

Rebecca M. Varney

Postdoctoral researcher

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EDUCATION

- Ph.D. Biology** 2017-2021
University of Alabama, Tuscaloosa, Alabama
Dissertation: Biomineralization in the radula of the chiton *Acanthopleura granulata*
Committee Members: Kevin Kocot, Matthew Jenny, Michael McKain, Laura Reed, Daniel Speiser
- M.S. Biology** 2013-2016
University of West Florida, Pensacola, Florida
Thesis Title: Telomere elongation in regenerating tissues of the Grey Sea Star *Luidia clathrata*
Committee Members: Christopher Pomory, Alexis Janosik, Hui Min Chung
- B.S. Genetics** 2007-2011
University of California at Davis, California

PUBLICATIONS

(336 citations)

- X. **Varney RM**, Speiser DI, Cannon JT, Aguilar MA, Eernisse DJ, Oakley TH. Path dependence guides independent evolutions of visual systems across chitons. (in prep)
- X. **Varney RM**, Kingston ACN, Kocot KM, Speiser DI. Chitons modulate pH and withstand oxidative stress to biomineralize iron-clad teeth (in prep)
- X. Zehnpfening JR, **Varney RM**, Halanych KM, Mahon AR. Mitochondrial genomics of pycnogonids reveals conflict in family-level relationships. (in revision, Polar Biology)
- X. Drábková1 M, Zrzavý J, Halanych KM, Oakley TH, Moroz LL, Cannon JT, Kuris A, Garcia-Vedrenne AE, Pankey MS, Ellis EA, **Varney RM**, Štefka1 J, and Kocot KM. Different phylogenomic methods support monophyly of enigmatic ‘mesozoans’ Dicyemida and Orthonectida (Lophotrochozoa) (in revision, Proceedings B)
- X. **Varney RM**, Yap-Chiongco MK, Mikkelsen NT, Kocot KM. Genome of the lepidopleurid chiton *Hanleya hanleyi* (Mollusca, Polyplacophora). (in review) F1000Research 2022, 11:555
<https://doi.org/10.12688/f1000research.121706.1>
8. Nehmens MC, **Varney RM**, Janosik AM, Ebert DA (2021) Telomere length and longevity: an exploratory study using a deep-sea shark, *Etmopterus granulosus*. *Frontiers in Marine Biology* 8,267. doi: 10.3389/fmars.2021.642872
7. **Varney RM**, McDougall C, Degnan BM, Speiser DI, Kocot KM. (2021) The iron-responsive genome of the chiton *Acanthopleura granulata*. *Genome Biology and Evolution*. 10.1093/gbe/evaa263
6. **Varney RM**, Schroedl M, Brenzinger B, Meyer C, Malaquias MA, and Kocot KM (2021) Assessment of mitochondrial genomes for heterobranch gastropod phylogenetics. *BMC Evolutionary Biology*. 10.21203/rs.3.rs-30542/v1
5. Kocot KM, Wollesen T, **Varney RM**, Schwartz ML, Steiner G, Wanninger, A (2019) Complete mitochondrial genomes of scaphopod molluscs. *Mitochondrial DNA Part B*, 4:2, 3161-3162
doi 10.1080/23802359.2019.1666689
4. **Varney RM**, Funch P, Kocot KM, and Sørensen, MV (2019) A new species of Echinoderes (Cyclorhagida:

Echinoderidae) from the San Juan Islands, Washington State, USA, and insights into the kinorhynch transcriptome. *Zoologischer Anzeiger Special Issue* 282:52-63 doi: 10.1016/j.jcz.2019.06.003

3. **Varney RM**, Pomory CM, and Janosik, AM (2017) Telomere elongation and telomerase expression in regenerating arms of the starfish *Luidia clathrata* (Asteroidea: Echinodermata). *Marine Biology*. 164:195 doi: 10.1007/s00227-017-3230-x
2. DeAngelis KM, Pold G, Topcuglu B, van Diepen L, **Varney RM**, Blanchard J, Melillo F and Frey S (2015) Long-term forest soil warming alters microbial communities in temperate forest soils. *Frontiers in Microbiology*. 6:104 doi: 10.3389/fmicb.2015.00104
1. DeAngelis KM, Sharma D, **Varney R**, Simmons B, Isern NG, Markillie LM, Nicora C, Norbeck AD, Taylor RC, Aldrich JT and Robinson EW (2013) Evidence supporting dissimilatory and assimilatory lignin degradation in *Enterobacter lignolyticus* SCF1. *Frontiers in Microbiology*. doi: 10.3389/fmicb.2013.00280

ARTICLES (NON-PEER REVIEWED)

2. **Varney RM**, Heinrich KK. (2021) A Garden, Not a Leaky Pipeline. *The Teaching Professor*.
1. **Varney RM** "The Wonders of Mud at FHL" (2019) Friday Harbor Laboratories Tide Bite.
<http://depts.washington.edu/fhl/tidebites/Vol73/index.html>

GRANTS AND FELLOWSHIPS

UCSB Individualized Professional Skills (IPS) Grant Program Grant in support of field research, 2022	~\$1,000
"Tiny brains, big ideas: convergent evolution of complex processing centers across arthropods" Split-Seq Single-cell Sequencing Core Lab Grant, 2021	~\$15,000
Research Experience for Post-Baccalaureate Students (REPS), 2021 In collaboration with Todd Oakley, supports one post-bac student on salary for a full year of research as an extension to an existing NSF grant	\$48,675
Marine Biological Laboratories Support Grant, 2020 Course Fellowship, Embryology	\$6,500
University of Alabama Graduate Council Fellowship, 2020-2021 Research Fellowship	\$44,497
American Genetics Association Grant for Invited Symposium Speakers World Congress of Malacology Genomics Session, 2019	\$500
American Genetics Association Student Travel Grant, 2018 Flights and lodging for GIGAiii	\$2000
University of Alabama Student Travel Grant, 2018 Field work in Curacao	\$500
Lerner-Gray Memorial Fund, 2018 Field work in the Florida Keys	\$2217
Conchologists of America, 2018 Field work in the Florida Keys	\$2218
E.O. Wilson Biodiversity Fellowship, Summer 2018 Dissertation field work in the Florida Keys	\$5000
Western Society of Malacologists Research Grant, 2018 Differential gene expression analysis in the iron-mineralized radulae of four species of chitons from the Pacific Northwest	\$1000
University of Alabama Graduate Council Fellowship, 2018-2019 Research Fellowship	\$44,497
Charlotte Magnum Travel Award, Fall 2017	\$1500

SICB 2018 Housing	
University of Alabama Travel Grant, Fall 2017	\$1000
Travel to SICB 2018	
E.O. Wilson Biodiversity Fellowship, Summer 2017	\$5000
Dissertation field work in Washington State, Friday Harbor Marine Labs	
Alan J. Kohn Endowed Fellowship at UW Friday Harbor Laboratories, Summer 2017	\$2000
Marine Invertebrate Zoology	
UWF Scholarly and Creative Activities Committee Research Grant Class B, Fall 2015	\$500
Post-regeneration telomere elongation in <i>Luidia clathrata</i>	
UWF Scholarly and Creative Activities Committee Travel Grant Class C, Spring 2015	\$500
Novel microsatellites for the Gulf of Mexico hagfish	
UWF Scholarly and Creative Activities Committee Research Grant Class A, Fall 2014	\$1000
Development of novel microsatellites for three Gulf of Mexico hagfishes	

OTHER AWARDS

- Arts and Sciences Outstanding Doctoral Dissertation Award, University of Alabama 2021
- Best Graduate Student Presentation, American Society of Microscopy, SICB 2020 **\$150**
- Ralph L. Chermock Prize to the most outstanding graduate student in systematics and ecology, 2020 **\$800**
- Outstanding Teaching by a Graduate Student Fall 2019
- Best Student Talk, World Congress of Malacology, 2019. **\$300**
- Joab Langston Thomas Scholarship for outstanding scholarship, creativity and potential as a scholar and teacher, 2019. **\$2500**
- Chair's Scholarship for Outstanding Contribution to Teaching in Biological Sciences, University of Alabama, 2017 **\$2500**
- Most Physiologically Accurate, Friday Harbor Laboratories Invertebrate Ball Costume Contest, 2017
- Outstanding Graduate TA, University of West Florida, 2015
- Best Graduate Presentation, Hal Marcus College of Science and Engineering Student Scholars Symposium, 2016 **\$250**
- 2nd Place Overall Graduate Presentation, University of West Florida Student Scholars Symposium, 2016 **\$500**

DIVERSITY, EQUITY, AND INCLUSION ACTIVITIES

Activities

- Mentor for Women Lead - UF Institute for Early Career Scholars, matches new graduate students with an external mentor to help them navigate graduate school. (<http://postdoc.ua.ufl.edu/programs/women-lead/>)
- Letters to a Pre-Scientist - Scientist pen-pal for students in schools from lower-income communities/schools with a low percentage of students continuing to college. 2017-2018, 2018-2019, 2019-2020, 2020-2021, 2021-2022

Workshops Organized

- Junior Faculty Launch Workshop - SICB 2022. This program is aimed at decreasing the phenomenon of insider knowledge in the academic job search. Co-organized by Deidre Lyons (UC San Diego), Billie Swalla (University of Washington), and Leslie Babonis (Cornell) I was invited to be the post-doctoral

member of the panel, and will continue to participate in future years, ideally as I progress in career stage.

Workshops Attended

- Building a Better Fieldwork Future (BBFF) - offered through UC Santa Cruz, this workshop focuses on preventing and addressed harassment and assault in fieldwork settings. March 15, 2022.
- Implicit Bias Workshop - offered through UCLA for postdoctoral researchers. September 2021
- DEI-Sensitive Mentorship Workshop - offered by the Society of Developmental Biology, directed by Dr. Nancy Schwartz. July 2020.
- Strategies to Identify Bias in the Culture of Biology - offered by the Society of Developmental Biology, directed by Dr. Loydie Jerome-Majewska. July 2020.
- Racism, Microaggression, Social Injustice, and Minority Mental Health- seminar offered by Dr. Nahree Doh, hosted by the University of Alabama DEI Office. July 7, 2020.

Memberships

- Graduate Women in Science (GWIS), President (2013-2016) and co-founder
- Association of Women in Science

INVITED TALKS AND SEMINARS

Keynote Address - NSF Genomics Education Partnership Regional Node Meeting To crack a chiton: new challenges for gene annotation in non-model organisms	April 22, 2022
University of Florida, Biology Seminar Series. Iron teeth and dried out shrimp: how invertebrates are stressed for success	November 30, 2021
California State University, Fullerton, Biology Seminar Series. Iron biomineralization in the chiton radula	November 3, 2021
Mem. Univ. of Newfoundland, Friday Light Informal Research Talk (FLIRT) series. Iron-clad teeth in chitons: how to avoid cavities without really trying	September 11, 2020
SpiraliaBase Virtual Lab Meeting Series High Molecular Weight DNA Extraction Techniques in Spiralian	September 10, 2020
World Congress of Malacology, Utility of Molluscan Genomics Session An Aculiferan perspective on molluscan mineralization	August 2019

Best Student Talk

ORAL PRESENTATIONS

Society of Integrative and Comparative Biology The role of iron-response elements (IREs) in regulating translation during iron biomineralization in the chiton radula Rebecca M. Varney , Alexandra C.N. Kingston, Kevin M. Kocot, Daniel I. Speiser	January 4, 2022
Society of Integrative and Comparative Biology Chitons on the cutting edge: the biomineralization of iron-clad teeth in <i>A. granulata</i> Rebecca Varney , Daniel I. Speiser, Alexandra C.N. Kingston, Kevin M. Kocot	January 7, 2021
Society of Integrative and Comparative Biology The genome of the chiton <i>A. granulata</i> : an Aculiferan perspective on molluscan mineralization Rebecca M. Varney , Caramel McDougall, Bernie Degnan, Daniel I. Speiser, Kevin M. Kocot	January 5, 2020
5th Annual Scalidophoran Conference A new species of Echinoderidae and first insights from the kinorhynch transcriptome Rebecca Varney , Peter Funch, Kevin Kocot, Martin Vinter Sørensen	January 23, 2019
UWF Biology Seminar Series	October 15, 2016

Telomere elongation in regeneration tissues of *Luidia clathrata*
Rebecca Varney, Alexis Janosik, Christopher Pomory

RESEARCH EXPEDITIONS

- Antarctic Research Cruise** September 20-December 18, 2020
RVIB Nathaniel B. Palmer
Weddell Sea and Peninsula, sampling for benthic invertebrates
- LA Urban Ocean BioBlitz** August 19-August 31, 2019
BioBlitz under Dr. Gustav Pauley alongside the LA Museum of Natural History, day trips aboard the Ocean Sentinel
Sediment grabs and sorting
- DISL Meiofauna Diversity and Taxonomy Workshop** August 4-August 10, 2019
Meiofaunal collection and sorting in collaboration with Dr. Kelly Dorgan's laboratory at the Dauphin Island Sea Lab, day trips aboard the R/V E.O. Wilson
Sediment collection and sorting
- Meiofaunal Sampling, Ft. Pierce** May 11-15, 2018
Day trips aboard the R/V Sunburst
Sediment grabs and sorting
- South Carolina Department of Natural Resources** September 2-September 5, 2014
Coastal Shark and Red Drum Population Surveys, R/V Silver Crescent
Longlining along Atlantic Coast
- Deep-C Consortia Research Cruise** June 30-July 4, 2014
Florida State University, R/V Apalachee
Deep sea longlining in the Gulf of Mexico
- Gulf of Mexico Reef Monitoring** September 2013
Deep sea line fishing for triggerfish and red snapper

TEACHING EXPERIENCE

- Guest Lecture: Macroevolution and Tree Thinking March 2, 2022
Introduction to Evolution at University of California Santa Barbara
(Dr. Eleanor Cave's invitation)
- Guest Lecture & Guided Lab: Meiofaunal Invertebrates February 12, 2020
Marine Invertebrate Zoology Field Course at the University of Florida
(Dr. Gustav Paulay's invitation)
- Guest Lecture: The Immune System October 24, 2019
Principles of Biology, II
- Invited Lecture: Introduction to the Shell August 23, 2018
Bioinformatics
- Invited Lecture: Sequencing Phage Genomes with 3rd Generation Technology April 11, 2018
Phage Discovery
- Graduate Teaching Assistant Spring 2017 - Present
Microbes and Man
- Instructor of Record Spring 2015 - Fall 2016
Biology I Laboratory
*Instructor of Record indicates that instructional context of the course was formatted and grades were assigned by that individual
- Coursework Development Spring 2015 - Fall 2016
Collaborative development of laboratory curriculum and student lab manual for Biology I Laboratory

Graduate Teaching Assistant
Marine Vertebrate Zoology
Introduction of Marine Biology and Oceanography for Non-Majors
Biology I Laboratory

Fall 2014

***Very positive teaching evaluations and comments from students and faculty observers available upon request.**

MENTORSHIP

Singular supervision

UC Santa Barbara Fall 2021 - Summer 2022	Direct supervisor of NSF REPS Scholar post baccalaureate Cheyenne McKinley*, who was awarded a GRFP Fall 2022
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Graduate Student Training and Supervision

University of West Florida Spring 2014 - Fall 2015	Supervised three graduate student directed independent studies (B. McAcy, E. Stein, A. Earls) and trained four additional graduate students in genetic techniques (S. Cecil, M. Davis, C. Nash, A. Egan)
Univ. of Massachusetts Fall 2011 - Spring 2013	Trained three graduate students in anaerobic culturing techniques (A. Billings, F. Abdul-Rahman, D. Sharma)

Undergraduate Student Training and Supervision

University of Alabama Fall 2018 - Spring 2021	Assisted with laboratory and bioinformatics training for three undergraduates (E. Pabst*, R. Partain, C. Pruett)
University of West Florida Fall 2013 - Spring 2016	Trained and supervised the directed independent studies of thirteen undergraduate research assistants in basic laboratory skills and genetic techniques (K. Vaccaro*, A. Johanssen, H. Sthole*, H. Schmuki*, L. Hartigan, A. Nes-smith, R. Rogers, C. Howard, E. Miller, N. Zielinski*, I. Bollinger*, A. Brooks*, K. Price)
Univ. of Massachusetts Fall 2011 - Spring 2013	Trained three undergraduate research assistants in microbiology laboratory techniques (D. Burkhardt*, B. Surjawan*, G. Gundersen)

* denotes an undergraduate or post baccalaureate student that went on to pursue a graduate or medical degree

SERVICE

Reviewer: Ecology & Evolution, Zoological Journal of the Linnean Society, Nature Communications, Zoologica Scripta, Scientific Reports, Communications Biology, Current Biology, and others.

Graduate/Postdoc Representative, Division of Invertebrate Zoology, SICB	2020-2022
Undergraduate Research Symposium Planner/Judge	April 22, 2022
Graduate Teaching Assistant Workload Assessment Committee	Academic year 2018-2019
Biology Graduate Student Association (BGSA) President	Academic year 2018-2019
Bama Biology Bootcamp, Graduate mentor	Fall 2018
Bama Biology Bootcamp Mentor Training Workshop (developed content and taught workshop)	August 11, 2018
Bama Biology Bootcamp Organization and Schedule Planning	Summer 2018
Undergraduate Research and Creative Activities (URCA) Judge	March, 2019/2018; March 29, 2018
Bama Biology Bootcamp, Graduate mentor	Fall 2017
University of West Florida Biology Department Advertising Committee	Spring 2015-Fall 2016

OUTREACH

ArBOOretum Volunteer: arboretum tours, organization.	October 27, 2019
UA Homecoming Biology Collections Outreach Tent	October 26/13, 2019/2018
Bessemer Country Science Fair: Volunteer judge.	January 16, 2019
BioBlitz Volunteer (herbarium specimen preparation & arboretum tours)	April 21, 2018
Skype A Scientist Scientific volunteer	2017-2020
Alabama Regional Science Olympiad Competition Judge	February, 2018/2017
Volunteer, Night at the Museum	February 2019, 2018, 2017
Northwest Florida Regional Science Olympiad Competition Judge	February 2016, 2015
High school lecture- A Career in Biology	November 20, 2015
58th Annual West Panhandle Regional Science and Engineering Fair Judge	January 27, 2014
Panelist: Preparing for Graduate School	January 15, 2014

POSTER PRESENTATIONS

Society of Integrative and Comparative Biology	January 5, 2020
Localized physiological changes regulate the biomineralization of magnetite in the radula of the chiton <i>Acanthopleura granulata</i>	
RM Varney , ACN Kingston, KM Kocot, DI Speiser	
*Best Student Presentation, AMS	
Entomology	October 2019
Two new bumble bee genomes: <i>de novo</i> assembly of <i>Bombus bifarius</i> and <i>Bombus vosnesenskii</i> genomes from long and short read sequences	
S Heraghty, J Strange, J Sutton, RM Varney , J Lozier	
BioFest, University of Alabama	September 27, 2019
Radular physiology of the chiton <i>Acanthopleura granulata</i>	
RM Varney , KM Kocot, DI Speiser	
Pearls of Wisdom Molluscan Genomics Conference	September 2019
A cost-effective strategy to obtain highly contiguous aculiferan mollusc genomes enables broader investigations of understudied molluscs	
RM Varney , MK Yap-Chiongco, NT Mikkelsen, S Pirro, DI Speiser, KM Kocot	
World Congress of Malacology	August 2019
Draft genome of <i>Neomenia megatrapezata</i> (Solenogastres) as a tool to study aculiferan sclerite biomineralization	
MK Yap-Chiongco, RM Varney , KM Kocot	
Evolution	July 2019
Assessing the genomes of <i>Drosophila</i> species for genetic indicators of alpha-amanitin tolerance	
O Fish, C Scott-Chialvo, RM Varney , LM Reed	
Global Invertebrate Genomics Alliance	October 20, 2018
The genome of the chiton <i>Acanthopleura granulata</i>	
RM Varney , DI Speiser, KM Kocot	
BioFest, University of Alabama	September 28, 2018
The genome of the chiton <i>Acanthopleura granulata</i>	
RM Varney , DI Speiser, KM Kocot	
STEM Forward 2018: Shattering the STEM Ceiling	April 14, 2018
The genome of the chiton <i>Acanthopleura granulata</i> : preliminary work toward understanding biomineralization of teeth as tough as tank armor	
RM Varney , DI Speiser, KM Kocot	
Society of Integrative and Comparative Biology	January 5, 2018
The genome of the chiton <i>Acanthopleura granulata</i> : preliminary work toward understanding biomineralization of teeth as tough as tank armor	

RM Varney , DI Speiser, KM Kocot University of West Florida Student Scholars Symposium Telomere elongation in regenerating tissues of the Grey Sea Star, <i>Luidia Clathrata</i>	April 21 2016
RM Varney , CM Pomory, AM Janosik 24th Annual Harvard Forest Ecology Symposium Microbial community dynamics in a long-term soil warming chronosequence KM DeAngelis, LV Diepen, RM Varney , JR Blanchard, JR Melillo, S Frey	March 20 2013
University of Massachusetts Microbiology Retreat Digging Deep: Soil microbial carbon use in a warmer world A Billings, RM Varney , G Pold, DR Burkhardt, B Surjawen, KM DeAngelis	March 2 2013

OTHER RESEARCH EXPERIENCE

Research Fellow University of Massachusetts at Amherst	May 2012-August 2013 Advisor: Prof. Kristen DeAngelis
Laboratory Technician (Analytical Chemistry) Microtest Laboratories, Inc.	December 2011-May 2012 Supervisor: Patrick Kenney, M.S.
Laboratory Assistant University of California at Davis	August 2009-August 2011 Advisor: Prof. Dina St. Clair
Undergraduate Research Assistant University of California at Davis	October 2007-June 2009 Advisor: Prof. Leslie Lyons

OTHER WORKSHOPS ATTENDED

- NSF Detecting Selection in Polar Organisms Workshop - prior to SICB, January 2018 and 2019.
- University of Alabama Research Software Initiative - Kickoff Workshop
September 28, 2018
- BITMaB2 (Benthic Invertebrate Taxonomy, Metagenomics, and Bioinformatics)
Harte Research Institute, Corpus Christi, Texas. January 16-19, 2018
- Genome Solver Workshop: Introducing molecular tools to undergraduates. NSF/Georgetown University, Anne Rosenwald. March 8-9, 2016
- Molecular Ecology and Genetics workshop prior to JMIH 2014, coordinated by Dovi Kacev
University of Tennessee, Chattanooga
- Introduction to Command Line(BASH) and Python (iPy notebook) by Software Carpentry, 2013.

OTHER PROFESSIONAL DEVELOPMENT

- Scientific Branding Workshop - led by Dr. Alexis Janosik. May 27, 2020.
- David Bauer Grant-Writing Workshop for Graduate Students - a nomination-based workshop led by David G. Bauer. August 25, 2018
- Women in Leadership - a conference at UWF addressing issues particular to women in leadership positions. February 13, 2015

PROFESSIONAL AFFILIATIONS

- Global Invertebrate Genomics Alliance (GIGA) from 2018
- Society of Integrated and Comparative Biology (SICB) (from 2015)
- Golden Key Honour Society (from 2011)
- AWIS (from 2013)

- ASIH (from 2013)
- Phi Beta Kappa Honour Society (from 2014)

CERTIFICATIONS

- SCUBA: Divemaster (2015), AAUS (current 2022)
- CPR (Emergency First Responder, First Aid, AED, O2 Administrator)
- WFA (Wilderness First Aid) and epinephrine auto-injector training (American Heart Association and Code 3 Life Support Education), 2022