

NIKKI GEORGINA TRAYLOR-KNOWLES

Kavli Frontiers in Science Fellow
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EDUCATION

Ph.D., Biology	Boston University	2012
M.Sc., Cellular and Molecular Biology <i>*Biology Departmental Honors</i>	Johns Hopkins University	2004
B.Sc., Cellular and Molecular Biology	Johns Hopkins University	2003

RESEARCH & ACADEMIC HISTORY

Assistant Professor, University of Miami, RSMAS	Starting Feb. 2016
Postdoctoral Researcher, Stanford University, Hopkins Marine Station	2011 - current
<ul style="list-style-type: none"> ▪ Advisor: Stephen Palumbi ▪ Research focus: The role of tumor necrosis factor receptor in heat stressed corals (<i>Acropora hyacinthus</i>). ▪ Techniques: cnidarian stress physiology, bioinformatics/genomics, cell biology, molecular biology, field work 	
Ph.D Graduate Researcher, Boston University	2005 - 2011
<ul style="list-style-type: none"> ▪ 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 <i>Nematostella vectensis</i> and the coral <i>Pocillopora damicornis</i>. ▪ Techniques: phylogenetics, cell biology, microscopy, transcriptomics, field work 	
Master's Researcher, Johns Hopkins University	2003 - 2004
<ul style="list-style-type: none"> ▪ Advisor: Gary K. Ostrander ▪ Master's Thesis: The initial characterization of coral skeletal tissue anomalies found in <i>Porites compressa</i>. ▪ Techniques: cell culture, western blots, microscopy 	

GRANTS, FELLOWSHIPS & AWARDS

Ocean Sciences Postdoctoral Research Fellow	2013 - 2015
<ul style="list-style-type: none"> ▪ National Science Foundation: Total amount \$170,000 	
Postdoctoral Enrichment Program Award	2013 - 2016
<ul style="list-style-type: none"> ▪ Burroughs Wellcome Fund: Total amount \$60,000 	
Warren-McLeod Marine Biology Fellowship	2011
<ul style="list-style-type: none"> ▪ Boston University: Total amount \$22,000 	
East Asia Pacific and Summer Institutes Fellow	2010
<ul style="list-style-type: none"> ▪ National Science Foundation: Total amount \$12,000 	
Warren-McLeod Marine Biology Fellowship	2010
<ul style="list-style-type: none"> ▪ Boston University: Total amount \$22,000 	
National Institute of Health	
<ul style="list-style-type: none"> ▪ Graduate student "Training Grant" 	
	2008

Boston University

- George R. Bernard Travel Grant 2007

Boston University

- Teaching Fellowship, 2005-2009, 2011

Johns Hopkins University

- Departmental Biology Honors 2003

TEACHING AND MENTORING EXPERIENCE

UROC Student Supervisor, **Cal State Monterey Bay**

2014

- **Responsibilities:** Mentor of Kirsten Boyer

Under-represented undergraduates in STEM Student Supervisor, **Stanford**

2013

- **Responsibilities:** Mentor of Megan Mikhail, STEM Fellow

Student Supervisor, Mentor for 5 students, **Boston University**

2007-2011

- **Responsibilities:** Developed student project, guided senior thesis

Invited Lecturer, Marine Biology, **Boston University**

2011

- **Lecture Title:** "Organismal, molecular, and genomic mechanisms underlying wound healing in a model coral"

Teaching Fellow, Marine Invertebrate Zoology, **Boston University**

2008

- **Responsibilities:** Lab instructor, lab lecturer and fieldwork coordinator

Teaching Fellow, Animal Behavior Laboratory, Boston University

2007

- **Responsibilities:** Lab instructor, lab lecturer, student project coordinator

Teaching Fellow, Marine Biology, **Boston University**

2006-2007

- **Responsibilities:** Discussion leader, course coordinator, developed discussion curriculum

Teaching Fellow, Systems Physiology Laboratory, **Boston University**

2005-2009, 2011

- **Responsibilities:** Lab instructor, lab lecturer, design course and test materials

Teaching Assistant, Intro. Biology Lab, **Johns Hopkins University**

2003-04

- **Responsibilities:** Lab coordinator, lab lecture

PEER-REVIEWED PUBLICATIONS

(16) **Traylor-Knowles, N.**, Seneca, F.O., Palumbi, S. R. (*in review*) Two Distinct Tumor Necrosis Factor Receptor Clusters Respond Differently to Heat Stress in Reef Building Corals.

(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 starletsea anemone, *Nematostella vectensis*. *EvoDevo*. 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- κ 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- κ 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.

INVITED SEMINAR SPEAKER

University of California, Davis, Bodega Marine Labs
University of Miami, RSMAS

2015
2015

Oregon State University, Corvallis, OR	2015
University of California, San Diego	2015
University of California, Santa Cruz	2015
San Diego State University, Coral Club, Rohwer Lab, San Diego, CA	2014
Hatfield Marine Station, Newport, OR	2014
Oregon State University, Weis Lab, Corvallis, OR	2014
UC Santa Barbara, Hofmann Lab, Santa Barbara, CA	2014
Massachusetts Institute of Technology, Thompson Lab, Cambridge, MA	2014
Harvard University, Extavour Lab, Cambridge, MA	2014
Woods Hole Oceanographic Institute, Tarrant Lab, Woods Hole, MA	2014
Northeastern University, Vollmer Lab, Nahant, MA	2014
University of Texas-Arlington, Mydlarz Lab, Arlington, TX	2014
University of North Carolina-Charlotte, Reitzel Lab, Charlotte, NC	2014
Romberg Tiburon Center, San Francisco State University	2013
National Science Foundation, EAPSI Pre-departure Panel, Washington D.C.	2011
Stanford University, Hopkins Marine Lab, Pacific Grove, CA	2010
Harvard University, Extavour Lab, Cambridge, MA	2010
National Museum of Marine Biology and Aquarium, Heng Chun, Taiwan	2010
Boston University, Boston, MA	2006, 2010
Johns Hopkins University, Baltimore, MD	2005

CONFERENCE PRESENTATIONS AND POSTERS

Oral presentations:

Evolution, Guraruja, Brazil	2015
Evolution, Raleigh, NC	2014
North American Comparative Immunology Workshop, Albuquerque, NM	2014
The International Conference on Coelenterate Biology, Eilat, Israel	2013
Nematostella Workshop, at ICCB, Eilat, Israel	2013
Evolution, Snowbird, UT	2013
International Coral Reef Symposium, Cairns, AUS	2012
International Society of Reef Studies, Wagenigen, The Netherlands	2010
Society of Integrative and Comparative Biology, Seattle, WA	2010
International Coral Reef Symposium, Fort Lauderdale, FL	2008

Poster presentations:

Israeli-American Kavli Frontiers of Science Symposium, Jerusalem, Israel	2015
Midwinter Immunology Conference, Pacific Grove, CA	2014
Boston University Engineering and Science Day, Boston, MA	2010
Society of Integrative and Comparative Biology, Boston, MA	2009

REVIEW PANELS, COMMITTEES, MEMBERSHIPS AND PROFESSIONAL DEVELOPMENT

Jumpstart Your Academic Career, Job Search Panel	2015
Chair of Evolution session: Climate I, Guraruja, Brazil	2015
Pan-American Society For Evolutionary Developmental Biologists Member	2015
International Society of Reef Sciences Member	2015
NSF, Ocean Sciences Postdoctoral Fellowship Grant Reviewer	2015
Israeli-American Kavli Frontiers of Science, National Academy of Science	2015
Binational Agricultural Research and Development Fund US-Israel	2014
Co-chair of Evolution session: Gene Expression, Raleigh, NC	2014
Annual Biomedical Conference for Minority Students, San Jose, CA	2012
Co-chair of symposium: Immunity on the Reef, ICRS	2012
Grant Research Panel Reviewer, NSF East Asia Pacific and Summer Institutes	2011
Invited student, H.I.M.B. - Edwin Pauley Class on coral stress	2007

JOURNAL PEER REVIEW

Proceedings of the Royal Society B
BMC Genomics
Molecular Ecology Resources
Molecular Ecology

Frontiers
PLoS One
Marine Genomics
Hydrobiologica

OUTREACH AND MENTORSHIP

Young Women in Science Day at HMS

- I am organizing a “DNA Science Day” for local youth at Hopkins Marine Station with the Monterey Bay Aquarium Educational Department, to promote diversity in research. 2015

Postdoctoral Science Management Series Liaison, Hopkins Marine Station 2014

Mentorship Training, Cal State Monterey Bay 2014

Stanford Graduate Diversity Research Presenter, Stanford University 2014

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

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