

# Rodrigo Dorantes-Gilardi

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## Experience

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

## Education

<b>2014–2018</b>	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”
<b>2012–2014</b>	MS Applied Mathematics, <i>Universidad Autónoma de San Luis Potosí, Mexico.</i>
<b>2008–2012</b>	BS Economics, <i>Université de Toulouse 1 Capitole, France.</i>

## Publications

### Peer reviewed

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

## Books

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

<b>2017</b> (December)	<b>R. Dorantes-Gilardi</b> , 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

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

## Awards

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

## Reviewing

### Papers

<b>2024</b>	Nature Communications
<b>2023</b>	Nature Communications, npj Systems Biology and Applications, Bioinformatics Advances
<b>2022</b>	PNAS, Bioinformatics Advances
<b>2019</b>	PLOS One

### Grants

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

## Talks

<b>2024</b> (July)	ICSSI 2024 <i>“Evaluating the Impact of Biomedical Tools and Methods”</i> National Academy of Sciences, Washington DC, USA
<b>2024</b> (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
<b>2023</b> (February)	NetSci-X 2023 <i>Quantifying biobank impact</i> Buenos Aires, Argentina
<b>2022</b> (November)	Complex networks 2022 <i>Quantifying biobank impact</i> Palermo, Italy
<b>2022</b> (July)	Lanet 2022 <i>Structural and functional change to mutation using amino acid networks</i> Universidad del Pacífico, Lima, Peru
<b>2022</b> (June)	ICSSI 2022 <i>Quantifying biobank impact</i> National Academy of Sciences, Washington D.C.
<b>2021</b> (June)	CEE seminar <i>Super-cited authors and their effect on gender citation bias: a network approach.</i> El Colegio de México.
<b>2020</b> (December)	Computational biology week at the INMEGEN <i>Gene co-expression networks.</i> Insituto Nacional de Medicina genómica.
<b>2016</b> (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.
<b>2016</b> (March)	Workshop on Advanced mathematics for network analysis <i>Amino-acid networks used to capture protein structural changes caused by mutations.</i>  Luchon, France.
<b>2015</b> (June)	Workshop on protein fibers: from pathology to nanomaterial <i>Protein Graphs.</i> École Normale Supérieure de Lyon, France.
<b>2015</b> (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.
<b>2014</b> (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

<b>2023</b> (June)	ICSSI 2023 <i>Talent matters: The Role of International Science Medals in Academic Career Advancement</i> Chicago, USA
<b>2017</b> (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.
<b>2015</b> (May)	Inter'Actions 2015 <i>Statistics On Protein Graphs.</i> Grenoble, France.

## Schools

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

## Organization

<b>2014</b> (December)	Theoretical Approaches for the Genome and the proteome Bourget-du-Lac, France.
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## Skills

### Programming

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

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

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