**Raúl A. González-Pech, PhD**

*Curriculum vitae*

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| Department of Biology, College of Science and Engineering | **M:** +1 (813) 370-6598 |
| Texas State University | **E:** [r.gonzalezpech@txstate.edu](mailto:r.gonzalezpech@txstate.edu) |
| San Marcos, TX 78666 | |

**WoS ResearcherID:** C-7968-2017 | **Scopus:** 56621437200 | **ORCID:** 0000-0001-9808-297X

**GitHub:** RaulGoch | **Bluesky:** @raulgoch.bsky.social | **X:** @RaulGoch

**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 intracolonial 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 | Dept. 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**

2024 (pending) Postdoctoral trainee and writer | $1,786,716 (PSU portion)

Biodiversity in a Changing Planet | National Science Foundation

Collaborative Research: “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**

2024 CnidoFest Registration Fee Waver Award

*Cassiopea* Workshop Travel Fund

2022-present Eberly Postdoctoral Research Fellowship | PSU Eberly College of Science

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**

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| --- | --- | --- |
| **h-index:** 15 | **i10-index:** 15 | **Citations:** 989 |

Peer-reviewed

1. 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.
2. 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.
3. **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.
4. **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.
5. 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.
6. 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.
7. **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.
8. 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.
9. 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.
10. **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.
11. 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.
12. 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.
13. 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.
14. **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]**
15. **González-Pech RA**, Stephens TG & Chan CX. (2018). Commonly misunderstood parameters of NCBI BLAST and important considerations for users. *Bioinformatics* 35 (15): 2697-8.
16. 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.
17. **González-Pech RA**, Ragan MA & Chan CX. (2017). Signatures of adaptation and symbiosis in genomes and transcriptomes of *Symbiodinium*. *Scientific Reports* 7 (1), 15021.
18. **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.
19. Voigt O, Erpenbeck D, **González-Pech RA**, Al-Aidaroos 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.
20. Schweinsberg M, **González-Pech RA**, Tollrian R, Lampert KP. (2014). Transfer of intracolonial genetic variability through gametes in *Acropora hyacinthus* corals. *Coral Reefs* 33 (1), 77-87.
21. 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.

Sharp V, Mammone M, Dye C, González-Pech RA, Yarden O & Medina M. (In preparation). *In vivo* fungal diversity of *Cassiopea xamachana* revealed through isolate sequencing.

**Internships, Trainings & Scholarships**

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**

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

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 | ANSC 456 Animal Microbiomes | The Pennsylvania State University | Undergraduate course

Guest lecturer | BIOL 497 Biological Oceanography | The Pennsylvania State University | Undergraduate course

Guest lecturer | BI/ES 593 Marine Physiology and Climate Change | Boston University || Undergraduate and graduate course

2021 Guest lecturer | BSC 6932 Organic Evolution | University of South Florida | Graduate 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

**Presentations**

Invited seminars

2025 Larry Mays Seminar Series in Bioinformatics, Department of Bioinformatics and Genomics, University of North Carolina Charlotte, USA (Virtual)

2024 **Keynote**, Genomics Symposium, Center for Genomics, Kansas University, USA

Helmholtz Institute for Marine Functional Biodiversity, Germany

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 2nd Global Invertebrate Genomics Alliance (GIGA) workshop, Germany

**Professional Service & Outreach**

2024 Ambassador | DNA Day Penn State outreach program for underserved high schools

2023-present Associate Editor | Frontiers in Protistology

2023 Faculty Mentor | PA Space Grant Undergraduate Research | NASA Pennsylvania State Grant Consortium

Panelist | *LGBTQ+ in STEM Leading the Way* | The Rainbow Science Network, Rainbow Engineering Network, and College of Engineering | The Pennsylvania State University

Ambassador | DNA Day Penn State outreach program for underserved high schools

2022-present Postdoc Representative | Biology Climate and Diversity Committee | The Pennsylvania State University

2022-2023 Research Topic Editor | *Innovative Approaches to Coral Reef Science by Early Career Researchers* | Frontiers

2022 Invited Judge | Biology Student Research Showcase | The Pennsylvania State University

2021 Invited Speaker | *Life Science Café* | University of Massachusetts Amherst

2020-present Contributor | *500 Queer Scientists*

2019-2020 Councilor for the Australian Coral Reef Society

2021-present *Ad hoc* reviewer: National Science Foundation: Biological Oceanography and Ecosystems (1), French National Research Agency: “CE02 - Terre vivante” (2)

2018-present Reviewer for: Molecular Ecology (10), BMC Genomics (3), Science Advances (2), Coral Reefs (2), Frontiers in Marine Science (2), Nucleic Acids Research (1), Communications Biology (1), Marine Pollution Bulletin (1), PeerJ (1), Frontiers in Microbiology (1)

2018 Conference Co-organizer of EMBL Australia Postgraduate Symposium

**Mentoring**

2023-present Samantha Kratman (BSc) | The Pennsylvania State University

Diego Lera-Lozano (BSc) | The Pennsylvania State University

2022-present 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

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| **Languages** | **Licenses** |
| Spanish | Mother language | 2023- AAUS Scientific Diver |
| English | Professionally proficient | NAUI Advanced Open Water Diver |
| German | Proficient | NAUI Nitrox Diver |
|  | NAUI Rescue Scuba Diver |
|  | NAUI Deep Diver |