Timothy Stephens
Curriculum vitae

Personal summary

I am a computational biologist working on understanding and characterizing functionally uncharacterized "dark genes", which are found in all non-model genomes, but often ignored despite their immense biological importance. I am also CTO of OceanOmics, a company dedicated to developing scalable tools for environmental health monitoring.

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TimothyStephens

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Education and Research Experience

2024 — present	Research Associate, Department of Biochemistry and Microbiology, Rutgers University
2019 — 2024	Post Doctoral Associate, Department of Biochemistry and Microbiology, Rutgers University
2016 — 2019	PhD, Institute for Molecular Bioscience, The University of Queensland
2015 — 2015	Honours, Institute for Molecular Bioscience, The University of Queensland
2012 — 2015	Bachelor of Biotechnology, Institute for Molecular Bioscience, The University of Queensland

Selected Awards and honours

2023	Selected to attend and present at the New Phytologist Next Generation Scientists Conference 2023, National University of Singapore
2021	2019 Dean's Award for Outstanding Higher Degree by Research Theses, University of Queensland
2016	Research Training Program (RTP) scholarship, University of Queensland
2012	Dean's Commendation for Academic Excellence (achieved a GPA over 6.6), University of Queensland
2011	Merit Scholarship for academic achievement, University of Queensland

Select Publications

2025 Nandi S., **Stephens T. G.**, Walsh K., Garcia R., Villalpando M. F., Sellares-Blasco R. I., Zubillaga A. L., Croquer A., Bhattacharya D. Shifts in the microbiome and virome are associated with stony coral tissue loss disease (SCTLD). *ISME Communications*, ycaf226, 2025. [Preprint] [URL]

2024 **Stephens T. G.**, Van Etten J., McDermott T., Christian W., Chaverra M., Gurney J., Lee Y., Kim H., Hyun Cho C., Chovancek E., Westhoff P., Otte A., Northen T. R., Bowen B. P., Louie K. B., Barry K., Grigoriev I. V., Mock T., Liu S., Miyagishima S., Yoshinaga M, Weber A. P.M., Yoon H. S., and Bhattacharya D. Temporal dynamics in a red alga dominated geothermal feature in Yellowstone National Park. *ISME Communications*, 4:01, 2024. [Preprint] [URL]

2024 Benites L. F., **Stephens T. G.**, Etten J. V., James T., Christian W. C., Barry K., Grigoriev I. V., McDermott T. R. & Bhattacharya D. Viruses associated with extremophilic red algal mats reveal signatures of early thermal adaptation. *Communications Biology*, 2024. Featured by Science [URL]

2022 *Gabr A., ***Stephens T. G.**, and Bhattacharya D. Loss of key endosymbiont genes may facilitate early host control of the chromatophore in *Paulinella*. *iScience*, 25:104974, 2022. *Co-first authorship [URL]

2022 *Calatreva V., ***Stephens T. G.**, Gabr A., Grossman A. R., and Bhattacharya D. Retrotransposition facilitated the establishment of a primary plastid in the thecate amoeba *Paulinella*. *PNAS*, 119:e2121241119, 2022. *Co-first authorship [URL]

2021 Williams A., Pathmanathan J. S., **Stephens T. G.**, Su X., Chiles E. N., Conetta D., Putnam H. M., and Bhattacharya D. Multi-omic characterization of the thermal stress phenome in the stony coral *Montipora capitata*. *PeerJ*, 9:e12335, 2021. [Preprint] Featured by PeerJ Expert Curations: Molecular Ecology: PeerJ Expert Curations, PeerJ Blog [URL]

2021 **Stephens T. G.**, Gabr A., Calatreva V., Grossman A. R., and Bhattacharya D. Why is primary endosymbiosis so rare?. *New Phytologist*, 231:1693-1699, 2021. [URL]

2021 Gonzalez-Pech, R. A., **Stephens T. G.**, Chen Y., Mohamed A. R., Cheng Y., Shah S., Dougan K. E., Fortuin M. D. A., Lagorce R., Burt D. W., Bhattacharya D., Ragan M. A., and Chan C. X. Comparison of 15 dinoflagellate genomes reveals extensive sequence and structural divergence in family Symbiodiniaceae and genus *Symbiodinium*. *BMC Biology*, 0.842361111, 2021. [Preprint] [URL]

2020 **Stephens T. G.**, Gonzalez-Pech R. A., Cheng Y., Mohamed A. R., Burt D. W., Bhattacharya D., Ragan M. A., and Chan C. X. Genomes of the dinoflagellate *Polarella glacialis* encode tandemly repeated single-exon genes with adaptive functions. *BMC Biology*, 18:56, 2020. [Preprint] Featured by IMB News [URL]

2019 Chen Y., Gonzalez-Pech R. A., **Stephens T. G.**, Bhattacharya D., and Chan C. X. Evidence that inconsistent gene prediction can mislead analysis of dinoflagellate genomes. *Journal of Phycology*, 56:6-10, 2019. [Preprint] [URL]

2018 **Stephens T. G.**, Ragan M. A., Bhattacharya D., and Chan C. X. Core genes in diverse dinoflagellate lineages include a wealth of conserved dark genes with unknown functions. *Scientific Reports*, 8:17175, 2018. [URL]

2018 Liu H., **Stephens T. G.**, Gonzalez-Pech R. A., Beltran V. H., Lapeyre B., Bongaerts P., Cooke I., Aranda M., Bourne D. G., Foret S., Miller D. J., van Oppen M. J. H., Voolstra C. R., Ragan M.A., and Chan C.X. *Symbiodinium* genomes reveal adaptive evolution of functions related to coral-dinoflagellate symbiosis. *Communications Biology*, 0.107638889, 2018. [Preprint] Featured by multiple outlets: IMB News, GBRF, Video Feature, IMB 2018 year in review [URL]

Selected Grants

2024 New Jersey CSIT Clean Tech R&D Voucher Pilot Program Round 3, $40,000 USD
Funds awarded to our startup OceanOmics to utilize government facilities to aid development of our coral health monitoring toolkit.
Principal Investigators: **Timothy Stephens** (Rutgers University), New Jersey Commission on Science, Innovation and Technology

2024 New Jersey CSIT Clean Tech Seed Grant Program Round 3, $75,000 USD
Funds awarded to our startup OceanOmics to continue development of our coral health monitoring toolkit.
Principal Investigators: **Timothy Stephens** (Rutgers University), New Jersey Commission on Science, Innovation and Technology

2023 Rutgers TechAdvance Fund, $74,842 USD
Funds to continue development of our coral health monitoring toolkit.
Principal Investigators: Debashish Bhattacharya (Rutgers University), Rutgers University

Selected Teaching experience

2020 — present

Co-lecturer

Rutgers University

Design and conducted lectures on de novo next-generation genome and transcriptome sequencing, metabolomics, proteomics, metagenomics, phylogenetics, and phylogenomics in a join undergraduate and postgraduate course titled "Fundamentals of Microbial Genomics". Duties include designing and marking student' exam questions and oral presentations.

Selected Talks

2024 **Stephens T. G.**, Kulczyk A. W., and Bhattacharya D. Cosmopolitan gene families with known functions are hotspots for the evolution of novel genes in stony corals. *3rd Joint Congress on Evolutionary Biology*. 26-30 July 2024, Montreal, Canada.

2023 **Stephens T. G.**, Etten J. V., Benites L. F., Mcdermott T., and Bhattacharya D. Cyanidiophyceae: The extremophilic red algae that underpin hot spring microbial communities in Yellowstone National Park. *UQ Marine Ecogenomics Symposium 2023*. 13-14 December 2023, University of Queensland, Australia.

2023 **Stephens T. G.**, Calatrava V., Gabr A., Grossman A., and Bhattacharya D. Exploring the origin and evolution of primary plastids using *Paulinella* as a model system. *International Society of Endocytobiology conference 2023*. 10-14th September 2023, Field Museum, Chicago.

2023 **Stephens T. G.**, Chille E., Strand E. L., Putnam H. M., and Bhattacharya D. Multi-omics investigation of coral resilience. *Invited talk at Carnegie Plant Biology Seminar, August 2023*. 25th August 2023, Carnegie Department of Plant Biology, Stanford University, USA.

2023 **Stephens T. G.**, Calatrava V., Gabr A., Grossman A., and Bhattacharya D. Exploring the origin and evolution of primary plastids using *Paulinella* as a model system. *New Phytologist Next Generation Scientists Conference 2023*. 3rd July 2023, National University of Singapore, Singapore.

2022 **Stephens T. G.**, Strand E. L., Putnam H. M., and Bhattacharya D. Differences in ploidy and the prevalence of clonal propagation between *Montipora capitata* and *Pocillopora acuta* from Kane'ohe Bay, Hawai'i. *15th International Coral Reef Symposium*. 3-8th July 2022, Bremen, Germany.

Selected Media coverage

2024 Our Sargassum Biofuel project was featured by Rutgers News

2024 Our paper Viruses associated with extremophilic red algal mats reveal signatures of early thermal adaptation was featured by Science

2022 Article by Rutgers Research on our short film The Coral Holobiont Response to Climate Change which won Best Trailer in the Kiez Berlin Film Festival.

2020 Our paper Amoeba Genome Reveals Dominant Host Contribution to Plastid Endosymbiosis covered by Rutgers Today

Selected Service

2023 — present Associate Editor: Symbiotic and Parasitic Protists section, Frontiers in Protistology

Patents

2023 Provisional Patent "Protein Markers of Coral Stress" (5431.1025-000:2023-098)

2023 Provisional Patent "Coral Rapid Strip Test" (5431.1024-000:2023-097)