIostatistics and Bioinformatics Unit, INSTITUT DE RECERCA BIOMÈDICA DE BARCELONA (IRB)

Barcelona, Spain

JUL 2015 - AUG 2015

- Development of a Shiny App to explore the role of microRNAs in prostate cancer.

Research Student

COMPUTATIONAL MEDICINE, UNIVERSITAT AUTÒNOMA DE BARCELONA (UAB)

Barcelona, Spain

NOV 2013 - MAY 2014

- Molecular dynamic simulations of G-protein coupled receptors (GPCRs).

Software & Applications

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UMI4Cats. R package for processing, analysis and visualization of UMI-4C chromatin contact data.

[Bioconductor](#)

2017

The Islet Regulome Browser. Visualization tool that provides access to interactive exploration of pancreatic islet genomic data. isletregulome.org

Publications

1. Fontcuberta-PiSunyer, M., García-Alamán, A., Prades, Èlia, Téllez, N., Alves-Figueiredo, H., Ramos-Rodríguez, M., Enrich, C., Fernandez-Ruiz, R., Cervantes, S., Clua, L., Ramón-Azcón, J., Broca, C., Wojtusciszyn, A., Montserrat, N., Pasquali, L., Novials, A., Servitja, J.-M., Vidal, J., Gomis, R., & Gasa, R. (2023). Direct reprogramming of human fibroblasts into insulin-producing cells using transcription factors. *Communications Biology*, 6(1). <https://doi.org/10.1038/s42003-023-04627-2>
2. Arroyo, N., Villamayor, L., Díaz, I., Carmona, R., Ramos-Rodríguez, M., Muñoz-Chápuli, R., Pasquali, L., Toscano, M. G., Martín, F., Cano, D. A., & Rojas, A. (2021). GATA4 induces liver fibrosis regression by deactivating hepatic stellate cells. *JCI Insight*, 6(23). <https://doi.org/10.1172/jci.insight.150059>
3. Ramos-Rodríguez, M., Subirana-Granés, M., & Pasquali, L. (2021). UMI4Cats: An R package to analyze chromatin contact profiles obtained by UMI-4C. *Bioinformatics*. <https://doi.org/10.1093/bioinformatics/btab392>
4. Ramos-Rodríguez, M., Pérez-González, B., & Pasquali, L. (2021). The β -Cell Genomic Landscape in T1D: Implications for Disease Pathogenesis. *Current Diabetes Reports*, 21(1), 1. <https://doi.org/10.1007/s11892-020-01370-4>
5. Colli, M. L., Ramos-Rodríguez, Mireia, Nakayasu, E. S., Alvelos, M. I., Lopes, M., Hill, J. L. E., Turatsinze, J.-V., Brachè, A. C. de, Russell, M. A., Raurell-Vila, H., Castela, A., Juan-Mateu, J., Webb-Robertson, B.-J. M., Krogh, L., Dahl-Jorgensen, K., Marselli, L., Marchetti, P., Richardson, S. J., Morgan, N. G., ... Eizirik, D. L. (2020). An integrated multi-omics approach identifies the landscape of interferon- γ -mediated responses of human pancreatic beta cells. *Nature Communications* 2020 11:1, 11(1), 1–17. <https://doi.org/10.1038/s41467-020-16327-0>
6. Ramos-Rodríguez, Mireia, Raurell-Vila, H., Colli, M. L., Alvelos, M. I., Subirana-Granés, M., Juan-Mateu, J., Norris, R., Turatsinze, J.-V., Nakayasu, E. S., Webb-Robertson, B.-J. M., Inshaw, J. R. J., Marchetti, P., Piemonti, L., Esteller, M., Todd, J. A., Metz, T. O., Eizirik, D. L., & Pasquali, L. (2019). The impact of proinflammatory cytokines on the β -cell regulatory landscape provides insights into the genetics of type 1 diabetes. *Nature Genetics*, 51(11), 1588–1595. <https://doi.org/10.1038/s41588-019-0524-6>
7. Miguel-Escalada, I., Bonàs-Guarch, S., Cebola, I., Ponsa-Cobas, J., Mendieta-Esteban, J., Atla, G., Javierre, B. M., Rolando, D. M. Y., Farabella, I., Morgan, C. C., García-Hurtado, J., Beucher, A., Morán, I., Pasquali, L., Ramos-Rodríguez, Mireia, Appel, E. V. R., Linneberg, A., Gjesing, A. P., Witte, D. R., ... Ferrer, J. (2019). Human pancreatic islet three-dimensional chromatin architecture provides insights into the genetics of type 2 diabetes. *Nature Genetics*, 51(7), 1137–1148. <https://doi.org/10.1038/s41588-019-0457-0>
8. Kameswaran, V., Golson, M. L., Ramos-Rodríguez, Mireia, Ou, K., Wang, Y. J., Zhang, J., Pasquali, L., & Kaestner, K. H. (2018). The Dysregulation of the DLK1 - MEG3 Locus in Islets From Patients With Type 2 Diabetes Is Mimicked by Targeted Epimutation of Its Promoter With TALE-DNMT Constructs. *Diabetes*, 67(9), 1807–1815. <https://doi.org/10.2337/db17-0682>
9. Raurell-Vila, H., Ramos-Rodríguez, Mireia, & Pasquali, L. (2018). Assay for Transposase Accessible Chromatin (ATAC-Seq) to Chart the Open Chromatin Landscape of Human Pancreatic Islets. In T. Vavouri & M. A. Peinado (Eds.), *Methods in molecular biology* (CpG Island, pp. 197–208). Human Press. https://doi.org/10.1007/978-1-4939-7768-0_11
10. Mularoni, L., Ramos-Rodríguez, Mireia, & Pasquali, L. (2017). The Pancreatic Islet Regulome Browser. *Frontiers in Genetics*, 8(FEB), 13. <https://doi.org/10.3389/fgene.2017.00013>

Teaching Experience

Fundamentals of Computational Biology

UNIVERSITAT POMPEU FABRA (UPF)

- 1st year of Human Biology degree.

Barcelona, Spain

SEPT 2021 - Present

Basic Genetics

UNIVERSITAT POMPEU FABRA (UPF)

- 2nd year of Human Biology and Medicine degrees.

Barcelona, Spain

APR 2021 - Present

Graphic Wizardry with Inkscape

CAN RUTI PHD COMMITTEE WORKSHOP

- Materials: [Google Drive](#)

Barcelona, Spain

30th JAN 2020

Improve your plots with ggplot2

R-LADIES BARCELONA WORKSHOP

- Materials: [@ mireia-bioinfo/workshop_ggplot2](#)

Barcelona, Spain

15th OCT 2019

Analyzing ChIP-seq data

BIOINFORMATICS WORKSHOP: INTRODUCTION TO NGS DATA ANALYSIS (EPICHEMBIO)

- Materials: [@ mireia-bioinfo/workshop_bioinfo_ChIPseq](#)

Badalona, Spain

13th - 15th MAR 2019

Plots with ggplot2 are better plots!

R-LADIES BARCELONA WORKSHOP

Barcelona, Spain

27th SEP 2017

- Materials:  [mireia-bioinfo/2017-09-27_rladiesBCN-meetup-ggplot2](https://github.com/mireia-bioinfo/2017-09-27_rladiesBCN-meetup-ggplot2)

Fellowships & Awards

OCT 2022	Premi Extraordinari de Doctorat de la Facultat de Biologia	UB
OCT 2020	Premi al Millor Article de Recerca en Ciències de la Salut elaborat per un Investigador Predoctoral	ICS
AUG 2018	Excellent poster presentation (Spetses Summer School on Chromatin and Metabolism)	ChroMe
MAR 2017	PhD Fellowship – Ayudas para la contratación de personal investigador novel (FI)	AGAUR
JUL 2015	Maths4Life Fellowship	IRB

Extracurricular Activities

R-Ladies Barcelona

ORGANIZER

Barcelona Spain

2017 - Present

Can Ruti PhD Committee

MEMBER/PRESIDENT

Badalona, Spain

2018 - 2020