

Rodrigo Dorantes-Gilardi

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Web: <https://rodogi.github.io>

Experience

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| 2025 | Associate Research Scientist at Northeastern University |
| 2021–Present | Part-time lecturer at Northeastern University |
| 2021–2025 | Postdoctoral Fellow at Northeastern University |
| 2020–2021 | Postdoctoral Fellow at Colegio de México |
| 2019–2020 | Postdoctoral Fellow at Instituto Nacional de Medicina Genómica |
| 2018–2019 | Data Scientist at Telcel |

Education

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| 2014–2018 | PhD Applied Mathematics <i>IXXI Complex Systems Institute, ENS-Lyon, France.</i> <i>Université de Grenoble, France.</i> Thesis: “Bio-mathematical aspects of the plasticity of protein folding” |
| 2012–2014 | MS Applied Mathematics, <i>Universidad Autónoma de San Luis Potosí, Mexico.</i> |
| 2008–2012 | BS Economics, <i>Université de Toulouse 1 Capitole, France.</i> |

Publications

Peer reviewed

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| 2024 (In Preparation) | Abel Elekes, R. Dorantes-Gilardi , and Albert-László Barabási <i>Evaluating the scientific coverage of large language models.</i> |
| 2024 (In Preparation) | R. Dorantes-Gilardi , Yixuan Liu, and Albert-László Barabási <i>The role of international science medals in academic career advancement.</i> |
| 2024 (In Preparation) | Yixuan Liu, R. Dorantes-Gilardi , and Albert-László Barabási <i>The effect of high-impact venues on career development.</i> |
| 2024 (Submitted JAMA) | R. Dorantes-Gilardi , Kerry Ivey, Lauren Costa, Rachael Matty, Kelly Cho, John Michael Gaziano, Albert-László Barabási <i>Quantifying the impact of biobanks and cohort studies.</i> |
| 2024 (Submitted Bioinformatics) | Andrés Aldana, Michael Sebek, Gordana Ispirova, R. Dorantes-Gilardi , Albert-Laszlo Barabasi, Joseph Loscalzo, Giulia Menichetti <i>NetMedPy: A Python package for Large-Scale Network Medicine Screening.</i> |
| 2023 (January) | R. Dorantes-Gilardi , D. Terrazas-Santamaría and A. Ramirez-Álvarez <i>Is there a differentiated gender effect of collaboration with super-cited authors? Evidence from early-career economists.</i> Scientometrics |
| 2022 (August) | R. Dorantes-Gilardi , D. Terrazas-Santamaría and A. Ramirez-Álvarez <i>The role of highly intercited papers on scientific impact: the Mexican case.</i> Applied Network Science |
| 2022 (January) | C. Sotomayor-Vivas, E. Hernández-Lemus and R. Dorantes-Gilardi <i>Linking protein structural and functional change to mutation using amino acid networks.</i> PLOS One |
| 2021 (October) | W. Ye, R. Dorantes-Gilardi , Z. Xiang, and I. Aron <i>COVID-19 Twitter Communication of Major Societal Stakeholders: Health Institutions, the Government, and the News Media.</i> International Journal of Communication |
| 2021 (October) | L. Pacini, R. Dorantes-Gilardi , L. Vuillon, and C. Lesieur <i>Mapping Function from Dynamics: Future Challenges for Network-Based Models of Protein Structures.</i> Frontiers in Molecular Biosciences |
| 2021 (August) | R. Dorantes-Gilardi , D. García-Cortés, E. Hernandez-Lemus, and J. Espinal-Enríquez <i>Genes in the k-core underpin functional features of breast cancer.</i> Scientific Reports |
| 2020 (November) | R. Dorantes-Gilardi , D. García-Cortés, Hiram Hernández-Ramos and J. Espinal-EnrÁquez <i>Eight years of homicide evolution in Monterrey, Mexico: a network approach.</i> Scientific Reports |
| 2020 (August) | R. Dorantes-Gilardi , D. García-Cortés, E. Hernandez-Lemus, and J. Espinal-EnrÁquez <i>Multilayer approach reveals organizational principles disrupted in breast cancer co-expression networks.</i> Applied Network Science |
| 2018 (October) | R. Dorantes-Gilardi , L Bourgeat, L Vuillon, and C Lesieur <i>In proteins, the structural responses of a position to mutation rely on the Goldilocks principle: not too many links, not too few.</i> Phys. Chem. Chem. Phys., 20 , 25399 (2018) |
| 2016 (December) | M. Achoch, R. Dorantes-Gilardi , C. Wymant, G. Feverati, K. Salamatian, L. Vuillon, and C. Lesieur <i>Protein structural robustness to mutations: an in silico investigation.</i> Phys. Chem. Chem. Phys., 18 , 13770 (2016) |

Books

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| 2022 (October) | Ortega, Reynaldo Y., Fernando Nieto, Rodrigo Dorantes Gilardi , and Cristina I. Sotomayor <i>Strategic Polarization in social Media.</i> El Colegio de Mexico AC |
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Conference articles

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| 2017 (December) | R. Dorantes-Gilardi , L. Vuillon, and C. Lesieur <i>Perturbation of amino acid networks: A statistical study of the defects introduced in proteins by mutations.</i> The 6th International Conference on Complex Networks and Their Applications |
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Teaching

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| 2024 (Fall) | NETS5116 <i>Northeastern University.</i> Graduate & undergraduate |
| 2023 (Fall) | NETS5116 <i>Northeastern University.</i> Graduate & undergraduate |
| 2021 (Fall) | PHYS5116 <i>Northeastern University.</i> Graduate & undergraduate |
| 2021 (Spring) | Network science <i>El Colegio de México.</i> Graduate |
| 2020 (Fall) | Mathematics <i>El Colegio de México.</i> Undergraduate |

Awards

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| 2024–2028 (NIH NIGMS) | SoS: BIO: Evaluating the Impact of Biomedical Tools and Methods \$995,572 Project Number: 1R01GM158813-01 |
| 2022 (SNI) | Sistema Nacional de Investigadores (National System of Researchers, Mexico) <i>Level 1</i> Area 1 – Interdisciplinary and applied math |
| 2020 (SNI) | Sistema Nacional de Investigadores (National System of Researchers, Mexico) <i>Candidate</i> Area 1 – Interdisciplinary and applied math |

Reviewing

Papers

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| 2024 | Nature Communications |
| 2023 | Nature Communications, npj Systems Biology and Applications, Bioinformatics Advances |
| 2022 | PNAS, Bioinformatics Advances |
| 2019 | PLOS One |

Grants

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| 2024 | NSF – Human Networks and Data Science (HNDS-I) |
| 2023 | NSF – Science of Science: Discovery, Communication and Impact (SoS:DCI) |

Talks

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| 2024 (July) | ICSSI 2024 <i>"Evaluating the Impact of Biomedical Tools and Methods"</i> National Academy of Sciences, Washington DC, USA |
| 2024 (May) | Seminario Permanente Ciencia de Datos Colegio de México 2024 <i>"El Impacto de los Métodos y Herramientas en la Ciencia"</i> Virtual – El Colegio de México |
| 2023 (February) | NetSci-X 2023 <i>Quantifying biobank impact</i> Buenos Aires, Argentiná |
| 2022 (November) | Complex networks 2022 <i>Quantifying biobank impact</i> Palermo, Italy |
| 2022 (July) | Lanet 2022 <i>Structural and functional change to mutation using amino acid networks</i> Universidad del Pacífico, Lima, Peru |
| 2022 (June) | ICSSI 2022 <i>Quantifying biobank impact</i> National Academy of Sciences, Washington D.C. |
| 2021 (June) | CEE seminar <i>Super-cited authors and their effect on gender citation bias: a network approach.</i> El Colegio de México. |
| 2020 (December) | Computational biology week at the INMEGEN <i>Gene co-expression networks.</i> Instituto Nacional de Medicina genómica. |
| 2016 (May) | Workshop on Mechanisms underlying local to global signals in networks <i>Amino-acid network as a model of the protein's structure, an in silico investigation.</i> IXXI, École Normale Supérieure de Lyon, France. |
| 2016 (March) | Workshop on Advanced mathematics for network analysis <i>Amino-acid networks used to capture protein structural changes caused by mutations.</i> Luchon, France. |
| 2015 (June) | Workshop on protein fibers: from pathology to nanomaterial <i>Protein Graphs.</i> École Normale Supérieure de Lyon, France. |
| 2015 (April) | IXXI Seminar <i>Tentative to relate functional and structural changes in protein, caused by mutations (perturbations) using amino-acid networks.</i> École Normale Supérieure de Lyon, France. |
| 2014 (December) | Theoretical Approaches for the Genome and the proteome <i>What impact to expect on a whole protein from geometrical changes produced by local amino acid side chain perturbation (in silico amino acid mutation): resilience and innovation.</i> Bourget-du-Lac, France. |

Posters

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| 2023 (June) | ICSSI 2023 <i>Talent matters: The Role of International Science Medals in Academic Career Advancement</i> Chicago, USA |
| 2017 (December) | The 6th International Conference on Complex Networks and Their Applications <i>Perturbation of amino acid networks: A statistical study of the defects introduced in proteins by mutations.</i> Lyon, France. |
| 2015 (May) | Inter'Actions 2015 <i>Statistics On Protein Graphs.</i> Grenoble, France. |

Schools

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| 2016 (April) | <i>Spring school of theoretical informatics.</i> CIRM, Marseille, France. |
| 2016 (March) | <i>School for young researchers in mathematical informatics.</i> IMJ-PRG, Paris, France. |
| 2015 (January) | <i>School Algorithms and Heuristics for Large-scale Data Sets.</i> École Normale Supérieure de Lyon, Lyon, France. |
| 2014 (November) | <i>Lyon systems biology.</i> École Normale Supérieure de Lyon, Lyon, France. |

Organization

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| 2014 (December) | Theoretical Approaches for the Genome and the proteome Bourget-du-Lac, France. |
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Skills

Programming

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| Python | Advanced |
| SQL | Advanced (BigQuery, Oracle and Netezza) |
| R | Intermediate |
| Bash | Intermediate |
| HTML, CSS | Intermediate |
| Lisp | Intermediate (Emacs) |
| Git | Intermediate |

Open Source Software

I have contributed to the following projects:

- NetMedPy (<https://github.com/menicgiulia/NetMedPy>)
- networkx (<https://networkx.github.io/>)
- biographs (<https://github.com/rodogi/biographs>)
- biopython (<http://biopython.org/>)

Bioinformatics

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| Pymol | Intermediate |
| YASARA | Intermediate |
| FoldX | Intermediate |
| Bio | Protein Data Bank: query (requests module in python), cleanse, analyze (numpy and pandas) |
| Bio-Structure | Database analysis (Biopython PDB module) |
| Bio-Space | Computational Algorithms using Delaunay triangulations and Convex hulls (Scipy spatial module) |

Languages

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| Spanish | Reading, Writing, Speaking: Native language. |
| English | Reading, Writing, Speaking: Fluent (C2). |
| French | Reading, Writing, Speaking: Fluent (C1). |