

**CURRICULUM VITAE ABREVIADO (CVA)**

**Part A. PERSONAL INFORMATION**

|  |                     |                            |  |
|--|---------------------|----------------------------|--|
| First name                                     | Verónica            |                            |  |
| Family name                                    | Lloréns Rico        |                            |  |
| Gender (*)                                     |                     | Birth date<br>(dd/mm/yyyy) |  |
| e-mail   | vllorens@cipf.es    |                            |  |
| Open Researcher and Contributor ID (ORCID) (*) | 0000-0002-0860-5990 |                            |  |

(\*) *Mandatory*

**A.1. Current position**

|                   |  |                   |  |
|-------------------|--|-------------------|--|
| Position          | Junior Group Leader (Ramón y Cajal)  |                   |  |
| Initial date      | 01/01/2023   |                   |  |
| Institution       | Centro de Investigación Príncipe Felipe  |                   |  |
| Department/Center |  |                   |  |
| Country           | Spain  | Teleph.<br>number |  |
| Key words         | Microbiota, microbiome, metatranscriptomics, gene regulation, transcription, RNA-seq |                   |  |

**A.2. Previous positions (research activity interruptions, indicate total months)**

| Period                      | Position/Institution/Country/Interruption cause                                      |
|-----------------------------|--|
| 2020-2022                   | FWO Senior postdoctoral researcher – VIB-KU Leuven Center for Microbiology – Belgium |
| 2017-2020                   | FWO postdoctoral researcher – VIB-KU Leuven Center for Microbiology – Belgium        |
| 2016-2017                   | Postdoctoral researcher – Centre for Genomic Regulation – Spain                      |
| 2012-2016                   | PhD student – Centre for Genomic Regulation – Spain                                  |
| 2013 (May – June)           | Visiting researcher – Stanford University – USA                                      |
| 2011 (February – September) | Undergraduate researcher – Centro de Investigación Príncipe Felipe – Spain           |
| 2010 (July – September)     | JAE Intro researcher – Institut de Biologia Molecular de Barcelona – Spain           |
| 2009-2010                   | Undergraduate researcher – Centro de Investigación Príncipe Felipe – Spain           |

**A.3. Education**

| PhD, Licensed, Graduate | University/Country                  | Year |
|-------------------------|-------------------------------------|------|
| PhD in Biomedicine      | Universitat Pompeu Fabra            | 2016 |
| MSc in Biophysics       | Universidad Autónoma de Madrid      | 2012 |
| BSc in Biotechnology    | Universitat Politècnica de València | 2011 |

**Part B. CV SUMMARY** (*max. 5000 characters, including spaces*)

After completing my BSc in Biotechnology in 2011, I pursued a MSc in Biophysics thanks to a *La Caixa* MSc fellowship, which allowed me to join the lab of Prof. Luis Serrano at the Centre for Genomic Regulation, first as a master's and then as a PhD student. During my PhD, I worked in understanding the mechanisms of transcriptional regulation in the model bacterium *Mycoplasma pneumoniae*, by using a combination of experimental data and computational and modelling approaches. To complement my PhD training, I carried out a research stay of 2 months in the group of Prof. Markus Covert at Stanford University. The work towards my PhD represented the first systems-level quantification of the role of different transcriptional regulation mechanisms in a model bacterium, and led to 10 publications, of which I am first or



co-first author in 5. Additionally, it received an Extraordinary PhD award, as well as a Young Investigator Award (*Premi al Jove Investigador*) from the Catalan Society of Biology.

After my PhD, I joined the group of Prof. Jeroen Raes at the Vlaams Institute of Biotechnology (VIB; also part of the KU Leuven) as a postdoc, where I developed new tools to profile the metatranscriptome and study the functionality of the human microbiota. To develop this work, I received highly competitive fellowships such as the FWO postdoctoral fellowship (2017-2020) and the FWO Senior postdoctoral fellowship (2020-2023, including 29,800€ for research expenses). During my postdoc, I participated in ongoing collaborations or contributed to establish new ones with clinical groups (Prof. Sabine Tejpar and Prof. Joost Wauters, from the UZ Leuven University Hospital) and pharmaceutical companies (Janssen Pharmaceutica) to apply the methods I developed to the study of the gut microbiome in colorectal cancer or the respiratory microbiome in COVID-19 patients. As part of these collaborations, I was co-principal investigator of an FWO Senior Research project (awarded 507,300€) to study host-microbiome interactions in the development of colorectal cancer.

In January 2023, I joined the *Centro de Investigación Príncipe Felipe* in Valencia as a Junior Group Leader with a Ramón y Cajal contract, where am currently working to build my own research team. The main goal of our lab is to understand the drivers of transcriptional variation in the human microbiota, and how can we modify the microbial ecosystem (for instance, with drugs or prebiotics) to induce the expression of beneficial functions or to avoid expression of detrimental pathways. While we have gathered an immense knowledge of what shapes microbial composition in the human microbiota in the past decades, we still have very little information of what drives microbial functionality. Therefore, in the short term, we will invest our research efforts in this characterization of functional variation. In the longer term, learning about transcriptional variation and regulation in the gut microbiota will allow us to better predict the outcomes of microbiota transplantation procedures in different disorders, or to develop personalized next generation probiotic treatments that will be effective in the unique microbiota context of each individual.

I have combined my research with various teaching activities: in 2019, I was an instructor at the EMBO Summer School in Whole Cell Modelling in Barcelona, and in 2021 I was invited to deliver a lecture and two hands-on tutorials at the Microbiome Data Analysis Workshop organized by the University of Hasselt in Belgium. Additionally, I have co-supervised a master student and I am currently co-supervising two PhD students, together with Prof. Jeroen Raes. Lastly, as a postdoc I was a member of the postdoc association of the VIB-KU Leuven Center for Microbiology during 2022, and part of the organizing committee of the departmental meetings and seminars in 2018.

Besides these tasks, I have been very active in promoting the role of women in science throughout my entire career, as well as taking part in several science outreach initiatives both in Belgium and in Spain (VIB Biotech day, PRBB Open day, *11 de Febrero*). As I advance in my career, I plan to continue contributing to these initiatives as part of my service to society, with the aim of increasing equality in STEM-related professions and being a role model for the future generations of scientists.

## **Part C. RELEVANT MERITS** (*sorted by typology*)

### **C.1. Publications**

- **Verónica Lloréns-Rico\***, Joshua A. Simcock\*, Geert R.B. Huys and Jeroen Raes. (2022). Single-cell approaches in human microbiome research. *Cell* 185(15), 2725-2738. **[position: 1/3 – shared first authorship]**
- **Verónica Lloréns-Rico**, Ann C. Gregory, Johan Van Weyenbergh, ..., Jeroen Raes. (2021). Clinical practices underlie COVID-19 patient respiratory microbiome composition and its interactions with the host. *Nature communications*, 12(1), 1-12. **[position: 1/20]**
- **Verónica Lloréns-Rico**, Sara Vieira-Silva, Pedro J. Gonçalves, Gwen Falony, Jeroen Raes. (2021). Benchmarking microbiome transformations favors experimental quantitative approaches to address compositionality and sampling depth biases. *Nature communications*, 12(1), 1-12. **[position: 1/5]**



- **Verónica Lloréns-Rico**, Jeroen Raes. (2019). Tracking humans and microbes. *Nature*, 2019. **[position: 1/2]**
- Eva Yus\*, **Verónica Lloréns-Rico\***, Sira Martínez, ..., Luis Serrano. (2019). Determination of the gene regulatory network of a Genome-Reduced bacterium highlights alternative regulation independent of transcription factors. *Cell systems*, 9(2), 143-158. \* **Equal contribution [position: 1/9 – shared first authorship]**
- Kevin D'hoë, Stefan Vet, Karoline Faust, ..., Jeroen Raes. (2018). Integrated culturing, modeling and transcriptomics uncovers complex interactions and emergent behavior in a three-species synthetic gut community. *Elife*, 7, e37090. **[position: 7/11]**
- **Verónica Lloréns-Rico**, Jaime Cano, Tjerko Kamminga, ..., Maria Lluch-Senar. (2016). Bacterial antisense RNAs are mainly the product of transcriptional noise. *Science advances*, 2(3), e1501363. **[position: 1/10]**
- Samuel Miravet-Verde\*, **Veronica Llorens-Rico\***, Luis Serrano. (2017). Alternative transcriptional regulation in genome-reduced bacteria. *Current opinion in microbiology*, 39, 89-95. \* **Equal contribution [position: 1/3 – shared first authorship]**
- **Verónica Lloréns-Rico**, Maria Lluch-Senar, Luis Serrano. (2015). Distinguishing between productive and abortive promoters using a random forest classifier in *Mycoplasma pneumoniae*. *Nucleic acids research*, 43(7), 3442-3453. **[position: 1/3]**
- **Verónica Lloréns-Rico**, Luis Serrano, Maria Lluch-Senar. (2014). Assessing the hodgepodge of non-mapped reads in bacterial transcriptomes: real or artifactual RNA chimeras? *BMC genomics*, 15(1), 1-11. **[position: 1/3]**

## C.2. Congress

- **2022 – International Human Microbiome Conference (Kobe, Japan)**. Poster presentation: “Microbial detection in host-derived single-cell RNA-seq data reveals specific host-microbe interactions in COVID-19 patients”
- **2021 - Microbiome Data Analysis Workshop (online course, UHasselt)**. Hands-on tutorials presented: “From raw data to OTU table” and “Microbiome data visualisation, diversity, differential abundance and normalizations”. Seminar presented: “The issue of data normalizations”.
- **2019 - Exploring Human Host-Microbiome Interactions in Health and Disease (Cambridge, UK)**. Oral presentation: Quantitative microbiome profiling links gut microbial load to host inflammatory conditions.
- **2018 - EMBO|EMBL Symposium: The Human Microbiome (Heidelberg, Germany)**. Poster presentation: A Mapping-based Human Metatranscriptomics Analysis Pipeline (Obtained Best Poster Presentation Award)
- **2016 - IOM, Conference of the International Organisation of Mycoplasma (Brisbane, Australia)** Poster presentation: Antisense RNAs in *Mycoplasma pneumoniae* are mainly the product of transcriptional noise
- **2016 - JBI2016, Spanish Bioinformatics Symposium (Valencia, Spain)**. Oral presentation: Bacterial antisense RNAs are mainly the product of transcriptional noise.
- **2015 - PhD student symposium, Center for Genomic Regulation (Barcelona, Spain)**. Poster presentation: Key determinants of transcript abundance in the minimal bacterium *Mycoplasma pneumoniae*
- **2014 - PhD student symposium, Center for Genomic Regulation (Barcelona, Spain)**. Oral presentation: A whole-cell model of the minimal bacterium *Mycoplasma pneumoniae*
- **2014 - Course on Multiscale Integration in Biological Systems (Institute Curie, Paris, France)**. Oral presentation: A whole-cell model of the minimal bacterium *Mycoplasma pneumoniae*

## C.3. Research projects



### **Projects with participation as (co-)Principal Investigator:**

- **(in evaluation) ERC Starting Grant. Project title:** “Transcriptional regulation as a mediator of bacterial interactions in the microbiome”. **Funding body:** European Research Council (ERC). **Principal Investigator:** Verónica Lloréns Rico. **Funding:** 1.497.479€.
- **FWO Senior research project - G0C9620N. Project title:** “Characterisation of the phenotypic plasticity of IL17-producing T-cells in colon cancer development and their interactions with the microbiome”. **Funding body:** Fonds Wetenschappelijk Onderzoek (FWO). **Principal Investigator:** Prof. Sabine Tejpar. **Co-principal investigators:** Dr. Verónica Lloréns-Rico, Dr. Sara Verbandt. **Project duration:** 01/01/2020 - 31/12/2023. **Funding:** 507,300€.

### **Personal fellowships and contracts:**

- **Ramón y Cajal contract - RYC2021-031410-I. Funding body:** Ministerio de Ciencia e Innovación. **Project duration:** 01/01/2023-31/12/2027. **Funding:** personal salary + 42.000€ for research expenses.
- **FWO Senior postdoctoral fellowship - 12V9421N. Project title:** “Single-cell metatranscriptomics in the human gut microbiota”. **Funding body:** Fonds Wetenschappelijk Onderzoek (FWO). **Project duration:** 01/10/2020-31/12/2022. **Funding:** postdoctoral salary + 29,800€ for research expenses.
- **FWO postdoctoral fellowship - 12V9418N. Project title:** “Characterization of the transcriptome interactions between host and gut microbiota in health and disease”. **Funding body:** Fonds Wetenschappelijk Onderzoek (FWO). **Project duration:** 01/10/2017-30/09/2020. **Funding:** postdoctoral salary.

### **Projects with participation as a researcher:**

- **VIB Grand Challenges Program – CONTAGIOUS. Project title:** COntAGlouS: COvid-19 Advanced Genetic and Immunologic Sampling. **Funding Body:** VIB Grand Challenges Program. **Principal Investigator:** Several (large consortium) **Project duration:** 25/03/2020-30/09/2020. **Funding:** 330,000€.
- **ERC Advanced Grant – H2020-670216. Project title:** “MYCOCHASSIS: Engineering of a minimal bacterial therapeutic chassis”. **Funding body:** European Research Council (ERC). **Principal Investigator:** Prof. Luis Serrano. **Project duration:** 01/11/2015-31/10/2021. **Funding:** 2,454,522€.

### **C.4. Contracts, technological or transfer merits**

- **Collaboration partnership with Janssen Pharmaceutica - Project title:** “CRC\_μBiome: Characterization of human and microbial components in premalignant adenoma and colorectal cancer.” This partnership was established in the framework of the Agency for Innovation in Science and Technology (Agentschap voor Innovatie door Wetenschap en Technologie – IWT O&O grants). **Partners:** Janssen Pharmaceutica, UZ Leuven (PI: Sabine Tejpar) and VIB-KU Leuven (PI: Jeroen Raes). **Project duration:** 2015-2018. **Type of participation:** researcher.