

Katherine Elizabeth Dougan, Ph.D.

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EDUCATION

- 2021 **Ph.D. Biology** • Florida International University, Miami, FL, USA
2019 **M.S. Biology** • Florida International University, Miami, FL, USA
2014 **B.S. Microbiology** • University of Michigan, Ann Arbor, MI, USA

APPOINTMENTS

- 2020- **Postdoctoral Research Fellow** • The University of Queensland
2019-20 **Dissertation Year Fellow** • Florida International University (FIU)
2018 **Tropics Program Research Fellow** • FIU Tropical Conservation Institute
2015-19 **Graduate Teaching Assistant** • FIU
2010-14 **Research Assistant** • The University of Michigan (UofM)

PEER-REVIEWED PUBLICATIONS

- R Lo, **KE Dougan**, Y Chen, S Shah, D Bhattacharya, CX Chan (2022). Alignment-Free Analysis of Whole-Genome Sequences From Symbiodiniaceae Reveals Different Phylogenetic Signals in Distinct Regions. In Press at *Frontiers in Plant Science*. DOI: [10.3389/fpls.2022.81571](https://doi.org/10.3389/fpls.2022.81571)
- KE Dougan**, RA González-Pech, TG Stephens, S Shah, Y Chen, MA Ragan, D Bhattacharya, CX Chan (2022). Genome-powered classification of microbial eukaryotes: focus on coral algal symbionts. In Press at *Trends in Microbiology*. DOI: [10.1016/j.tim.2022.02.001](https://doi.org/10.1016/j.tim.2022.02.001)
- AP Jacobus, TG Stephens, P Youssef, R González-Pech, MM Cicotosto-Camp†, **KE Dougan**, Y Chen, LC Basso, J Frazzon, CX Chan, J Gross (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. DOI: [10.3389/fmicb.2021.644089](https://doi.org/10.3389/fmicb.2021.644089)
- R González-Pech, TG Stephens, Y Chen, AR Mohamed, Y Cheng, S Shah, **KE Dougan**, MDA Fortuin†, R Lagorce, DW Burt, D Bhattacharya, MA Ragan, CX Chan (2021). Comparison of 15 dinoflagellate genomes reveals extensive sequence and structural divergence in family Symbiodiniaceae and genus *Symbiodinium*. In Press at *BMC Biology*.
- AP Jacobus, TG Stephens, P Youssef, R González-Pech, MM Cicotosto-Camp†, **KE Dougan**, Y Chen, LC Basso, J Frazzon, CX Chan, J Gross (2021) Comparative genomics supports that Brazilian bioethanol *Saccharomyces cerevisiae* comprise a unified group of domesticated strains related to cachaça spirit yeasts. In Press at *Frontiers in Ecology and Evolution*. DOI: [10.3389/fmicb.2021.644089](https://doi.org/10.3389/fmicb.2021.644089)
- C Iha, **KE Dougan**, JA Varela, V Avila, CJ Jackson, KA Bogaert, Y Chen, LM Judd, R Wick, KE Holt, MM Pasella, F Ricci, SI Repetti, M Medina, VR Marcelino, CX Chan, H Verbruggen (2021). Genomic adaptations to an endolithic lifestyle in the coral-associated alga *Ostreobium*. *Current Biology*, 31, 1-10. DOI: [10.1016/j.cub.2021.01.018](https://doi.org/10.1016/j.cub.2021.01.018)
- KE Dougan**, MC Ladd, C Fuchs, R Vega Thurber, DE Burkepile, M Rodriguez-Lanetty (2020). Nutrient pollution and predation differentially affect innate immune pathways in the coral *Porites porites*. *Frontiers in Marine Science*, 7:563865. DOI: [10.3389/fmars.2020.563865](https://doi.org/10.3389/fmars.2020.563865)
- AJ Bellantuono*, **KE Dougan***, C Granados-Cifuentes, M Rodriguez-Lanetty (2019). Free-living and symbiotic lifestyles of a thermotolerant coral endosymbiont display profoundly distinct

transcriptomes under both stable and heat stress conditions. *Molecular Ecology*, 28(24):5265-5281. DOI: 10.1111/mec.15300

G Bonthond, DG Merselis, **KE Dougan**, T Graff, W Todd, JW Fourqurean, M Rodriguez-Lanetty (2018). Inter-domain microbial diversity within the coral holobiont *Siderastrea sidereal* from two depth habitats. *PeerJ* 6:e4323. DOI: 10.7717/peerj.4323

TA Hendry, J.R. de Wet, **KE Dougan**, and PV Dunlap (2016). Genome evolution in the obligate but environmentally active luminous symbionts of flashlight fish. *Genome Biology and Evolution*, 8:2203-2213. DOI: 10.1093/gbe/evw161

AL Gould, **KE Dougan**, S Koel, PV Dunlap (2016). Life history of the symbiotically luminous cardinal fish *Siphamia tubifer* (Perciformes: Apogonidae) in Okinawa, Japan. *Journal of Fish Biology*, 89:1359-1377. DOI: 10.1111/jfb.13063

*Authors contributed equally

†Undergraduate students mentored

OTHER PUBLICATIONS

KE Dougan (2015). Effect of variable reproductive output and connectivity on populations of a host fish and its bacterial symbiont, with implications for future climate change. In D. Nichols & J. Xia (Eds.), *Excellence in Upper-Level Writing* (pp. 35-50). Ann Arbor, MI: Michigan Publishing.

INVITED TALKS

2019: NASA Extreme Environment Missions Operations, Johnson Space Center, Houston, TX

CONFERENCE PRESENTATIONS

KE Dougan, D Bhattacharya, CX Chan. Patterns of Adaptive selection on symbiotic dinoflagellate lineages within the genus *Symbiodinium* (2021). 12th International Phycological Congress, Puerto Montt, Chile.

KE Dougan and M Rodriguez-Lanetty. Characterizing the expression of insulin-like peptides in Cnidarian-algal symbioses (2018). 9th International Symbiosis Society Congress, Corvallis, OR.

KE Dougan and M Rodriguez-Lanetty. Comparative transcriptomics reveal extensive diversity of insulin-like peptides in Cnidaria (2018). Society for Integrative & Comparative Biology Annual Meeting, San Francisco, CA.

DM Merselis, AJ Bellantuono, **KE Dougan**, T Thinesh, K Nedimeyer, NEEMO consortium, M Rodriguez-Lanetty. Effects of genotype and environmental history on coral nursery production (2018). FIU Biosymposium, Miami, FL.

AJ Bellantuono, **KE Dougan**, C Granados-Cifuentes, M Rodriguez-Lanetty. Transcriptome analysis of *Symbiodinium trenchii*: comparing *in symbio* and free-living responses to hyperthermal stress (2017). European Coral Reef Symposium, Oxford, UK.

KE Dougan, M Ladd, C Fuchs, R Vega Thurber, DE Burkepille, M Rodriguez-Lanetty. Nutrient Enrichment suppresses an innate immunity pathway in the coral *Porites porites* and recovery from predation. 38th Scientific Meeting of the AMLC, Mérida, Yuc., Mexico.

T Graff, K Young, D Coan, D Merselis, AJ Bellantuono, **KE Dougan**, M Rodriguez-Lanetty, K Nedimyer, S Chappell, K Beaton, A Nails, A Hood, M Reagan, E Rampe, W Todd, J Poffenberger and D Garrison. NEEMO 21: Tools, Techniques, Technologies, & Training for Science Exploration. 48th Lunar and Planetary Science Conference, The Woodlands, TX.

KE Dougan, M Ladd, C Fuchs, R Vega Thurber, DE Burkepille, M Rodriguez-Lanetty. Nutrient enrichment decreases phenoloxidase pathway involved in wound healing and immunity in the coral *Porites porites*. FIU Biosymposium, Miami, FL.

KE Dougan, DG Merselis, G Bonthond, M Rodriguez-Lanetty. High-resolution characterization of Symbiodinium communities from a depth gradient in the reef-building coral *Siderastrea siderea*. 13th International Coral Reef Symposium, Honolulu, HI.

GRANTS/AWARDS

2021: University of Queensland Genome Innovation Hub Research Grant • ~\$30,000 AUD
2019: University Graduate School Dissertation Year Fellowship • FIU • \$20,000 USD
2018: Tropics Program Research Fellowship • FIU • \$8000 USD
2018: Biosymposium 3rd Place Oral Presentation • FIU Department of Biology • \$50 USD
2017: Travel Grant • FIU Graduate and Professional Student Committee • \$300 USD
2017: Travel Grant • Association of the Marine Labs of the Caribbean • \$225 USD
2017: Biosymposium 1st Place Oral Presentation • FIU Department of Biology • \$100 USD
2016: Travel Grant • FIU Graduate and Professional Student Committee • \$300 USD
2015: Captains Choice Award • NASA Extreme Environment Missions Operations
2015: Granader Prize for Excellence in Upper-Level Writing • UofM • \$1042
2014: Graduate Teaching Assistantship • FIU • \$135,000
2014: EEB Travel, Research, and Internship Funding • UofM • \$600
2013: Underwood Alger Scholarship • UofM • \$1000
2012: Undergraduate Research Opportunity Program Travel Grant • UofM • \$800
2010: Pro/Con Editorial First Place Prize • Michigan Interscholastic Press Association (MIPA)
2010: Environmental Story Third Place Prize • MIPA

MENTORSHIP

2020-Present: *Sarah Shah, Co-Supervisor* • PhD Student, UQ
2020-Present: *Yibi Chen, Co-Supervisor* • PhD Student, UQ
2020: *Xiaoyu Hou, Co-Supervisor* • Masters Student, UQ
2020: *Michael Ciccotosto-Camp, Co-Supervisor* • Undergraduate Student, UQ
2020: *Michael Fortuin, Co-Supervisor* • Undergraduate Student, UQ
2018-19: *Juan Carabeo-Nieva* • Undergraduate Student, FIU
2017-18: *Bridgette Hernandez* • Undergraduate Student, FIU
2017-18: *Natalia Padillo* • Undergraduate Student, FIU

TEACHING

2020-Present: *Instructor* • SCIE2100/BINF6000 Bioinformatics 1: Introduction, UQ
2019: *Lead Instructor* • SEA-PHAGES Program, HHMI/FIU
2016-18: *Graduate Teaching Assistant* • SEA-PHAGES Program, HHMI/FIU
2016-17: *Graduate Teaching Assistant* • General Biology II Lab, FIU
2014-16: *Graduate Teaching Assistant* • Genetics Lab, FIU

PROFESSIONAL DEVELOPMENT AND WORKSHOPS

2018: *Genomics Workshop* • HHMI Headquarters, Chevy Chase, MD
2017: *Python for Everybody* • UofM/Coursera
2016: *Coral In Situ Metabolism (CISME) Workshop* • University of Miami, Miami, FL
2015: *R Workshop* • FIU
2015: *Functional Genomics and Proteomics* • FIU

SERVICE AND OUTREACH EXPERIENCE

Reviewer: *BMC Genomics, Coral Reefs, Frontiers in Ecology and Evolution, Molecular Ecology Resources, Biotechnology Reports*

2018: *Judge* • Quantifying Biology in the Classroom Symposium, FIU
2018: *Volunteer* • Biosymposium Planning Committee, FIU
2017: *Volunteer* • DEEPEND Consortium, Conservation Village, Tortuga Music Festival
2017: *Volunteer* • Biosymposium Planning Committee, FIU
2016: *Panelist* • Assisting Latinos to Maximize Achievement Program, UM
2015: *Presenter* • Miami Underwater Festival, Frost Science Museum, Miami, FL
2015: *Volunteer* • Family Science Nights, Treasure Village Montessori, Islamorada, FL
2013-14: *Student Judge* • Greek Activities Review Panel, UM
2013: *Volunteer* • Ann Arbor Community Center Summer Day Camp
2011-13: *Mentor* • Assisting Latinos to Maximize Achievement Program, UM
2011: *Student Representative* • Leadership Connection, UM
2010-11: *Vice President* • M.O.S.A.I.C. Multicultural Council, UM
2009-12: *Mentor* • Proyecto Avance: Latino Mentoring Association, UM

RELEVANT CERTIFICATIONS

American Academy of Underwater Sciences (AAUS) Certified Scientific Diver
Technical Diving International Nitrox Diver
Professional Association of Diving Instructors (PADI) Open Water Diver
Divers Alert Network (DAN) Oxygen Provider
DAN Basic Life Support: First Aid/CPR/AED

PROFESSIONAL MEMBERSHIP

International Society for Reef Studies (ISRS), Association of the Marine Labs of the Caribbean (AMLC), International Symbiosis Society (ISS)