

# NIKKI GEORGINA TRAYLOR-KNOWLES

Assistant Professor of Marine Biology and Ecology  
Kavli Frontiers in Science Fellow  
University of Miami, Rosenstiel School of Marine and Atmospheric Sciences  
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## EDUCATION

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2012: PhD, Biology, *Boston University*

2004: MSc., Cellular and Molecular Biology, *Johns Hopkins University* \*Biology Departmental Honors

2003: BSc., Cellular and Molecular Biology, *Johns Hopkins University*

## RESEARCH & ACADEMIC HISTORY

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2016 - present:

*Title:* Assistant Professorship, *University of Miami, RSMAS*

*Advising:* I am advising five graduate students, and four undergraduates.

*Research focus:* Innate immunity and wound healing in corals, sea anemones and ctenophores

2011 - 2015:

*Title:* Postdoctoral Researcher, *Stanford University, Hopkins Marine Station*

*Advisor:* Stephen Palumbi

*Research focus:* The role of tumor necrosis factor receptor in heat stressed corals.

*Techniques:* stress physiology, bioinformatics/genomics, cell biology, molecular biology, field work

2005 - 2011:

*Title:* Ph.D. Graduate Researcher, *Boston University*

*Co-advisors:* John R. Finnerty and Les Kaufman

*Dissertation title:* Molecular insights into the stress response of cnidarians with a focus on wound healing in the sea anemone *Nematostella vectensis* and the coral *Pocillopora damicornis*.

*Techniques:* phylogenetics, cell biology, microscopy, transcriptomics, field work

2003 - 2004:

*Title:* Master's Researcher, *Johns Hopkins University*

*Advisor:* Gary K. Ostrander

*Master's Thesis:* The initial characterization of coral skeletal tissue anomalies found in *P. compressa*.

*Techniques:* cell culture, western blots, microscopy

## HONOR SOCIETIES, AWARDS, AND FELLOWSHIPS

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2019: 1) Sigma Xi Research Honor Society, Inducted as an Associate Member

2) University of Miami, Provost Award

2018: University of Miami, Provost Award

2016: Kavli Frontiers in Science, National Academy of Science, Fellow

2011: Boston University, Honorable mention for best dissertation.

2007: Boston University, George R. Bernard Travel Grant Award

2003: Johns Hopkins University, Departmental Biology Honors

## GRANTS, FELLOWSHIPS & AWARDS

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### ***Active Grant Funding-Research:***

2020-2023:

National Science Foundation, Award #: 1951826, "NSF-BSF: Live Cellular Immune Mechanisms in Corals under Heat Stress." Lead PI: N.Traylor-Knowles, Total Award: \$437,894. Start date: July 1, 2020.

National Science Foundation, Award #: 2013692, "Innate immune system function in the ctenophore *Mnemiopsis leidyi*" Lead PI: W.E. Browne, co-PI N.Traylor-Knowles. Total Award: \$1,089,389. N. Traylor-Knowles awarded: \$286,268. Start date: September 1, 2020.

Award #2001523, Digitization TCN: Collaborative Research: Mobilizing Millions of Marine Mollusks of the Eastern Seaboard. Lead PI: Liz Shea (U. Delaware), Contractor: N.Traylor-Knowles. Total Award: \$491,014. . N. Traylor-Knowles awarded: \$115,858. Start date: September 15, 2020.

Award #: 2001892, "Digitization TCN: Collaborative Research: Documenting marine biodiversity through Digitization of Invertebrate collections (DigIn)" PI: N. Traylor-Knowles. Total Award : \$170,070. Start date: December 15, 2020

**\*\*Note: this is multi-PI collaborative grant.**

2020-2022:

Revive and Restore Foundation: "Development of coral stem cells treatment for the recovery and restoration of corals." Lead PI: N. Traylor-Knowles, Collaborator: B. Rosental. Total Award: \$580,000. Start date: June 30, 2020.

2019-2020:

"Development of A Biomarker System for SCTLD in Four Species of Caribbean Coral." Lead PI N.Traylor-Knowles, Florida Department of Environmental Protection. Total Award: \$88,202.

2019-2020:

"The Role of Algal Symbionts (Genus *Breviolum*) In the Susceptibility of Corals to Stony Coral Tissue Loss Disease in South Florida." Lead PI: A. Baker (University of Miami) co-PIs: N.Traylor-Knowles, S. Rosales (AOML/CIMAS), J. Del Campo (University of Miami). Total Award: \$83,466, N. Traylor-Knowles awarded: \$25,850.

"Do the Cumulative Effects of Temperature Acclimation, Bleaching and Disease in *A. palmata* Affect Disease Resistance?" Lead PI: N. Traylor-Knowles, Protect Our Reefs-Mote Marine Laboratory. Total Award: \$14,376.96.

"Stem Cell Population Characterization in Corals" Lead PI: N.Traylor-Knowles. University of Miami Provost Award. Total Award: \$17,000.

2019-2022:

"Molecular mechanisms behind AOML's CRCP Restoration Pillar." Lead PI: I. Enochs (NOAA), co-PI: N.Traylor-Knowles. Total Award: \$150,000

### ***Active Grant Funding-Education:***

2020-2021:

"Preservation, Digitization and Education Through the RSMAS Invertebrate Museum." Lead PI: N. Traylor-Knowles, University of Miami CREATE Award. Total Award: \$6000

### **Past Grant Funding-Research:**

2018-2019:

“Microbial Endosymbiosis Within Specialized- Cell Populations of Corals.” Lead PI: N.Traylor-Knowles, University of Miami Provost Award. Total Award: \$17,000.

“ Gene expression analysis of *Acropora cervicornis* to establish mechanism of disease resistance” Contractor: N. Traylor-Knowles, Mote Marine Labs. Total Award: \$30,000.

2017-2019:

“ Disease Resistance in Caribbean Coral.” Lead PIs: X. Serrano (AOML/CIMAS), S. Rosales (AOML/CIMAS), Team Partner: N. Traylor-Knowles, NOAA: Coral Reef Conservation Program, Total Award \$40,000.

2013-2016:

“Some like it hot: the role of the tumor necrosis factor receptor in heat stress corals” Lead PI: N. Traylor-Knowles, Postdoctoral Enrichment Program Award, Burroughs Wellcome Fund: Total Award: \$60,000.

2013-2015:

“Some like it hot: the role of the tumor necrosis factor receptor in heat stress corals” Lead PI: N. Traylor-Knowles, Ocean Sciences Postdoctoral Research Fellow, National Science Foundation, Total Award: \$170,000.

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## **PEER-REVIEWED PUBLICATIONS**

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### **Submitted:**

(1) Young B.\*\* , Serrano X.M., Rosales S., Miller M.W., Williams D., **Traylor-Knowles N.\*** Innate immune gene expression in *Acropora palmata* is consistent despite differences in yearly disease events, *in revision*, PloS One.

(2) Bonacolta A.\*\*\*, Connelly, M.T. \*\*, Rosales S., Del Campo J., **Traylor-Knowles N.\*** Micro-niche sampling of the bacteriome in the Starlet Sea Anemone, *Nematostella vectensis*, reveals a compartment-specific dominance of Spirochetes. *In review*, FEMS Microbiology Ecology Letters.

(3) Nowotny, J. D. \*\*\* , Connelly, M.T.\*\* , **Traylor-Knowles N.\*** Novel Methods to Establish Whole-Body Primary Cell Cultures for the Cnidarians *Nematostella vectensis* and *Pocillopora damicornis*. *In review*, Scientific Reports.

### **Published:**

(29) Walters B.\*\*\*, Connelly M.T.\*\* , Young, B.\*\* , **Traylor-Knowles N.\*** (2020) The Complicated Evolutionary Diversification of the Mpeg-1/Perforin-2 Family in Cnidarians. *Accepted*, Frontier of Immunology.

(28) Connelly M. T.\*\* , McRae C.J., Liu P-J, and **Traylor-Knowles, N.\*** (2020) Lipopolysaccharide treatment stimulates *Pocillopora* coral genotype-specific immune responses but does not alter coral-associated bacteria communities. *Developmental and Comparative Immunology*.109 (2020): 103717.

(27) Snyder, G.\*\* , Browne, W.E., **Traylor-Knowles, N.\***, Rosental, B.\* (2020) Fluorescence-activated cell sorting techniques for the isolation of scleractinian cell populations. *JoVE*. \*co-senior authors

- (26) Rosales, S. Miller, M., William, D., Young, B.\*\* , **Traylor-Knowles, N.**, Serrano, X. (2019) Microbiome differences in disease-resistant vs. susceptible *Acropora* corals subjected to disease challenge assays. *Scientific Reports*. 9(1): 1-11.
- (25) **Traylor-Knowles, N.\***, Vandepas, L., Browne, W.E. (2019) Still enigmatic: innate immunity in *Mnemiopsis leidyi*. *Integrative and Comparative Biology*. Icz116. <https://doi.org/10.1093/icb/icz116>.
- (24) **Traylor-Knowles N.\*** (2019) Heat stress compromises epithelial integrity in the coral, *Acropora hyacinthus*. *PeerJ*. 7:e6510 <https://doi.org/10.7717/peerj.6510>.
- (23) Cunning, R., Bay, R. A., Gillette, P., Baker, A.C., and **Traylor-Knowles, N.\***. (2018) Comparative analysis of the *Pocillopora damicornis* genome highlights role of immune system in coral evolution. *Scientific Reports*. 8(1): 8:16134. DOI:10.1038/s41598-018-34459-8.
- (22) **Traylor-Knowles, N.\*** (2018) In situ hybridization techniques for paraffin embedded adult coral samples. *J. Vis. Exp.* 138. DOI: 10.3791/57853.
- (21) **Traylor-Knowles, N.\*** and Connelly, M.\*\* (2017) What is currently known about the effects of climate change on the coral immune response. *Curr Clim Change Rep*. <https://doi.org/10.1007/s40641-017-0077-7>
- (20) Rosental, B., Kozhekbaeva, Z., Fernhoff, N., Tsai, J., **Traylor-Knowles, N.\*** (2017) Coral cell separation and isolation by fluorescence-activated cell sorting (FACS). *BMC Cell Biology*. 18(1): 1-30. <https://doi.org/10.1186/s12860-017-0146-8>.
- (19) **Traylor-Knowles, N.\***, Rose, N.H., Sheets, E.A., Palumbi, S.R. (2017) Early transcriptional responses during heat stress in the coral *Acropora hyacinthus*. *Biological Bulletin*. 232: 91–100.
- (18) **Traylor-Knowles, N.\***, Rose, N.H., Palumbi, S.R. (2017) The cell specificity of gene expression in the response to heat stress in corals. *Journal of Experimental Biology*. 10: 1837-1845.
- (17) **Traylor-Knowles, N.\*** (2016) Distinctive wound healing characteristics in the corals *Pocillopora damicornis* and *Acropora hyacinthus* found in two different temperature regimes, *Marine Biology*. 163(231); doi: 10.1007/s00227-016-3011-y
- (16) Quistad, S. and **Traylor-Knowles, N** (2016) Precambrian Origins of the TNFR superfamily, *Cell Death and Discovery*. 2; doi:10.1038/cddiscovery.2016.58.
- (15) **Traylor-Knowles, N.**, Kane, E.G., Sombatsaphay, V., Finnerty, J.R., Reitzel, A. M. (2015) Sex-specific and developmental gene expression of Dmrt-genes in the starlet sea anemone, *Nematostella vectensis*. *EvoDevo*. 6 (13); doi:10.1186/s13227-015-0013-7.
- (14) Palumbi, S. R., Barshis, D., **Traylor-Knowles, N.**, Bay, R. (2014) Mechanisms of reef coral resistance to future climate change. *Science*. 344 (6186): 895-898; doi: 10.1126/science.1251336
- (13) **Traylor-Knowles, N.**, Palumbi, S.R. (2014) Translational environmental biology: using cell biology to inform conservation. *Trends in Cell Biology*. 24(5): 265-7; doi: 10.1016/j.tcb.2014.03.001.
- (12) DuBuc, T.Q., **Traylor-Knowles, N.**, Martindale, M.Q. (2014) Initiating a regenerative response, cellular and molecular features of wound healing in the cnidarian *Nematostella vectensis*. *BMC Biology*. 12:24; doi:10.1186/1741-7007-12-24. [HIGHLY ACCESSED]

- (11) Barshis, D.J., Ladner, J.T., Oliver, T.A., Seneca, F.O., **Traylor-Knowles, N.**, Palumbi, S.R. (2013) A genomic basis for coral resilience to climate change. PNAS. 110(4): 1139-1140; doi:10.1073/iti0413110. [Cover Article]
- (10) Palmer, C.V. and **Traylor-Knowles, N.** (2012) Towards an integrated network of coral immune mechanisms. Proc R Soc B. ; doi:10.1098/rspb.2012.1477.
- (9) **Traylor-Knowles, N.**, Granger, B., Lubinski, T., Parikh, J.R., Garamszegi, S., Xia, Y., Marto, J., Kaufman, L., Finnerty, J.R. (2011) Production of a reference transcriptome and transcriptomic database (PocilloporaBase) for the cauliflower coral, Pocillopora damicornis. BMC Genomics. 12(1): 585. PMID: 22126435. [HIGHLY ACCESSED]
- (8) Palmer, C.V., **Traylor-Knowles, N.**, Willis, B.L., and Bythell, J.C. (2011) Corals use similar immune cells and wound-healing processes as those of higher organisms. PLoS One, 6(8): e23992.
- (7) Marquez, E.C., **Traylor-Knowles, N.**, Novillo-Villajos, A., Callard, I.P. (2011) Cloning of the estrogen receptor alpha and aromatase cDNAs and gene expression in turtles (*Chrysemys picta* and *Pseudemys scripta*) exposed to different environments. Comparative Biochemistry and Physiology. Part C. 154: 213-225. doi:10.1016/j.cbpc.2011.05.008
- (6) Marquez, E.C., **Traylor-Knowles, N.**, Novillo-Villajos, A., and Callard, I.P. (2011) Novel cDNA sequences of aryl hydrocarbon receptors in turtles (*Chrysemys picta* and *Pseudemys scripta*) and changes in gene expression in turtles exposed to different environments, Comparative Biochemistry and Physiology. Part C. 154(4): 305-17.
- (5) Wolenski, F.S., Garbati, M.R., Lubinski, T, **Traylor-Knowles, N.**, Dresselhaus, E., Stefanik, D., Goucher, H., Finnerty, J.R., Gilmore, T.D. (2010) Characterization of the core elements of the NF- $\kappa$ B signaling pathway in the sea anemone, *Nematostella vectensis*. Molecular and Cellular Biology. doi:10.1128/MCB.00927-10
- (4) **Traylor-Knowles, N.**, Hansen, U., Dubuc, T.Q., Martindale, M. Q., Kaufman, L., Finnerty, J.R. (2010) The evolutionary diversification of LSF and Grainyhead transcription factors preceded the radiation of basal animal lineages. BMC Evolutionary Biology, 10:101. [HIGHLY ACCESSED]
- (3) Sullivan, J.C., Wolenski, F.S., Reitzel, A.M., French, C.E., **Traylor-Knowles, N.**, Gilmore, T.D., and Finnerty, J.R. (2009) Two alleles encoding transcription factor NF- $\kappa$ B in the sea anemone *Nematostella vectensis* are widely distributed in natural populations and encode proteins with distinct DNA-binding and transactivation activities. PLoS One, 4:10, e7311.
- (2) Reitzel A.M., Sullivan, J.C., **Traylor-Knowles, N.**, Finnerty, J.R. (2008) Genomic survey of stress-response genes in the estuarine anemone *Nematostella vectensis*. The Biological Bulletin. 214: 233-54.
- (1) Domart-Coulon, I. J., **Traylor-Knowles, N.**, Peters, E.; Elbert, D., Downs, C.A., Price, K., Stubbs, J., McLaughlin, S., Cox, E., Aeby, G., Brown, P. R., and Ostrander, G. K. (2006) Comprehensive characterization of skeletal tissue growth anomalies of the finger coral *Porites compressa*. Coral Reefs. 25 (4): 531-543.

\*: senior/ corresponding author

\*\*: graduate student co-author

\*\*\*: undergraduate student co-author

## BOOK CHAPTERS

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(2) Invited Book Chapter: Emery M.\*\*\*, **Traylor-Knowles N.\***. Methods to study the innate immune response during regeneration in the Cnidarian *Nematostella vectensis*, *in review*.

(1) Palmer, C.V. and **Traylor-Knowles, N.** (2018) Cnidarian immunity: anthozoans in the hot seat. In *Advances in Comparative Immunology*. New York, NY, Springer.

## TEACHING AND MENTORING EXPERIENCE

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### ***Courses Taught at University of Miami since 2017:***

Year	Semester and Class Number				Course Name	Type	Students
2020	SP	MSC	411	34	Research in Marine Science	Practicum	2
2020	SP	MSC	412	12	Thesis in Marine Science	Practicum	2
2020	FA	MBE	110	N	Research Fundamentals	Practicum	4
2020	FA	MSC	411	36	Research in Marine Science	Practicum	TBD
2020	FA	MSC	412	2	Thesis in Marine Science	Practicum	TBD
2019	FA	MSC	230	N	Intro Marine Bio	Lecture	11
2019	FA	MSC	411	36	Research in Marine Science	Practicum	4
2019	SP	BIL	321	S	Invertebrate Zoology	Lecture and Lab	4
2019	SP	MSC	323	S	Invertebrate Zoology	Lecture and Lab	4
2019	SP	MSC	411	34	Projects in MSC	Practicum	2
2019	SP	MSC	412	12	Thesis in Marine Science	Practicum	2
2018	FA	MSC	230	N	Intro Marine Bio	Lecture	21
2018	FA	MSC	411	36	Projects in MSC	Practicum	4
2018	FA	MSC	412	2	Thesis in Marine Science	Practicum	2
2018	SP	MSC	411	34	Projects in MSC	Practicum	2
2018	SP	MSC	412	12	Thesis in Marine Science	Practicum	2
2017	FA	MSC	411	26	Projects in MSC	Practicum	3
2017	SP	BIL	321	1	Invertebrate Zoology	Lecture and Lab	4
2017	SP	MSC	323	1	Invertebrate Zoology	Lecture and Lab	12

### ***Guest lectures:***

2016: Guest Lecturer: RSMAS, Coral Biology  
 Guest Lecturer: UM Medical School, Microbiology  
 2017: Guest Lecturer: RSMAS, Coral Biology

### ***Thesis and Dissertation Advising:***

Ph.D. Students	Year	Project
Michael Connelly	Fall 2016- Fall 2021	Coral immunology and the holobiont
Benjamin Young	Fall 2017- Fall 2021	Coral Immunology and disease
Grace Snyder	Spring 2018-Spring 2023	Coral Immunology and cell biology
Allyson DeMerlis*	Fall 2019 - Fall 2024	Coral Immunology and stress
Ashley Gonclaves**	Spring 2020- Fall 2024	Coral Immunology and disease

\*: co-advised with Dr. Ian Enochs, NOAA

\*\* : co-advised with Dr. Sealy, UM Biology Department

**Undergraduate Advising:**

Number	Student	Year	Project	Thesis completed
24	Olivia Watts	2019-2020	Coral disease physiology	
23	Cecily Martin	2020-present	Symbiont gene expression	
22	Brielle D'Alonzo	2019-present	Coral disease physiology	
21	Cynthia Blanco**	2019-present	Nematostella immunology	
20	James Wilson*∞	2019-2020	Coral immunology	2020
19	Celia Leto*∞	2019-2020	Sunscreens & Nematostella	2020
18	Melody Li	2019-present	Nematostella regeneration	
17	Rachel Sandquist*∞	2019-2020	Evolution of TRAF gene family	2020
16	Joel Licor	2019	Husbandry	
15	Joseph Ricca	2018-present	Pocillopora population genetics	
14	Anthony Bonacolta*∞	2018-2019	Nematostella microbiome	2019
13	Stephanie Chang**	2017	Nematostella regeneration	
12	Bianca Noguera	2017	Husbandry	
11	Haley Plaas*	2017-2019	Coral wound healing	
10	Madison Emery*∞	2017-2019	Regeneration and immunity assays	2018
9	Jessica Daly*∞	2017-2018	Proliferation assay	2018
8	Alanna Wasserman	2017	Bacteria plating	
7	Kevin Rodriguez*∞	2017- 2020	RNA sequencing	
6	Megan Howson*∞	2017-2018	Apoptosis assays	2018
5	James Nowotny*∞	2017-present	Cell culture	2019
4	Brian Walters*∞	2017-present	Immune gene evolution	2019
3	Annabel Macklin∞	2016-2017	Nematostella regeneration	
2	Alexis Sturm*∞	2016-2017	Coral wound healing	
1	Kristi Kaleel*∞	2016	Ancient DNA	

\*Students in Graduate or professional school

∞Students who were mentored to degree completion

\*\* HHMI Summer/Bridge Scholar

**Undergraduate student thesis committees:**

Number	Student	Nikki's Role	Semester	Year
12	Celia Leto	Chair	Spring	2020
11	Rachel Sandquist	Chair	Spring	2020
10	James Wilson	Chair	Spring	2020
9	Anthony Bonacolta	Chair	Spring	2019
8	James Nowotny	Chair	Spring	2019
7	Merrill Froney	Comm. member	Spring	2019
6	Jordan Czerwiec	Comm. member	Spring	2019
5	Madison Emery	Chair	Fall	2018
4	Brian Walters	Chair	Fall	2018
3	Kate Dremluk	Comm. member	Fall	2018
2	Jessica Daly	Chair	Spring	2018
1	Megan Howson	Chair	Spring	2018

**Graduate Student Committee Service:**

Number	Student	Year	Department	Degree	Role
15	Ashley Gonclaves	2020	Biology	PhD	Dissertation co-chair

14	Khadija Haider	2020	MBE	PhD	Committee member
13	Kelsey Johnson-Sapp	2020	MBE	Ph.	Committee member
12	David Ehrens	2019-2020	MBE	MPS	Committee member
11	Allyson DeMerlis	2019-present	MBE	PhD	Dissertation chair
10	Abigail Dieter	2019-present	Biology	PhD	Committee member
9	Reed Boohar	2019-present	Biology	Ph.D.	Committee member
8	Melissa Drown	2018-present	MBE	Ph.D.	Committee member
7	Olivia Williamson	2018-present	MBE	Ph.D.	Committee member
6	John Morris	2018-present	MBE	Ph.D.	Committee member
5	Grace Synder	2018-present	MBE	Ph.D.	Dissertation chair
4	Phil Colburn	2017	MBE	MPS	Committee member
3	Ben Young	2017-present	MBE	Ph.D.	Dissertation chair
2	Zoi Thanopoulou	2017-present	Biology	Ph.D.	Committee member
1	Michael Connelly	2016-present	MBE	Ph.D.	Dissertation chair

***Awards and fellowship of graduate and undergraduate students under my mentorship:***

- 2020: Allyson DeMerlis\*\*, RSMAS David Rowland Endowed Fellowship, \$2500.  
2019: J. Nowotny\*\*\*, University of Miami, Linda Farmer Research Award, \$2500.  
B. Walters\*\*\*, University of Miami, Mastriani Award, \$2000.  
A. Bonacolta\*\*\*, University of Miami, SURGE, \$800.  
M. Xi\*\*\*, University of Miami, Mastriani award, \$600.  
B. Young\*\*, Explorers Grant, \$3000  
2018: M. Connelly\*\*, RSMAS David Rowland Endowed Fellowship, \$2500.  
M. Connelly\*\*, Marine Aquarium Societies of North America (MASNA) Scholarship, \$5000.  
M. Connelly\*\*, Global Invertebrate Genomics Alliance (GIGA) Travel Scholarship, \$800.  
B. Young\*\*, Southeastern Ecology & Evolution Conference, Honorable mention for best talk  
B. Young\*\*, Reef Futures, student travel and registration scholarship, \$3000.  
B. Young\*\*, Reef Futures, Award for Best Student Talk.  
J. Nowotny\*\*\*, University of Miami SURGE, \$800.  
2017: M. Connelly\*\*, Graduate Career Development Fund for CompBio-athon Workshop, \$2500.  
2016: M. Connelly\*\*, NSF, E. Asia and Pacific Summer Institute (EAPSI) Taiwan Fellow, \$5,000.  
M. Connelly\*\*, University of Miami Graduate Fellowship

\*\* : graduate student

\*\*\* : undergraduate student

## PROFESSIONAL ACTIVITIES

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***Invited Departmental Seminars:***

- 2021: Cal Academy of Science, San Francisco, CA (*sch. Mar 2021*)  
University of Pennsylvania, Philadelphia, PA (*sch. April 2021*)
- 2020: ***(All virtual due to Covid-19)***  
Coral Collaboration, NOAA Coral Reef Conservation Program, 8/13/2020  
Bowdoin College, Brunswick, ME (*sch. 10/21/2020*)  
Wellesley College, Wellesley, MA (*sch: 11/4/2020*)  
University of North Carolina, Chapel Hill, NC (*sch.11/5/2020*)  
University of Maryland, Baltimore County, Baltimore, MD (*sch.: 12/2/2020*)  
University of Southern California, San Diego, CA (*sch: 9/29/2020*)  
University of California, Santa Cruz, Santa Cruz, CA (*sch:11/18/2020*)
- 2019: University of Miami, Human Genetics and Genomics Retreat, Miami, FL  
University of Miami, Department of Marine Biology and Ecology, Miami, FL



*2017- 2018: On bed rest and maternity leave due to birth of twins.*

2016: University of Miami, Department of Biology, Miami, FL  
NOVA Southeastern University, Dania Beach, FL  
Florida International University, Miami, FL  
University of Miami, Department of Immunology and Microbiology, Miami, FL

2015: University of California, Davis, Bodega Marine Labs, Bodega, CA  
University of Miami, RSMAS, Miami, FL  
Oregon State University, Corvallis, OR  
University of California, San Diego, San Diego, CA  
University of California, Santa Cruz, Santa Cruz, CA

2014: San Diego State University, Coral Club, Rohwer Lab, San Diego, CA  
Hatfield Marine Station, Newport, OR  
Oregon State University, Weis Lab, Corvallis, OR  
UC Santa Barbara, Hofmann Lab, Santa Barbara, CA  
Massachusetts Institute of Technology, Thompson Lab, Cambridge, MA  
Harvard University, Extavour Lab, Cambridge, MA  
Woods Hole Oceanographic Institute, Tarrant Lab, Woods Hole, MA  
Northeastern University, Vollmer Lab, Nahant, MA  
University of Texas-Arlington, Mydlarz Lab, Arlington, TX  
University of North Carolina-Charlotte, Reitzel Lab, Charlotte, NC

2013: Romberg Tiburon Center, San Francisco State University, San Francisco, CA

2011: National Science Foundation, EAPSI Pre-departure Panel, Washington D.C.

2010: Stanford University, Hopkins Marine Lab, Pacific Grove, CA  
Harvard University, Extavour Lab, Cambridge, MA  
National Museum of Marine Biology and Aquarium, Heng Chun, Taiwan  
Boston University, Boston, MA

2006: Boston University, Boston, MA

2004: Johns Hopkins University, Baltimore, MD

***Public Speaking Engagements:***

2020: Miami Waterkeeper Scientist Feature, Miami, FL

2019: Gordon Conference Power Hour, Hong Kong  
Peace Mural PBS Interview, Miami, FL  
Why Research at RSMAS Matters, UM, RSMAS, Miami, FL  
University of Miami, Marine Science Major, Undergraduate Talk, Miami, FL

2018: Parents Weekend Presentation, UM, RSMAS, Miami, FL  
Climate Change Cinema Series Panel, Miami, FL

2015: Jumpstart Your Academic Career, Job Search Panel, Palo Alto, CA

***Review Panels:***

- 2020: Virtual Panelist, NSF BIO, Evolutionary Processes  
Panel reviewer, NSF BIO IEP.  
Ad hoc reviewer, Kaust Competitive Research Grants
- 2019: Ad hoc reviewer Schmidt Ocean Institute.  
Ad hoc Swiss National Science Foundation, European Research Council.
- 2016-*present*: Ad hoc reviewer, NSF BIO OCE.
- 2015: Ad hoc reviewer, NSF Ocean Sciences Postdoctoral Fellowship Grant Reviewer.
- 2014: Ad hoc Binational Agricultural Research and Development Fund US-Israel.
- 2011: GEO Research Panel: NSF East Asia Pacific and Summer Institutes.

***Invited Workshops:***

- 2021: STEMwrite Institute, University of Minnesota
- 2019: Coral Disease Technical Workshop, Stony Coral Tissue Loss Disease, St. Petes., FL
- 2017: Summer Writing Institute, University of Miami, Miami, FL
- 2012: iRITE-iSPEAK Stanford University, Palo Alto, CA
- 2014: Jumpstart Your Academic Career, Stanford University, Palo Alto, CA
- 2007: Hawaii Institute of Marine Biology-Edwin Pauley Program

***Symposium, conference and working group committees:***

- 2019-*present*: Sub-team leader, “Stony Coral Tissue Loss” Immunity/’omics research team
- 2019- 2021: Chair of International Coral Reef Society session on Coral Immunity, Bremen, GER
- 2017-19: Symposium Co-chair, Kavli Frontiers, National Academy of Science, Jerusalem, Israel
- 2016: Co-chair of ICRS session: Coral immunity, Honolulu, HI
- 2015: Chair of Evolution session: Climate I, Guraruja, Brazil  
Israeli American Kavli Frontiers of Science, National Academy of Science
- 2014: Co-chair of Evolution session: Gene Expression, Raleigh, NC
- 2012: Stanford Postdoc Rep., ABCMS conference, San Jose, CA  
Co-chair of International Coral Reef Society, 1st Coral Immunity session, Cairns, AUS

***Professional Development:***

- 2020: Faculty Women of Color Conference, Virginia Tech, Blacksburg, VA.
- 2019-2020: CTSI Research Mentoring Training Program, U. of Miami, Miller School of Medicine.

- 2018: Development of workshop, with Mike Connelly: The CompBio-athon Workshop: Learning Computational Skills Through Teamwork and Leadership
- 2017: 1) Summer Writing Institute, University of Miami, Miami, FL  
2) R01 Bootcamp, University of Miami, Miami, FL
- 2016-present: Online Program: Faculty Success Program
- 2015: Jumpstart Your Academic Career, Job Search Panel

## **CONFERENCE, SYMPOSIUM AND POSTERS PRESENTATIONS**

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### ***Invited National and International Symposium Speaker:***

**Nikki Traylor-Knowles**, schedule July 28, 2020. On the Front Lines of Coral Disease. ASM Microbe Live, Online Virtual Panel.

**N. Traylor-Knowles**, 2019. From cells to genes: the surprising innate immune system of *Pocillopora damicornis*. 2nd International Forum of Coral Reef, Hainan, China.

**N. Traylor-Knowles**, 2019. Eco-immunity And Coral Conservation: Do Coral Cells Hold the Key to the Future? Gordon Conference: Marine Molecular Ecology, Hong Kong.

**N. Traylor-Knowles**, L.E. Vandepas, W.E. Browne, 2019. "Ctenophore Immunity: A Journey into the unknown. Society of Integrative and Comparative Biology, Tampa, FL.

### ***Other Conference Talks: (since 2008):***

**\*\***: graduate student

**\*\*\***: undergraduate student

**N. Traylor-Knowles**, G.A. Snyder\*\*, M.T. Connelly\*\*, W.E. Browne, B. Rosental, scheduled for 2021. From Cells to Genes: The Surprising Immune System of *Pocillopora damicornis*. International Coral Reef Symposium, Bremen, Germany.

M.T. Connelly\*\*, C. J. McRae, P.J. Liu, **N. Traylor-Knowles**, scheduled for 2021. Experimental treatment of *Pocillopora* corals with LPS stimulates genotype-specific immune responses but does not alter associated bacteria communities. International Coral Reef Symposium, Bremen, Germany.

G. Snyder\*\*, B. Rosental, W.E. Browne, **N. Traylor-Knowles**, scheduled for 2021. Transcriptional and Microbial Variation Across Coral Cell Types Using Fluorescent Activated Cell Sorting. International Coral Reef Symposium, Bremen, Germany.

B. Young\*\*, X. Serrano, M. Miller, S. Rosales, and **N. Traylor-Knowles**, scheduled for 2021. Signatures of disease resistance for the threatened Caribbean branching coral, *Acropora palmata*. International Coral Reef Symposium, Bremen, Germany.

A. DeMerlis\*\*, I.C. Enochs, A. Kirkland, **Nikki Traylor-Knowles**, A. Mayfield, N. Formel, D.P. Manzello, D. Lirman, scheduled for 2021. Variable temperature treatments alter a coral's response to acute thermal stress. International Coral Reef Symposium, Bremen, Germany.

L.E. Vandepas, C. Stefani, **N. Traylor-Knowles**, W. E. Browne, F. W. Goetz, Adam Lacy-Hulbert, 2020. Tick, Tick, Boom: Exploring diverse immune cell behaviors in ctenophores and oysters. Society of Integrative and Comparative Biology. Austin, TX.

W. E Browne, L. E Vandepas, A. C Dieter\*\*, G. A. Snyder\*\*, **N. Traylor-Knowles**, 2019. Ctenophore phagocyte behavior in response to microbial challenge. Pan-American EvoDevo Conference, Miami, FL.

**N. Traylor-Knowles**, 2019. Eco-immunity of corals. Israeli American Kavli Frontiers of Science Symposium, Jerusalem, Israel. Note: flash talk.

M.T. Connelly\*\*, C.J. McRae, P-J Liu, **N. Traylor-Knowles**, 2018. Differential immune gene expression of Pocillopora damicornis corals in response to antibiotics treatment, heat stress, and lipopolysaccharide exposure. Southeastern Ecology and Evolution Conference, Miami, FL.

G. Snyder\*\*and **N. Traylor-Knowles**, 2018. Transcriptional and microbial characterization of scleractinian coral cell populations separated by Fluorescence Activated Cell Sorting (FACS). Cnidofest, St. Augustine, FL.

G. Snyder\*\*and **N. Traylor-Knowles**, 2018. Transcriptional and microbial characterization of scleractinian coral cell populations separated by Fluorescence Activated Cell Sorting (FACS). Southeastern Ecology and Evolution Conference, Miami, FL.

G. Snyder\*\*and **N. Traylor-Knowles**, 2018. Transcriptional and microbial characterization of scleractinian coral cell populations separated by Fluorescence Activated Cell Sorting (FACS). Global Invertebrate Genomics Alliance (GIGA) III Conference, Curaçao.

B. Young\*\*, X. Serrano, M. Miller, S. Rosales, and **N. Traylor-Knowles**, 2018. Signatures of disease resistance for the threatened Caribbean branching coral, Acropora palmata. Southeastern Ecology and Evolution Conference, Miami, FL. Note: Student Award: Honorable mention for best talk

B. Young\*\*, X. Serrano, M. Miller, S. Rosales, and **N. Traylor-Knowles**, 2018. Signatures of disease resistance for the threatened Caribbean branching coral, Acropora palmata. Reef Futures, Key Largo, FL. Note: Student Awards: Fully funded scholarship for registration and accommodation, won best talk for research that should be published

**N. Traylor-Knowles**, G. Snyder\*\*, M.T. Connelly\*\*, W.E. Browne, B. Rosental, 2018. From Cells to Genes the Surprising Immune System of Pocillopora damicornis. Cnidofest, St. Augustine, FL.

M.T. Connelly\*\*, C.J. McRae, P-J Liu, **Nikki Traylor-Knowles**, 2018. Patterns of Pocillopora damicornis immune gene expression in response to antibiotics treatment, heat stress, and lipopolysaccharide exposure, Global Invertebrate Genomics Alliance (GIGA) III Conference, Curaçao.

**N. Traylor-Knowles** and S. Palumbi, 2016. Fine –scale sampling of A. hyacinthus during an acute heat shock, illuminates potential immune gene reactions and interactions International Coral Reef Symposium, Honolulu, HI.

**N. Traylor-Knowles** and S. Palumbi, 2016. The evolution of innate immunity: what can hot corals tell us? Comparative Immunology. Miami, FL.

**N. Traylor-Knowles**, S. Palumbi, 2015. The Mechanisms of Eco-immunity In A Changing Environment. Evolution, Guraruja, Brazil.

**N. Traylor-Knowles**, 2015. Some do (not) like it hot: the role of Tumor Necrosis Factor Receptor in heat stressed corals. Israeli American Kavli Frontiers of Science Symposium, Jerusalem, Israel. Note: flash talk.

**N. Traylor-Knowles**, F. Seneca, S. Palumbi. 2014 Some (do not) Like It Hot: The Role of The Tumor Necrosis Factor Receptor in Heat Stressed Corals. Evolution, Raleigh, NC.

**N. Traylor-Knowles**, 2014. Some (Do Not) Like It Hot: The Role of Tumor Necrosis Factor Receptor in Heat Stressed Corals North American Comparative Immunology Workshop, Albuquerque, NM.

**N. Traylor-Knowles**, F. Seneca, S. Palumbi, 2013. Some Like It Hot: The Role of The Tumor Necrosis Factor Receptor in Heat Stressed Corals. The International Conference on Coelenterate Biology. Eilat, Israel.

**N. Traylor-Knowles**, S. Palumbi, 2013. What Is the Role of TNFR in Cnidarians? Nematostella Workshop, The International Conference on Coelenterate Biology. Eilat, Israel.

**N. Traylor-Knowles**, F. Seneca, S. Palumbi, 2013. Some Like It Hot: The Role of The Tumor Necrosis Factor Receptor in Heat Stressed Corals. Evolution, Snowbird, UT.

**N. Traylor-Knowles**. 2011. Taiwan Rocks! National Science Foundation, East Asian and Pacific Summer Institute Conference.

**N. Traylor-Knowles**, B. Granger, T. Lubinski, L. Kaufman, J.R. Finnerty, 2012. Immunity and the coral "holobiont": What genomics and transcriptomics can tell us about this delicate relationship. International Coral Reef Symposium, Cairns, AUS.

**N. Traylor-Knowles**, J.R. Parikh, T. Lubinski, B. Granger, S. Garamszegi, L. Kaufman, & J.R. Finnerty, 2010. A Stress-Enriched Transcriptome for Pocillopora damicornis International Society of Reef Studies, Wageningen, The Netherlands.

**N. Traylor-Knowles**, A.M. Reitzel and J. R. Finnerty, 2010. Identification and expression of genes for sex determination in the starlet sea anemone, Nematostella vectensis. Society of Integrative and Comparative Biology, Seattle, WA.

**N. Traylor-Knowles**, A.M. Reitzel, J. Sullivan, J.R. Finnerty, 2008. The Initial Characterization of the Defensome in the Model Cnidarian, Nematostella vectensis and its Applications to Coral Reefs. International Coral Reef Symposium, Fort Lauderdale, FL.

**Poster presentations:**

Cynthia Blanco<sup>\*\*\*</sup>, Grace Snyder<sup>\*\*</sup>, **Nikki Traylor-Knowles**, 2019. The Effect of Lipopolysaccharides on Starlet Sea Anemone, Nematostella vectensis. Annual Biomedical Research Conference for Minority Students. Anaheim, CA.

**N. Traylor-Knowles**, 2019. Eco-immunity of corals. Israeli American Kavli Frontiers of Science Symposium, Jerusalem, Israel.

J.D. Nowotny<sup>\*\*\*</sup>, G.A. Snyder<sup>\*\*</sup>, M.T. Connelly<sup>\*\*</sup>, B. Rosental, and **N. Traylor-Knowles**, 2019. Working towards the establishment of long-term cnidarian cell culture and stem cell characterization through FACS. RSMAS Undergraduate Poster Symposium, Miami, FL.

A.M. Bonacolta<sup>\*\*\*</sup>, M.T. Connelly<sup>\*\*</sup>, S. Rosales, GA Snyder<sup>\*\*</sup>, **N. Traylor-Knowles**, 2019. Organismal compartmentalization of the microbiome in the starlet sea anemone, Nematostella vectensis. RSMAS Undergraduate Poster Symposium, Miami, FL.

M. Howson<sup>\*\*\*</sup>, J. Daly<sup>\*\*\*</sup> and **N. Traylor-Knowles**, 2018. Cell apoptosis during wound healing and regeneration in Nematostella vectensis. RSMAS Undergraduate Poster Symposium, Miami, FL.

J. Daly\*\*\*, M. Howson\*\*\*, and **N. Traylor-Knowles**, 2018. Apoptosis and Proliferation During Regeneration in *Nematostella vectensis*. RSMAS Undergraduate Poster Symposium, Miami, FL.

M.T. Connelly\*\*, C.J. McRae, P-J Liu, **N. Traylor-Knowles**, 2018. Patterns of *Pocillopora damicornis* immune gene expression in response to antibiotics treatment, heat stress, and lipopolysaccharide exposure. Cnidofest, St. Augustine, FL.

B. Young\*\*, X. Serrano, M. Miller, S. Rosales, and **N. Traylor-Knowles**, 2018. Signatures of disease resistance for the threatened Caribbean branching coral, *Acropora palmata*. Cnidofest, St. Augustine, FL.

**N. Traylor-Knowles**, 2015. Some do (not) like it hot: the role of Tumor Necrosis Factor Receptor in heat stressed corals. Israeli American Kavli Frontiers of Science Symposium, Jerusalem, Israel.

**N. Traylor-Knowles**, F. Seneca, M. Mikhail, S. Palumbi, 2014. The Role of Tumor Necrosis Factor Receptor in Heat Stressed Corals. Midwinter Immunology Conference, Pacific Grove, CA.

**N. Traylor-Knowles**, J. Parikh, L. Kaufman, J.R. Finnerty, 2010. First Look at the Stress Transcriptome of the Lace Coral, *Pocillopora damicornis*: Using “Next Generation” Sequencing. Boston University Engineering and Science Day, Boston, MA.

**N. Traylor-Knowles**, U. Hansen, T. Dubuc, M.Q. Martindale, L. Kaufman And J.R. Finnerty, 2009. The evolutionary diversification of LSF and Grainy head transcription factors preceded the radiation of basal animals. Society of Integrative and Comparative Biology, Boston, MA.

## SERVICE

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### **University Committee and Administrative Responsibilities:**

2019: UM Marine Invertebrate Museum, Director and Co-Chair

2018: Faculty Search Committee, Environmental Biologist

2018-*present*: RSMAS Diversity, Equity, and Inclusion Committee member

### **Community Activities:**

2020: Founder, Black Women in Ecology, Evolution, and Marine Science

2018-*present*: Participant, Women in science day, University of Miami, RSMAS, Miami, FL

2017- 2019: Israeli American Kavli Frontiers of Science Organizing Committee

2017-*present*: Advisor mentor: HHMI Bridge program

2017: Graduate of Leadership Miami, Year 38, Miami Chamber of Commerce

2016: Panel speaker, “Getting an Academic Job”, Stanford University, Palo Alto, CA

2015: Director, Young Women in Science Day, Stanford, Hopkins Marine Station, Pacific Grove, CA

2014: 1) Postdoctoral Science Management Series Liaison, Hopkins Marine Station, Stanford, CA

- 2) Mentorship Training, Cal State Monterey Bay
- 3) Stanford Graduate Diversity Research Presenter, Stanford University

2012: Science Fair Judge, Olosenga-Ofu Elementary School, American Samoa

1999-2003: Student Director and Program Coordinator, Johns Hopkins Tutorial Project

***Media coverage:***

2019: "Rosenstiel School Events Aims to Encourage Schoolgirls into Marine Science Careers," Key News, November 21, 2019, by Briana Gibbs.

2018: "Hawaii is banning sunscreen to protect corals. But what about your skin?" May 07, 2018, Stephanie Pappas.

"The unique immunity in a common coral species could save coral reefs," DiscoverWildlife, November 19, 2018, by Emily Gobbett.

"Widespread coral species shows unique adaptations against environmental changes," Zmescience, November 2, 2018, by Alexandru Micu.

"Unique immunity genes in one widespread coral species," ScienceDaily, November 1, 2018.

2011: "Coral Whisperers Diagnose Reef Pollution Woes" New Scientist, February 24, 2011, by Sonia Van Gilder Cooke.

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