

# Katherine Elizabeth Dougan, Ph.D.

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## EDUCATION

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- 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

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- 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

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- R González-Pech, TG Stephens, Y Chen, AR Mohamed, Y Cheng, S Shah, **KE Dougan**, MDA Fortuin<sup>†</sup>, 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 Ciccotosto-Camp<sup>†</sup>, **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
- 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
- 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
- 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**

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**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**

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

## **CONFERENCE PRESENTATIONS**

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

**KE Dougan** and M Rodriguez-Lanetty. Characterizing the expression of insulin-like peptides in Cnidarian-algal symbioses (2018). 9<sup>th</sup> 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 Burkepile, M Rodriguez-Lanetty. Nutrient Enrichment suppresses an innate immunity pathway in the coral *Porites porites* and recovery from predation. 38<sup>th</sup> 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 Naidis, A Hood, M Reagan, E Rampe, W Todd, J Poffenberger and D Garrison. NEEMO 21: Tools, Techniques, Technologies, & Training for Science Exploration. 48<sup>th</sup> Lunar and Planetary Science Conference, The Woodlands, TX.

**KE Dougan**, M Ladd, C Fuchs, R Vega Thurber, DE Burkepile, 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*. 13<sup>th</sup> International Coral Reef Symposium, Honolulu, HI.

## **GRANTS/AWARDS**

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**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 3<sup>rd</sup> 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 1<sup>st</sup> 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**

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**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**

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**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**

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**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**

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**Reviewer:** *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**

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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**

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