

Raúl A. González-Pech, PhD
Curriculum vitae

Department of Biology, College of Science and Engineering, Texas State University
San Marcos, TX 78666, USA

WoS ResearcherID: C-7968-2017 | **Scopus:** 56621437200 | **ORCID:** 0000-0001-9808-297X
E: r.gonzalezpech@txstate.edu

Education

- 2016-2020 PhD in Comparative Genomics | Institute for Molecular Bioscience
The University of Queensland, Australia
Dissertation: Genome evolution of Symbiodiniaceae
Supervisors: Cheong Xin Chan, Mark A. Ragan & Lachlan Coin
- 2013-2015 MSc in Evolution, Ecology and Systematics | Faculty of Biology
Ludwig-Maximilians University of Munich, Germany
Thesis: Individual plasticity vs. stress response: lessons from a transcriptome survey of an adult coral exposed to low pH
Supervisors: Gert Wörheide, Sergio Vargas & Warren R. Francis
- 2007-2013 BSc in Biology | School of Biological Sciences
Autonomous University of Nuevo Leon, Mexico
Thesis (in Germany): Transmission of intracolony genetic variability through sexual reproduction in *Acropora hyacinthus*
Supervisors: Kathrin Lampert & Maximilian Schweinsberg

Research Appointments

- 2025-present Assistant Professor | Department of Biology | Texas State University, USA
- 2022-2025 Eberly Postdoctoral Research Fellow | Department of Biology | The Pennsylvania State University, USA
- 2020-2022 Postdoctoral Scholar | Department of Integrative Biology (Parkinson Lab) | University of South Florida, USA
- 2019 Trainee | Climate Change Cluster (Suggett Lab) | University of Technology Sydney, Australia
- 2018-2019 Placement Student | Gut Microbiome Function Research Team (McSweeney Lab) | Commonwealth Scientific and Industrial Research Organisation, Australia
- 2013-2015 Graduate Researcher | Molecular Geo- & Paleobiology Lab (Wörheide Lab) | Ludwig-Maximilians University of Munich, Germany
- 2014 Student Job | German Barcode of Life Project (Supervised by Jerome Moriniere) | Bavarian State Collection of Zoology, Germany
Graduate Researcher | Statistical Genetics Group (Metzler Lab) | Ludwig-Maximilians University of Munich, Germany
- 2012-2013 Social Service | Beneficial Insects Collection (González-Hernández Lab) | Autonomous University of Nuevo Leon, Mexico
- 2012 Undergraduate Researcher | Department of Animal Evolution, Ecology & Biodiversity (Lampert Lab) | Ruhr-University of Bochum, Germany
- 2010 Undergraduate Intern | Marine Ecology Department (Turon Lab) | Blanes Centre for Advanced Studies, Spain
- 2009 Undergraduate Intern | Ecophysiology Lab (Mendoza-Alfaro Lab) | Autonomous University of Nuevo Leon, Mexico

- 2008 Undergraduate Intern | Department of Marine Ecology (Ibarra-Obando Lab) | Ensenada Center for Scientific Research and Higher Education, Mexico
- 2007 High School Intern | Department of Histology (Montes de Oca-Luna Lab) | Autonomous University of Nuevo Leon, Mexico

Funding

- 2026 PI | \$24,000 USD
Research Enhancement Program | Texas State University
“Advancing the understanding of the genomic basis of symbiosis”
- 2024 (pending) Subawardee | \$1,786,716 (PSU portion)
Biodiversity in a Changing Planet | National Science Foundation
“Ancient DNA approaches to reconstruct global anthropogenic impacts on coral reefs”
- Postdoctoral trainee and writer | \$5,000 USD
Interdisciplinary Innovation Fellowship | Penn State One Health Microbiome Center
“The role of symbiont terpenoid biosynthesis in host development”
- Co-PI | \$7,500 USD
Associate Director for Science and Chief Scientist Rolling Grant | Smithsonian Institution
“Phylogenomics of coral symbiosis: Testing an approach to target-capture ultraconserved elements in coral photosymbionts”
- 2023 PI | \$1,000 USD
Undergraduate Research Support | Eberly College of Science, The Pennsylvania State University
“Novel genomic markers to study diversity and evolution of coral symbionts”
- 2021 PI | \$2,400 USD
Grants-in-Aid of Research | Phycological Society of America
“Epigenetic regulation of transcript variants involved in the heat stress response of coral symbionts (family Symbiodiniaceae)”
- 2019 Co-PI | \$1,500 AUD
Ethel Mary Read Research Grant | Royal Zoological Society of New South Wales
“Harmless refugee or dangerous invader? Identification of fitness traits that allow the subtropical coral *Pocillopora aliciae* to proliferate in Sydney Harbor”

Awards

- 2022-2025 Eberly Postdoctoral Research Fellowship | PSU Eberly College of Science
- 2024 CnidoFest Registration Fee Waiver Award
Cassiopea Workshop Travel Fund
- 2023 International Society for Endocytobiology Conference Travel Grant (unattended)
Cassiopea Workshop Moore Foundation Travel Fund
- 2022 PSU Microbiome Center Community Building Travel Award
- 2016 Winter School Award | Institute for Molecular Biology, The University of Queensland
- 2009 Citizen Distinction | Mayor of Coatzacoalcos, Mexico
- 2007 Gold Medal | Ibero-American Biology Olympiad
Gold Medal | Mexican Biology Olympiad
- 2006 Silver Medal | Mexican Biology Olympiad

Publications**h-index:** 15**i10-index:** 16**Citations:** 1051Peer-reviewed

1. Sharp V, Mammone M, Dye C, **González-Pech RA**, Yarden O & Medina M. (2026). The mycobiome of *Cassiopea xamachana* as determined by culture-based and metagenomic sequencing. *Symbiosis*.
2. Lera-Lozano D, Ruiz Toquica JS, Kratman SA, Holt MW, McIntyre CA, Jones E, Lopez-Victoria M, Ritchie K, Medina M & **González-Pech RA**. (2025). Genomic potential of crustose coralline algae-associated bacteria for the biosynthesis of novel antimicrobials. *Microbial Genomics* 11 (7): 001456.
3. Walling LK, Gamache MH, **González-Pech RA**, Harwood VJ, Ibrahim-Hashim A, Jung JH, Lewis DB, Margres MJ, McMinds R, Rasheed K, Reis F, van Riemsdijk I, Santiago-Alarcon D, Sarmiento C, Whelan CJ, Zalamea PC, Parkinson JE & Richards CL. (2025). Incorporating microbiome analyses can enhance conservation of threatened species and ecosystem functions. *Science of the Total Environment* 970: 178826.
4. **González-Pech RA**, Li VY, Garcia V, Boville E, Mammone M, Kitano H, Ritchie KB & Medina M. (2024). The evolution, assembly, and dynamics of marine holobionts. *Annual Review of Marine Science* 16: 1.
5. **González-Pech RA**, Shepherd J, Fuller ZL, LaJeunesse TC & Parkinson JE. (2024). The genome of a giant clam zooxanthella (*Cladocopium infistulum*) offers few clues to adaptation as an extracellular symbiont with high thermotolerance. *BMC Genomics* 25: 914.
6. Paz-García DA, Armstrong EJ, Popovic I, **González-Pech RA** & Hellberg ME. (2023). Editorial: Innovative approaches to coral reef science by early career researchers. *Frontiers in Marine Science* 10: 1322657.
7. Davies S, Gamache MH, Howe-Kerr LI, Kriefall NG... **González-Pech RA**... Correa A & Parkinson JE. (2023). Building consensus around the assessment and interpretation of Symbiodiniaceae diversity. *PeerJ* 11: e15023.
8. **González-Pech RA**, Hughes DJ, Strudwick P, Lewis BM, Booth DJ, Figueira WF, Brigitte Sommer B, Suggett DJ & Matthews J. (2022). Physiological factors facilitating the persistence of *Pocillopora aliciae* and *Plesiastrea versipora* in temperate reefs of Southeastern Australia under ocean warming. *Coral Reefs* 41: 1239-53.
9. Dougan KE, **González-Pech RA**, Stephens TG, Shah S, Chen Y, Ragan MA, Bhattacharya D, & Chan CX. (2022). Genome-powered classification: insights gained from coral algal symbionts. *Trends in Microbiology* 30 (9): 831-840.
10. Bernard G, Stephens TG, **González-Pech RA** & Chan CX. (2021). Inferring phylogenomic relationship of microbes using scalable alignment-free methods. In: *Bacterial Pangenomics: Methods and Protocols, Methods in Molecular Biology*. Vol. 2242 (eds. Mengoni A et al.). Springer Nature.
11. **González-Pech RA**, Stephens TG, Chen Y, Mohamed AR, Cheng Y, Shah S, Dougan KE, Fortuin MDA, Lagorce R, Burt DW, Bhattacharya D, Ragan MA & Chan CX. (2021). Comparison of 15 dinoflagellate genomes reveal extensive sequence and structural divergence in family Symbiodiniaceae and genus *Symbiodinium*. *BMC Biology* 19: 73.
12. Jacobus AP, Stephens TG, Youssef P, **González-Pech RA**, Ciccotosto-Camp MM, Dougan KE, Chen Y, Basso LC, Frazzon J, Chan CX & Gross J. (2021). Comparative genomics supports that Brazilian bioethanol *Saccharomyces cerevisiae* comprise a unified group of domesticated strains related to cachaça spirit yeasts. *Frontiers in Microbiology* 12: 687.
13. Stephens TG, **González-Pech RA**, Cheng Y, Mohamed AR, Burt D, Bhattacharya D, Ragan MA & Chan CX. (2019). Genomes of the dinoflagellate *Polarella glacialis* encode tandemly repeated single-exon genes with adaptive functions. *BMC Biology* 18 (1): 1-21.
14. Chen Y, **González-Pech RA**, Stephens TG, Bhattacharya D & Chan CX. (2020). Evidence that inconsistent gene prediction can mislead analysis of algal genomes. *Journal of Phycology* 56: 6-10.
15. **González-Pech RA**, Bhattacharya D, Ragan MA & Chan CX. (2019). Genome evolution of coral reef symbionts as intracellular residents. *Trends in Ecology and Evolution* 34 (9): 799-80. **[Featured on cover]**

16. **González-Pech RA**, Stephens TG & Chan CX. (2018). Commonly misunderstood parameters of NCBI BLAST and important considerations for users. *Bioinformatics* 35 (15): 2697-8.
17. Liu H, Stephens TG, **González-Pech RA**, Beltran VH, Lapeyre B, Bongaerts P, Cooke I, Aranda M, Bourne DG, Forêt S, Miller DJ, van Oppen MJ, Voolstra CR, Ragan MA & Chan CX. (2018). *Symbiodinium* genomes reveal adaptive evolution of functions related to coral-dinoflagellate symbiosis. *Communications Biology* 1, 95.
18. **González-Pech RA**, Ragan MA & Chan CX. (2017). Signatures of adaptation and symbiosis in genomes and transcriptomes of *Symbiodinium*. *Scientific Reports* 7 (1), 15021.
19. **González-Pech RA**, Vargas S, Francis WR & Wörheide G. (2017). Transcriptomic resilience of the *Montipora digitata* holobiont to low pH. *Frontiers in Marine Science* 4, 403.
20. Voigt O, Erpenbeck D, **González-Pech RA**, Al-Aidaros AM, Berumen ML & Wörheide G. (2017). Calcinea of the Red Sea: providing a DNA barcode inventory with description of four new species. *Marine Biodiversity* 47, 1009-34.
21. Schweinsberg M, **González-Pech RA**, Tollrian R, Lampert KP. (2014). Transfer of intracolony genetic variability through gametes in *Acropora hyacinthus* corals. *Coral Reefs* 33 (1), 77-87.
22. Erwin PM, López-Legentil S, **González-Pech RA** & Turon X (2012) A specific mix of generalists: bacterial symbionts in Mediterranean *Ircinia* spp. *FEMS Microbiology Ecology* 79 (3): 619-37.

In Progress

- González-Pech RA**, Howe C, Lizcano-Sandoval L, Eisenhofer-Philipona RA, Marciniak S, Roitman S, Marulanda-Gomez AM, Rodriguez-Ramirez A, Perry GH, Weyrich L, Lopez-Victoria M, Cole JE & Medina M. (2024). A paleogenomic approach to reconstruct historical responses of coral reefs to anthropogenic change. *bioRxiv*.
- Walling L, van Riemsdijk I, **González-Pech RA**, Mounger J, Schmid MW, Parkinson JE & Richards C. (In preparation). Low genetic and epigenetic variation in the invasive cordgrass *Spartina alterniflora* in France.
- Ruiz Toquica JS, Lera-Lozano D, **González-Pech RA** & Medina M. (In preparation). Genomic assessment of a coral probiotic consortium reveals oxidative stress protection and other beneficial traits.

Internships, Trainings & Scholarships

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| 2019 | Early Career Training Program Coral Bleaching Research Coordination Network |
| 2016-2019 | Centennial Scholarship The University of Queensland
International Postgraduate Research Scholarship The University of Queensland |
| 2015 | Floating Summer School in Marine Biology & Oceanography (unattended) North South Atlantic Training Transect |
| 2013-2015 | Postgraduate Scholarship Mexican National Council of Science (CONACYT) & German Academic Exchange Service (DAAD) |
| 2011-2012 | Exchange Scholarship for Young Engineers Autonomous University of Nuevo Leon & German Academic Exchange Service (DAAD) |
| 2010 | JAE Intro Summer Research Internship Spanish National Research Council |
| 2009 | PROVERICYT Summer Research Internship Autonomous University of Nuevo Leon |
| 2008 | Summer Research Internship Mexican Academy of Sciences |
| 2007-2012 | Academic Merit Scholarship Autonomous University of Nuevo Leon |
| 2007 | Summer Research Internship Mexican Academy of Sciences |
| 2006 | Science for Youth Workshop National Autonomous University of Mexico, Ensenada Center for Scientific Research and Higher Education & Autonomous University of Baja California |

Teaching Experience

- 2026 Instructor | BIO 4351F Marine Ecology and Conservation | Texas State University | Undergraduate course
- 2025 Guest lecturer | BIO 4432/5432 Bacterial Genomics | Texas State University | Undergraduate and graduate course
 Guest lecturer | BIOL 483 Coastal Biology | The Pennsylvania State University | Undergraduate course
 Guest lecturer | BSC 4930/6936 Coral Reefs | Florida Atlantic University | Undergraduate and graduate course
- 2024 Instructor | BIOL 497 Ecology and Evolution of Coral Reefs | The Pennsylvania State University | Undergraduate course
 Guest lecturer | BIOL 483 Coastal Biology | The Pennsylvania State University | Undergraduate course
 Guest lecturer | ANSC 456 Animal Microbiomes | The Pennsylvania State University | Undergraduate course
- 2023 Guest lecturer | ANSC 456 Animal Microbiomes | The Pennsylvania State University | Undergraduate course
 Instructor | ECLGY 550 Current Issues Microbiome Sciences | The Pennsylvania State University | Graduate course
- 2022 Guest lecturer | BI/ES 593 Marine Physiology and Climate Change | Boston University | Undergraduate and graduate course
 Guest lecturer | ANSC 456 Animal Microbiomes | The Pennsylvania State University | Undergraduate course
 Guest lecturer | BIOL 497 Biological Oceanography | The Pennsylvania State University | Undergraduate course
- 2021 Guest lecturer | BSC 6932 Organic Evolution | University of South Florida | Graduate course
 Guest lecturer | PCB 4674 Organic Evolution | University of South Florida | Undergraduate course
 Guest lecturer | Introduction to Microbiology Laboratory | New College of Florida | Undergraduate course
 Organizer an instructor | Introduction to R | University of South Florida (Parkinson Lab) | Undergraduate and graduate workshop
- 2016-2019 Tutor | BINF 6000 Concepts in Bioinformatics | The University of Queensland | Graduate course
- 2018 Tutor | BINF 7000 Advanced Bioinformatics | The University of Queensland | Graduate course
- 2017-2018 Tutor | MICR 3004 Microbial Genomics | The University of Queensland | Graduate course
- 2016-2018 Tutor | BIOL 3004 Genomics & Bioinformatics | The University of Queensland | Graduate course
- 2014 Tutor | Geobiological Field Methods: Coral Reefs | Ludwig-Maximilians University of Munich | Graduate course
- 2010-2011 Tutor | Basic Concepts of Biology | Autonomous University of Nuevo Leon | Undergraduate course
- 2009-2010 Tutor | Biology of Insects | Autonomous University of Nuevo Leon | Undergraduate course

PresentationsInvited seminars

- 2025 Department of Biology, Texas State University, USA
Department of Biology and Marine Biology, University of North Carolina Wilmington, USA
Larry Mays Seminar Series in Bioinformatics, Department of Bioinformatics and Genomics, University of North Carolina Charlotte, USA (Virtual)
- 2024 Helmholtz Institute for Marine Functional Biodiversity, Germany
Keynote, Genomics Symposium, Center for Genomics, The University Kansas, USA
- 2023 Biology Department, Hope College, USA
Institute of Marine and Environmental Technology, University System of Maryland, USA
- 2022 Microbiome Center Seminar Series, The Pennsylvania State University, USA
Marine and Environmental Biology Section, University of Southern California, USA (Virtual)
- 2021 Department of Biology, Boston University, USA (Virtual)
Department of Biochemistry and Microbiology, Rutgers University, USA (Virtual)
Department of BioSciences, Rice University, USA (Virtual)
Marine BioGenomics Seminar Series, Biological Research Centre of the North-West (CIBNOR), Mexico (Virtual)
- 2020 Electronic Symposium on Protistology (Virtual)
- 2018 Joint Academic Microbiology Seminars Brisbane, Australia

Oral presentations

- 2025 PSU Ancient DNA Consortium Annual Meeting
- 2024 International *Cassiopea* Workshop and Conference, USA
- 2023 International *Cassiopea* Workshop and Conference, USA
- 2021 International Coral Reef Symposium (Virtual)
Phycological Society of America Annual Meeting (Virtual)
PSB 2021: Bioinformatics of Corals Workshop (Virtual)
- 2019 Australian Coral Reef Society Conference, Australia
- 2017 European Coral Reef Symposium, UK (×2)
Australian Coral Reef Society Conference, Australia

Posters

- 2024 CnidoFest, USA
Changing Microbiomes Symposium, The Pennsylvania State University, USA
Society for Molecular Biology and Evolution Meeting, Mexico
- 2023 Gordon Research Seminar in Animal-Microbe Symbiosis, Italy
Gordon Research Conference in Animal-Microbe Symbiosis, Italy
- 2022 CNRS-Jacques Monod Conference “From parasites to plankton and back: comparative biology and ecology of apicomplexans and dinoflagellates”, France
Changing Microbiomes Symposium, The Pennsylvania State University, USA
- 2017 Society for Molecular Biology and Evolution Meeting, Japan
EMBL Postgraduate Symposium, Australia
- 2016 IMB Higher Degree in Research Student Symposium, The University of Queensland
- 2015 Global Invertebrate Genomics Alliance (GIGA) Workshop, Germany

Professional Service

2025	Vendor SACNAS Annual Conference
2023-present	Associate Editor <i>Frontiers in Protistology</i>
2022-2023	Research Topic Editor <i>Innovative Approaches to Coral Reef Science by Early Career Researchers</i> <i>Frontiers</i>
2022	Invited Judge Biology Student Research Showcase The Pennsylvania State University
2019-2020	Councilor for the Australian Coral Reef Society
2021-present	<i>Ad hoc</i> reviewer: National Science Foundation: Biological Oceanography and Ecosystems (1), French National Research Agency: “CE02 - Terre vivante” (2), Research Grants Council of Hong Kong (1)
2018-present	Reviewer for: <i>Molecular Ecology</i> (10), <i>BMC Genomics</i> (3), <i>Science Advances</i> (2), <i>Coral Reefs</i> (2), <i>Frontiers in Marine Science</i> (2), <i>Nucleic Acids Research</i> (1), <i>Communications Biology</i> (1), <i>Marine Pollution Bulletin</i> (1), <i>PeerJ</i> (2), <i>Frontiers in Microbiology</i> (1)
2018	Conference Co-organizer of EMBL Australia Postgraduate Symposium

MentoringDirect Supervision

2026-present	Katie Shepart ASPIRE Undergraduate Student Fellow Texas State University Kevin Tran ASPIRE Undergraduate Student Fellow & Bobcat IDEA Undergraduate Researcher Texas State University
2025-present	Caleb Butler Postdoctoral Researcher Texas State University Sydney Dutton Laboratory Technician Texas State University
2025	Katie Shepart Undergraduate Researcher Texas State University Kevin Tran Undergraduate Researcher Texas State University
2023	Samantha Kratman Undergraduate Intern NASA Pennsylvania Space Grant Consortium Undergraduate Research Internship Program The Pennsylvania State University

Graduate Committee Member

2024-present	Milon Hosen Master Thesis Committee Texas State University
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Informal Research Supervision

2024-present	Samantha Kratman (BSc) The Pennsylvania State University
2023-2025	Diego Lera-Lozano (BSc) The Pennsylvania State University
2022-2025	Clancy McIntyre (PhD) The Pennsylvania State University Caleb Butler (PhD) The Pennsylvania State University Colin Howe (PhD) The Pennsylvania State University Julia Stewart (MA) The Pennsylvania State University Vivian Yifan Li (PhD) The Pennsylvania State University
2022	Michael Hewitt (BSc) The Pennsylvania State University Vanessa Garcia (PhD) The Pennsylvania State University Sophia DeGuara (BSc) The Pennsylvania State University
2021-2023	Lauren Walling (PhD) University of South Florida
2021	Victoria Carter (BSc) University of South Florida
2020	Matthew H. Gamache (PhD) University of South Florida

2019 Yibi Chen (MSc) | The University of Queensland
2018 Christopher Wrona (BSc) | The University of Queensland
Rémi Lagorce (BEng) | Polytech Nice Sophia
2017-2018 Clarisse Louvard (BSc) | The University of Queensland
2015 Lilly von Kalckreuth (Secondary school) | Ludwig-Maximilians University of Munich

Professional Development

2025-2026 Scholarship & Teaching Excellence Program | Texas State University
ASPIRE Entering Mentoring Training | Texas State University
2025 Attendee | Texas Groundwater Invertebrate Forum
2023 Faculty Mentor | PA Space Grant Undergraduate Research | NASA Pennsylvania State Grant Consortium

Outreach

2024 Ambassador | DNA Day Penn State outreach program for underserved high schools
2023 Ambassador | DNA Day Penn State outreach program for underserved high schools
2021 Invited Speaker | *Life Science Café* | University of Massachusetts Amherst

Languages

Spanish | Mother language
English | Professionally proficient
German | Proficient

Licenses

2023- AAUS Scientific Diver
NAUI Advanced Open Water Diver
NAUI Nitrox Diver
NAUI Rescue Scuba Diver
NAUI Deep Diver