

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

(291 citations, h-index 3, i10-index 3)

- X. **Varney RM**, Kingston ACN, Kocot KM, Speiser DI. Chitons modulate pH and withstand oxidative stress to biomineralize iron-clad teeth (under review, Current Biology, text available on request)
- 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. (submitted) Enigmatic ‘mesozoans’ Dicyemida and Orthonectida (Lophotrochozoa): different views from different phylogenomic methods.
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*.

GRANTS AND FELLOWSHIPS

(\$184,104 total)

"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 GIGAi	\$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 SICB 2018 Housing	\$1500
University of Alabama Travel Grant, Fall 2017 Travel to SICB 2018	\$1000
E.O. Wilson Biodiversity Fellowship, Summer 2017 Dissertation field work in Washington State, Friday Harbor Marine Labs	\$5000
Alan J. Kohn Endowed Fellowship at UW Friday Harbor Laboratories, Summer 2017 Marine Invertebrate Zoology	\$2000
UWF Scholarly and Creative Activities Committee Research Grant Class B, Fall 2015 Post-regeneration telomere elongation in <i>Luidia clathrata</i>	\$500
UWF Scholarly and Creative Activities Committee Travel Grant Class C, Spring 2015 Novel microsatellites for the Gulf of Mexico hagfish	\$500
UWF Scholarly and Creative Activities Committee Research Grant Class A, Fall 2014 Development of novel microsatellites for three Gulf of Mexico hagfishes	\$1000

OTHER AWARDS

- 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

Articles

1. **Varney RM**, Heinrich KK. (2021) A Garden, Not a Leaky Pipeline. *The Teaching Professor*.

Activities

- 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

- 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

SEMINARS

Upcoming: Biology Seminar, California State University, Fullerton (November 3, 2021)

Upcoming: Biology Seminar, University of Florida, Gainesville (November 30, 2021) **Upcoming:** Biology Seminar, University of West Florida (December 2021)

Iron-toothed molluscs: (literally) cutting-edge research. Friday Light Informal Research Talk (FLIRT) series.
Invited seminar Memorial University of Newfoundland (September 11, 2020)

ORAL PRESENTATIONS

High Molecular Weight DNA Extraction Techniques in Spiralian.

Invited seminar as part of SpiraliaBase Virtual Lab Meeting Series. (September 10, 2020)

The genome of the chiton *Acanthopleura granulata*: an Aculiferan perspective on molluscan mineralization

Rebecca M. Varney, Caramel McDougall, Bernie Degnan, Daniel I. Speiser, Kevin M. Kocot
SICB (January 5, 2020)

The genome of the chiton *Acanthopleura granulata*: an aculiferan perspective on biomineralization

Rebecca M. Varney, Daniel I. Speiser, Kevin M. Kocot
World Congress of Malacology (August 2019)

Invited talk, Utility of Molluscan Genomics Session

Best Student Talk

A new species of Echinoderidae and first insights from the kinorhynch transcriptome

Rebecca Varney, Peter Funch, Kevin Kocot, Martin Vinter Sørensen
5th Annual Scalidophoran Conference (January 23, 2019)

Telomere elongation in regeneration tissues of *Luidia clathrata*

Rebecca Varney, Alexis Janosik, Christopher Pomory
UWF Biology Seminar Series (October 15, 2016)

POSTER PRESENTATIONS

Localized physiological changes regulate the biomineralization of magnetite in the radula of the chiton

Acanthopleura granulata

Rebecca M. Varney, Alexandra C.N. Kingston, Kevin M. Kocot, Daniel I. Speiser
SICB (January 5, 2020)

Best Student Presentation, AMS

Two new bumble bee genomes: *de novo* assembly of *Bombus bifarius* and *Bombus vosnesenskii* genomes from long and short read sequences

Sam Heraghty, James Strange, John Sutton, **Rebecca Varney**, Jeff Lozier
Entomology, 2019

Radular physiology of the chiton *Acanthopleura granulata*

Rebecca Varney, Kevin Kocot, Daniel Speiser
BioFest (September 27, 2019)

A cost-effective strategy to obtain highly contiguous aculiferan mollusc genomes enables broader investigations of understudied molluscs

Rebecca Varney, Meghan K. Yap-Chiongco, Nina T. Mikkelsen, Stacy Pirro, Daniel I. Speiser, Kevin M. Kocot
Pearls of Wisdom Molluscan Genomics Conference (September 2019)

Draft genome of *Neomenia megatracheata* (Solenogastres) as a tool to study aculiferan sclerite biomineralization

Meghan K. Yap-Chiongco, **Rebecca M. Varney**, Kevin M. Kocot
World Congress of Malacology (August 2019)

Assessing the genomes of *Drosophila* species for genetic indicators of alpha-amanitin tolerance

Olivia Fish, Clare Scott-Chialvo, **Rebecca Varney**, Laura Reed
Evolution 2019

The genome of the chiton *Acanthopleura granulata*

Rebecca Varney, Daniel Speiser, Kevin Kocot
Global Invertebrate Genomics Alliance (October 20, 2018)

The genome of the chiton *Acanthopleura granulata*

Rebecca Varney, Daniel Speiser, Kevin Kocot

- University of Alabama Biofest (September 28, 2018)
- The genome of the chiton *Acanthopleura granulata*: preliminary work toward understanding biomineralization of teeth as tough as tank armor
Rebecca Varney, Daniel Speiser, Kevin Kocot
 STEM Forward 2018: Shattering the STEM Ceiling (April 14, 2018)
- The genome of the chiton *Acanthopleura granulata*: preliminary work toward understanding biomineralization of teeth as tough as tank armor
Rebecca Varney, Daniel Speiser, Kevin Kocot
 Society of Integrated and Comparative Biology (2018)
- Telomere elongation in regenerating tissues of the Grey Sea Star, *Luidia Clathrata*
Rebecca Varney, Christopher Pomory, Alexis Janosik
 University of West Florida Student Scholars Symposium (April 21 2016)
- Microbial community dynamics in a long-term soil warming chronosequence
 Kristen DeAngelis, Linda van Diepen, **Rebecca Varney**, Jeffrey Blanchard, Jerry Melillo, Serita Frey
 24th Annual Harvard Forest Ecology Symposium (March 20 2013)
- Digging Deep: Soil microbial carbon use in a warmer world
 Andrew Billings, **Rebecca Varney**, Grace Pold, Daniel Burkhardt, Bianca Surjawen, Kristen DeAngelis
 University of Massachusetts Microbiology Retreat (March 2 2013)

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 & 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 Fall 2014
 Marine Vertebrate Zoology
 Introduction of Marine Biology and Oceanography for Non-Majors
 Biology I Laboratory

MENTORSHIP

Graduate Student Training and Supervision

University of West Florida Spring 2014 - Fall 2015 Supervised **three** graduate student directed independent studies (Bethany McAcy, Emily Stein, Ashley Earls) and trained **four** additional graduate students in genetic techniques (Stacy Cecil, Matt Davis, Cody Nash, Ariel 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 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
 Graduate/Postdoc Representative, Division of Invertebrate Zoology, SICB 2020-2022
 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
Univ. of Alabama Undergraduate Research and Creative Activity Conference, Judge
March 29, 2018
Bama Biology Bootcamp, Graduate mentor
Fall 2017
University of West Florida Biology Department Advertising Committee
Spring 2015-Fall 2016

OUTREACH

Skype A Scientist
Scientific volunteer
2017-2020
ArBOOretum
Volunteer: arboretum tours, organization.
October 27, 2019
University of Alabama Homecoming Biology Outreach Tent
Volunteer at table on molluscs.
October 26, 2019; October 13, 2018p
Undergraduate Research and Creative Activities (URCA)
Volunteer judge.
March 28, 2019; March 29, 2018
Bessemer Country Science Fair
Volunteer judge.
January 16, 2019
BioBlitz
Volunteer: herbarium specimen preparation, insect drawings, arboretum tours.
April 21, 2018
Alabama Regional Science Olympiad Competition
Volunteer judge of student events.
February 24, 2018; February 28, 2017
Night at the Museum
Volunteer.
February 9, 2019; February 17, 2018; February 11, 2017
Northwest Florida Regional Science Olympiad Competition
Volunteer judge of student events. February 20, 2016; February 21, 2015
Hagfishes: My Slimy Research
Presentation to visiting high school students about graduate student research and what it means to
conduct hands-on science.
November 20, 2015
58th Annual West Panhandle Regional Science and Engineering Fair
Volunteer judge of student projects. January 27, 2014
Preparing for Graduate School
Graduate student representative on a panel for undergraduates considering graduate school.
January 15, 2014

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 2021)
- CPR (Emergency First Responder, First Aid, AED, O2 Administrator)