

Mónica García Solache

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Molecular Microbiologist and Bacteriologist

WORK EXPERIENCE

Assistant Professor. Department of Medicine, Division of Infectious Disease, Rhode Island Hospital/ Warren Alpert Medical School, Brown University. Providence, RI, USA. 07/2017-present.

- Writing and reviewing medical research protocols.
- Managing projects
- Team managing
- Scientific grant writing
- Raised \$200,000 of competitive funding

Research Associate. Department of Medicine, Division of Infectious Disease, Rhode Island Hospital/ Warren Alpert Medical School, Brown University. Providence, RI, USA. 04/2013-06/2017.

- Research project development
- Project organization and execution
- Scientific writing

Postdoctoral Research Fellow. Microbiology and Immunology Department, Albert Einstein College of Medicine. NY, NY, USA. 01/2010-09/2012.

- Received \$50,000 of competitive postdoctoral fellowship award
- Research Project design

Medical Social Service. National Institute of Public Health, National Institutes of Health, Cuernavaca, Morelos, Mexico. 01/01/2001-01/02/2002.

- Biostatistics
- Research

SKILLS

- Team management
- Technical writing
- Scientific research
- Interdisciplinary work
- Bioinformatics (Biopython, Javascript, BLAST, Prokka, PhyML, OrthoMCL)
- Biostatistics
- Molecular Biology (basic and advanced techniques)
- Microbiology (Basis and advanced techniques)
- Biochemistry and cell biology techniques

LANGUAGES

- Spanish, native.
- English, fluent.
- French, intermediate.

EDUCATION

Doctor of Philosophy. Darwin College, University of Cambridge, UK. Zoology Department, Laboratory for Evolution and Development. 5/01/1/2005-25/04/2009.

Master in Biological Sciences. School of Sciences, Universidad Nacional Autónoma de México. Grade: 9.56 Summa cum laude. 08/2002-12/2004.

Medical Doctor. School of Medicine, Universidad Nacional Autónoma de México. Grade: 8.96/10 (A), Enrolled in the High-Performance Program. General Practitioner, Mexican Board Registration: 3568393. Spanish Board Certification: 0741180/2009/H17124. 09/1995-02/2002.

MEMBERSHIP OF SCIENTIFIC SOCIETIES

- American Society for Microbiology. 2010-Present.
- Society for Molecular Biology and Evolution. 2012-Present.
- National Researchers System, National Council for Science and Technology, Mexico. 2012-Present.

FELLOWSHIPS AND AWARDS

- 2019-2021 National Researchers System (SNI), National Researcher Level I, National Council for Science and Technology, Mexico.
- 2016-2018 National Researchers System (SNI), National Researcher Level I, National Council for Science and Technology, Mexico.
- 2012-2014 National Researchers System (SNI) Candidate National Researcher, National Council for Science and Technology, Mexico.
- 1/1/2010- 12/31/2011 International Postdoctoral Fellowship, National Council for Science and Technology, Mexico. \$48,000 ≈ €40,000.
- 2009 Short term EMBO fellowship: Quantifying Gap Gene Expression in the Basal Fly *Clogmia albipunctata*, Centre for Genomic Regulation, Barcelona, Spain. Group Leader: Dr. Johannes Jaeger. €3,000.
- 2008 Lundgren Research Award, Board of Graduate Studies, University of Cambridge. Cambridge Philosophical Society Research Studentship. €1,000.
- 2005 -2008 PhD Fellowship, National Council for Science and Technology, Mexico. £119,5920 ≈ €132,000
- 2002 Poster presentation. First Place Award: “Cloning and Characterization of NRAMP homologous gene in the mosquito *Anopheles albimanus*”. XV National Congress of Immunology. Area Innate Immunity. Ixtapa Zihuatanejo, México, April 28 to May 1st, 2002.
- 2000 First Place Award: Plasmatic and Placental Levels of CETP in Preeclamptic Patients. XII Internship Medical Journeys, Dr. Manuel Gea González General Hospital, Health Ministry.

FUNDING

- 09/2022-09/2023 Brown Physicians Inc. Academic Assessment Grant, The role of c-di-AMP homeostasis in beta-lactam resistance in *Enterococcus faecalis*. \$50,000. Brown Physicians Inc. Providence, RI, USA.
- 04/2019-03/2020 COBRE CARTD Pilot Project, Mechanism of Synergy Between β -lactams & Aminoglycosides in Gram-positive Bacteria. \$150,000. National Institute of General Medical Sciences, National Institutes of Health, USA.
- 07/2017 Recruitment Package, this package was offered to me when I was appointed to the Brown University/Rhode Island Hospital Faculty Body for the position of Assistant Professor of Medicine. \$250,000.

EDITORIAL BOARD

- 12/2021- present Member of the Editorial Board of ASM Microbiology Spectrum
- 05/2023-present Member of the Editorial Board of Frontiers in Microbiology

REVIEWER

External scientific reviewer for the Nacional Council of Science and Technology (Conacyt) Mexico. Reviewer for candidates for doctoral studies abroad (2013) and to evaluate research projects for funding in the Basic Research Calls 2017-2018, 2019-2020 and 2022-2023.

Ad hoc reviewer NHI 2021 Prokaryotic Cell and Molecular Biology Study Section (PCMB).

Ad hoc reviewer NHI 2023 Small Business and Technology Transfer Study Section (SBIR/STTR).

REVIEWER JOURNALS

Antimicrobial Agents and Chemotherapy

PUBLICATIONS

- Penicillin-Binding Proteins and Alternative Dual-Beta-Lactam Combinations for Serious *Enterococcus faecalis* Infections with Elevated Penicillin MICs. Jaclyn A. Cusumano, Kathryn E. Daffinee, Paul Ugalde, Wolfgang Peti, Michel Arthur, Charlene Desbonnet, Louis B. Rice, Kerry L. LaPlante, **Mónica García-Solache**. Antimicrob Agents Chemother. 2023 Feb 16;67(2):e0087122. doi: 10.1128/aac.00871-22. Epub 2023 Jan 31. PMID: 36719223 PMCID: PMC9933722 (available on 2023-07-31) DOI: 10.1128/aac.00871-22
- Meropenem plus Ceftaroline is Active against *Enterococcus faecalis* in an In Vitro Pharmacodynamic Model Using Humanized Dosing Simulations. Cusumano JA, Daffinee KE, Piehl EC, **García-Solache M**, Desbonnet C, Rice LB, LaPlante KL. Antimicrob Agents Chemother. 2022 Oct 18;66(10):e0042622. doi: 10.1128/aac.00426-22. Epub 2022 Sep 26. PMID: 36154173
- Ready-to-eat Dairy Products as a Source of Multidrug-resistant *Enterococcus* Strains: Phenotypic and Genotypic Characteristics. Chajęcka-Wierzchowska W, Zadernowska A, **García-Solache M**. J Dairy Sci. 2020 May;103(5):4068-4077. doi: 10.3168/jds.2019-17395. Epub 2020 Mar 18. PMID: 32197843. Free article.
- The Structures of Penicillin-Binding Protein 4 (PBP4) and PBP5 from Enterococci Provide Structural Insights into β -lactam resistance. Moon TM, D'Andréa ÉD, Lee CW, Soares A, Jakoncic J, Desbonnet C, **Garcia-Solache M**, Rice LB, Page R, Peti W. J Biol Chem. 2018 Nov 30;293(48):18574-18584. doi: 10.1074/jbc.RA118.006052. Epub 2018 Oct 24. PMID: 30355734 Free PMC article.
- Structural and Regulatory Changes in PBP4 Trigger Decreased β -Lactam Susceptibility in *Enterococcus faecalis*. Rice LB, Desbonnet C, Tait-Kamradt A, **Garcia-Solache M**, Lonks J, Moon TM, D'Andréa ÉD, Page R, Peti W. mBio. 2018 Apr 3;9(2):e00361-18. doi: 10.1128/mBio.00361-18. PMID: 29615500 Free PMC article.
- Homologous Recombination within Large Chromosomal Regions Facilitates Acquisition of β -Lactam and Vancomycin Resistance in *Enterococcus faecium*. **García-Solache M**, Lebreton F, McLaughlin RE, Whiteaker JD, Gilmore MS, Rice LB. Antimicrob Agents Chemother. 2016 Sep 23;60(10):5777-86. doi: 10.1128/AAC.00488-16. Print 2016 Oct. PMID: 27431230 Free PMC article, corresponding author.
- Draft Genome Sequence of Vancomycin-Susceptible, Ampicillin-Intermediate *Enterococcus faecium* Strain D344RRF. **García-Solache M**, Rice LB. Genome Announc. 2016 May 5;4(3):e01720-15. doi: 10.1128/genomeA.01720-15. PMID: 27151809 Free PMC article, corresponding author.
- Genome Sequence of the Multiantibiotic-Resistant *Enterococcus faecium* Strain C68 and Insights on the pLRM23 Colonization Plasmid. **García-Solache M**, Rice LB. Genome Announc. 2016 May 5;4(3):e01719-15. doi: 10.1128/genomeA.01719-15. PMID: 27151808 Free PMC article, corresponding author.
- Involvement of the Eukaryote-Like Kinase-Phosphatase System and a Protein That Interacts with Penicillin-Binding Protein 5 in Emergence of Cephalosporin Resistance in Cephalosporin-Sensitive Class A Penicillin-Binding Protein Mutants in *Enterococcus faecium*. Desbonnet C, Tait-Kamradt A, **Garcia-Solache M**, Dunman P, Coleman J, Arthur M, Rice LB. mBio. 2016 Apr 5;7(2):e02188-15. doi: 10.1128/mBio.02188-15. PMID: 27048803 Free PMC article.
- Evolution of early development in dipterans: reverse-engineering the gap gene network in the moth midge *Clogmia albipunctata* (Psychodidae). Crombach A, **García-Solache MA**, Jaeger J. Biosystems. 2014 Sep;123:74-85. doi: 10.1016/j.biosystems.2014.06.003. Epub 2014 Jun 6. PMID: 24911671 Free article.

- Fungal virulence in a lepidopteran model is an emergent property with deterministic features. **García-Solache MA**, Izquierdo-García D, Smith C, Bergman A, Casadevall A. *mBio*. 2013 Apr 30;4(3):e00100-13. doi: 10.1128/mBio.00100-13. PMID: 23631914 Free PMC article, corresponding author.
- Global warming will bring new fungal diseases for mammals. **García-Solache MA**, Casadevall A. *mBio*. 2010 May 18;1(1):e00061-10. doi: 10.1128/mBio.00061-10. PMID: 20689745 Free PMC article, corresponding author.
- A systematic analysis of the gap gene system in the moth midge *Clogmia albipunctata*. **García-Solache M**, Jaeger J, Akam M. *Dev Biol*. 2010 Aug 1;344(1):306-18. doi: 10.1016/j.ydbio.2010.04.019. Epub 2010 Apr 28. PMID: 20433825 Free article.
- Cloning and functional characterization of the *Anopheles albimanus* DMT1/NRAMP homolog: implications in iron metabolism in mosquitoes. Martínez-Barnette J, **García Solache M**, Neri Lecona A, Tello López AT, del Carmen Rodríguez M, Gamba G, Vázquez N, Rodríguez MH, Lanz-Mendoza H. *Insect Biochem Mol Biol*. 2007 Jun;37(6):532-9. doi: 10.1016/j.ibmb.2007.02.009. Epub 2007 Mar 2. PMID: 17517330.

OTHER PEER-REVIEWED PUBLICATIONS

- The Enterococcus: a Model of Adaptability to Its Environment. **García-Solache M**, Rice LB. *Clin Microbiol Rev*. 2019 Jan 30;32(2):e00058-18. doi: 10.1128/CMR.00058-18. Print 2019 Mar 20. PMID: 30700430 Free PMC article. Review, corresponding author.

BOOKS AND BOOK CHAPTERS

- **García-Solache, Mónica A.** and Casadevall, Arturo. Phylogenetics and Evolution of Virulence in the Kingdom Fungi, in *Evolution of Virulence in Eukaryotic Microbes*, Editors, L. David Sibley, Barbara J. Howlett, and Joseph Heitman, Wiley-Blackwell, pp 70-90. 2012. ISBN: 978-1-1180-3818-5.

TEACHING

2019	Mentor Summer Research Program Brown University supervising one 2 nd year medical student and one 2 nd year undergraduate
2005 -2007	Evolution and Behaviour, Hours/year: 5. University of Cambridge, Undergraduate.
2008-2009	Bacteriology, Hours/year: 8. University of Cambridge, Undergraduate.
2009	Histopathology Hours/year: 6. University of Cambridge, Undergraduate.
2005- 2009	Biology of Cells IA, Hours/year: 40. University of Cambridge, Undergraduate.
2004	Undergraduate Research Project Supervisor, Universidad Autónoma del Estado de Morelos, México.