JUAN MAC DONAGH

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Professional resume

I am a proactive and committed PhD student, eager to take the next step in my scientific journey. I have always dreamed of becoming a scientist, and now that I have the opportunity to learn from others, I strive to show my full dedication. I enjoy working collaboratively, creating a healthy work environment, helping others, and seeking advice when needed. In addition, I like to be actively involved in the university ecosystem, contributing to conferences and teaching.

Graduate and Postgraduate Education

National Scientific and Technical Research Council (CONICET) - National University of Quilmes, Argentina:
PhD fellow at the Structural Bioinformatics Group (SBG). Advisor: Dr. Prof. Gustavo Parisi **2022 – 2027**

Faculty of Exact Sciences - National University of La Plata:
Bachelor's Degree in Biotechnology and Molecular Biology. GPA: 7,68/10, Final thesis grade: 10/10 **2016 – 2021**

Teaching experience

Teaching Assistant in Introduction to Chemistry and General Chemistry
National University of La Plata, Faculty of Exact Sciences. **03/2021 – present**

Publications

[*] **Juan Mac Donagh**, Nahuel Escobedo, Tadeo Saldaño, Luciana Rodriguez Sawicki, Nicolas Palopoli, Sebastian Fernandez Alberti, Maria Silvina Fornasari, and Gustavo Parisi. "Revealing Missing Protein–Ligand Interactions Using AlphaFold Predictions". In: *Journal of Molecular Biology* (2024). DOI: 10.1016/j.jmb.2024.168852.

[*] **Juan Mac Donagh**, Abril Marchesini, Agostina Spiga, Maximiliano José Fallico, Paula Nazarena Arrías, Alexander Miguel Monzon, Aimilia-Christina Vagiona, Mariane Gonçalves-Kulik, Pablo Mier, and Miguel A. Andrade-Navarro. "Structured Tandem Repeats in Protein Interactions". In: *International Journal of Molecular Sciences* (2024). DOI: 10.3390/ijms25052994.

[*] Manjeet Kumar, Sushama Michael, Jesús Alvarado-Valverde, András Zeke, Tamas Lazar, Juliana Glavina, Eszter Nagy-Kanta, **Juan Mac Donagh**, Zsofia E Kalman, Stefano Pascarelli, Nicolas Palopoli, László Dobson, Carmen Florencia Suarez, Kim Van Roey, Izabella Krystkowiak, Juan Esteban Griffin, Anurag Nagpal, Rajesh Bhardwaj, Francesca Diella, Bálint Mészáros, Kellie Dean, Norman E Davey, Rita Pancsa, Lucía B Chemes, and Toby J Gibson. "ELM—the Eukaryotic Linear Motif resource—2024 update". In: *Nucleic Acids Research* (2024). DOI: 10.1093/nar/gkad1058.

[*] **Juan Mac Donagh**, Diego Javier Zea, Guillermo Benitez, Cristian Guisande Donadio, Julia Marchetti, Nicolas Palopoli, María Silvina Fornasari, and Gustavo Parisi. *Evolutionary rates in human amyloid proteins reveal their intrinsic metastability*. Preprint. 2022. DOI: 10.1101/2022.09.07.506994.

[*] Tadeo Saldaño, Nahuel Escobedo, Julia Marchetti, Diego Javier Zea, **Juan Mac Donagh**, Ana Julia Velez Rueda, Eduardo Gonik, Agustina García Melani, Julieta Novomisky Nechcoff, Martín N. Salas, Tomás Peters, Nicolás Demitroff, Sebastian Fernandez Alberti, Nicolas Palopoli, Maria Silvina Fornasari, and Gustavo Parisi. "Impact of protein conformational diversity on AlphaFold predictions". In: *Bioinformatics* (2021). DOI: 10.1101/2021.10.27.466189.

Additional research and international experience

- **Johannes Gutenberg-Universität, Computational Biology and Data Mining Group**
  Marie Curie Fellow — Horizon 2020 "IDPFun2"
  5-month stay: March 2025 – August 2025
- **Johannes Gutenberg-Universität, Computational Biology and Data Mining Group**
  Marie Curie Fellow — Horizon 2020 "REFRACT"
  3-month stay: November 2022 – January 2023
  3-month stay: March 2024 – May 2024

- **European Molecular Biology Laboratory (EMBL), Heidelberg — Gibson Lab**
  Marie Curie Fellow — Horizon 2020 "IDPFun"
  3-month stay: February 2023 – May 2023

Conference Presentations (2022 – 2025)

[*] **Juan Mac Donagh** and Gustavo Parisi. "Transposable Element Insertions Contribute to the Emergence of Protein Disorder during Primate Evolution". In: *IDPfun2 Midterm Meeting / JIF UNQ*. Main talk. 2025.

[*] **Juan Mac Donagh**, Miguel A. Andrade-Navarro, and Gustavo Parisi. "Identifying differential codon usage bias in protein domains with an automated pipeline." In: *XIV A2B2C 2024*. Poster. 2024.

[*] **Juan Mac Donagh**, Diego Zea, and Gustavo Parisi. "Proteins that adopt condensate states occupy extreme and opposing positions within the spectrum of evolutionary rates in the human proteome". In: *XIV A2B2C 2024*. Poster. 2024.

[*] **Juan Mac Donagh**, Diego Zea, Nicolas Palopoli, María Silvina Fornasari, and Gustavo Parisi. "Evolutionary analysis reveals emerging properties of the different forms that proteins can adopt". In: *RABE V*. Poster. 2023.

[*] **Juan Mac Donagh**, Diego Zea, Gustavo Benítez, C.E. Guisande Donadio, J. Marchetti, Nicolas Palopoli, María Silvina Fornasari, and Gustavo Parisi. "Evolutionary rates in human amyloid proteins reveal their intrinsic metastability". In: *XIC A2B2C 2022*. Poster. 2022.

Awards and Grants

ORFG: Open Scholarship Seed Awards: "Open training material in Spanish for database curation". February 2024 (Member)

H2020-Marie Curie Rise. MSCA-Rise: "IDPFun2", 2025 - 2029 (Member)

PICT-2022: "Amyloidogenic proteins: an evolutionary and population-based approach to elucidate the sequence bases of their metastability". 2024 - present (Member)

PICT-2018. "Evolutionary trajectories, conformational diversity and structural divergence as foundations for the development of bioinformatics tools for protein study". 2018 - 2024 (Member)

H2020-Marie Curie Rise. MSCA-Rise: "IDPFun", 2017 - 2022 (Member)

Priority Research Program of the National University of Quilmes: Simulation of molecular processes of physicochemical and biological relevance. (Member)

Conferences attendance (2022 - 2025)

1st ML4NGP Training School: Protein aggregation, intrinsic disorder and phase separation in the era of machine learning. (Oporto, Portugal 19-21/4/2023)

EMBO Workshop: Visualizing biological data, VIZBI (EMBL Advanced Training Centre, Heidelberg, Germany. 28 - 31/3/2023)

Symposium of Spanish-speaking Bioinformatics and Computational Biology Students, SHE2Bioinfo. (virtual event, 5/6/2022)

Skill and Competencies

Programming languages: Extensive experience: R, Python, Julia, Bash. Intermediate experience: C, Unity.
Related tools: Git, LaTeX, HTML, CSS, Docker, use of computing clusters and HCPs.
English proficiency: First Certificate in English (B2) passed (20/1/13), TOEFL passed (28/02/22).

Scientific Community Involvement

Co-founder and vice president of the Young Researchers Association (AJI).
Volunteer in XIV Congress of the Argentine Association of Bioinformatics and Computational Biology (A2B2C, La Plata, Argentina, 07-08/11/2024).
Volunteer in the Argentine Regional Student Group in Bioinformatics (RSG, from 2022 to 2023).