Melissa B. DeBiasse

updated March 2022

Project Scientist
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CURRENT POSITION

Project Scientist (August 2020 – present) University of California Merced
Supervisor: Michael N. Dawson, http://cgomo.net/

EDUCATION

PhD (2014) Biological Sciences, Louisiana State University, Baton Rouge, LA
Advisor: Michael E. Hellberg
Recipient of a Louisiana Board of Regents fellowship (2008-2012)
MSc (2008) Marine Biology, Nova Southeastern University, Fort Lauderdale, FL
Advisor: Mahmood S. Shivji
BSc (2003) Biology (minor in History), Indiana University, Bloomington, IN

RESEARCH INTERESTS

The primary goal of my research program is to understand the processes that generate biodiversity in marine ecosystems. I integrate computational and experimental methods to ask how the interaction of genomes with their environment produces phenotypic variation in marine invertebrates. Towards this goal, my research integrates comparative genomics, transcriptomics, and phylogenomics, a dynamic approach that connects micro and macroevolutionary processes, allowing me to reconstruct the mechanisms that promote divergence, adaptation, and diversification.

RESEARCH EXPERIENCE

Postdoctoral Scholar (2016-2020) Evolutionary genomics of marine invertebrates. Whitney Laboratory for Marine Bioscience, University of Florida. Supervisor: Joseph F. Ryan

Postdoctoral Scholar (2014-2016) Phenotypic and transcriptomic responses to biotic and abiotic stressors in marine invertebrates. Louisiana State University. Supervisor: Morgan W. Kelly

Doctoral Student (2008-2014) Model-based tests of historical demography and species delimitation in a coral reef sponge genus. Louisiana State University.

Masters Student (2004-2008) Conservation genetics and phylogeography of marine invertebrates. National Coral Reef Institute and Guy Harvey Research Institute, Nova Southeastern University.

Graduate Internship (2003-2004). Acoustic monitoring of estuarine habitat use by juvenile sharks and effects of environmental pollutants on reproduction and development in elasmobranchs. Mote Marine Lab Center for Shark Research, Sarasota, FL. Advisors: Michelle R. Heupel and James J. Gelsleichter

PUBLICATIONS (*h*-index: 13)

22. **DeBiasse MB**, Stubler AS, Kelly MW (2022) Comparative transcriptomics reveals altered species interaction between the bioeroding sponge, *Cliona varians*, and the coral, *Porites furcata*, under ocean acidification. *Molecular Ecology*

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PUBLICATIONS CONT.

21. Ketchum RN, Smith EG, **DeBiasse MB**, Vaughan GO, McPharland D, Leach WB, Al-Mansoori N, Ryan JF, Burt JA, Reitzel AM (2020) Population genomic analyses of the sea urchin *Echinometra* sp. *EZ* across an extreme environmental gradient. *Genome Biology and Evolution*
20. **DeBiasse MB**, Colgan W*, Harris L*, Davidson B, JF Ryan (2020) Inferring tunicate relationships and the evolution of the tunicate Hox cluster with the genome of *Corella inflata*. *Genome Biology and Evolution* *Undergraduate author
19. Dardaillon J, Dauga D, Simion P, Onuma T, **DeBiasse MB**, ...Ryan JF, Davidson B, NISHIDA, Dantec C, Lemaire P (2019) ANISEED 2019: 4D exploration of genetic data for an extended range of tunicates. *Nucleic Acids Research*
18. Colgan W*, Leanza A, Hwang A, **DeBiasse MB**, Llosa I*, Rodrigues D*, Adhikari H*, Barreto Corona G*, Bock S*, Carillo-Perez A*, Currie M*, Darkoa-Larbi S, Dellal D, Gutow H*, Hokama P*, Kibby E*, Linhart N*, Moody S*, Naganuma A*, Nguyen D, Stanton R*, Stark S, Tumey C*, Velleca A, Vu, N*, Ryan JF, Davidson B (2019) Variable levels of drift in tunicate cardiopharyngeal gene regulatory elements. *EvoDevo*. *Undergraduate authors
17. Pastrana CC*[#], **DeBiasse MB**[#], Ryan JF (2019) Sponges lack Parahox genes. *Genome Biology and Evolution*. *Undergraduate author, [#]Authors contributed equally
16. Richards VP, **DeBiasse MB**, Shivji MS (2019) Deep mitochondrial lineage divergence among populations of the southern stingray (*Hypanus americana*) throughout the Southeastern United States and Caribbean. *Marine Biodiversity*
15. **DeBiasse MB**, Ryan JF (2019) Phylotocol: promoting transparency and overcoming bias in phylogenetics. *Systematic Biology*
14. Ketchum R, **DeBiasse MB**, Ryan JF, Burt J, Reitzel A (2019) The complete mitochondrial genome of the sea urchin *Echinometra sp. EZ*. *Mitochondrial DNA Part B: Resources*
13. Babonis LS, **DeBiasse MB**, Francis WR, Christianson LM, Haddock SHD, Martindale MQ, Ryan JF (2018) Integrating embryonic development and evolutionary history to characterize tentacle-specific cell types in a ctenophore. *Molecular Biology and Evolution*
12. Rivest EB, Kelly MW, **DeBiasse MB**, Hofmann GE (2018) Host and symbionts in *Pocillopora damicornis* larvae display different transcriptomic responses to ocean acidification. *Frontiers in Marine Science*
11. **DeBiasse MB**, Kawji Y*, Kelly MW (2018) Phenotypic and transcriptomic responses to salinity stress across genetically and geographically divergent *Tigriopus californicus* populations. *Molecular Ecology*. *Undergraduate author
10. Kelly MW, **DeBiasse MB**, Villela V*, Roberts H*, Cecola C* (2016) Adaptation to climate change: trade-offs among responses to multiple stressors. *Evolutionary Applications*. *Undergraduate authors
9. Kelly MW, Pankey MS, **DeBiasse MB**, Plachetzki DC (2016) Adaptation to heat stress reduces phenotypic and gene expression plasticity in a marine copepod. *Functional Ecology*
8. **DeBiasse MB**, Richards VP, Shivji MS, Hellberg MH (2016) Shared phylogeographic breaks in a Caribbean coral reef sponge and its invertebrate commensals. *Journal of Biogeography*
7. Brzeski KE, **DeBiasse MB,** Rabon Jr. DR, Chamberlain MJ, Taylor SS (2016) Mitochondrial DNA variation in Southeastern pre-Columbian canids. *Journal of Heredity*
6. **DeBiasse MB**, Kelly MW (2016) Plastic and adaptive responses to global change: what can we learn from comparative transcriptomics? *Journal of Heredity*
5. **DeBiasse MB**, Hellberg MH (2015) Discordance between morphological and molecular species boundaries among Caribbean species of the reef sponge *Callyspongia*. *Ecology and Evolution*
4. Richards VP, **DeBiasse MB**, Shivji MS (2015) Genetic evidence supports larval retention in the Western Caribbean for an invertebrate with high dispersal capability (*Ophiothrix suensonii*: Echinodermata, Ophiuroidea). *Coral Reefs*

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PUBLICATIONS CONT.

3. Prada C, **DeBiasse MB**, Neigel JE, Yedock B, Stake J, Forsman ZH, Baums IB, Hellberg ME (2014) Genetic species delineation among branching Caribbean *Porites* corals. *Coral Reefs*
2. **DeBiasse MB**, Nelson BJ, Hellberg ME (2014). Evaluating summary statistics used to test for incomplete lineage sorting: mito-nuclear discordance in the reef sponge *Callyspongia vaginalis. Molecular Ecology*
1. **DeBiasse MB**, Richards VP, Shivji MS (2010) Genetic assessment of connectivity in the common reef sponge, *Callyspongia vaginalis* (Demospongiae: Haplosclerida) reveals high population structure along the Florida reef tract. *Coral Reefs*

IN REVIEW AND NEAR SUBMISSION

Oritz J*, Bobkov YV, **DeBiasse MB**, Mitchell D, Edgar A, Martindale MQ, Moss AG, Hammar K, Babonis LS, Ryan JF (*in review*) Independent innexin radiations drove the emergence of lineage-specific gap junctions throughout animals: Evidence from ctenophores. *Undergraduate author

DeBiasse MB, Schiebelhut LM, Dawson MN (*in prep*) Comparative genomics of sea star wasting across the asteroid tree using chromosome-level assemblies.

DeBiasse MB, Buckenmeyer A*, Macrander J, Babonis LS, Bentlage B, Cartwright P, Prada C, Reitzel AM, Stampar SN, Collins AG, Daly M, Ryan JF (*in prep*) Illuminating the Cnidaria tree of life with a phylogenomic backbone fitted with hundreds of 18S leaves. *Undergraduate author

DeBiasse MB, Babonis LS, Koren S, Schnitzler CE, Martindale MQ, Ryan JF (*in prep*) The genome sequence of *Beroe ovata*, an ecologically and morphologically divergent pelagic ctenophore.

Stampar SN, Maronna MM, Kitahara MV, Lopes CSS, Santos TB, Reimer JD, Gameiro EM, Yap NWL, Neo ML, Sumida PY, Klompen AML, Macrander J, Reitzel AM, **DeBiasse MB**, Ryan JF, Daly M, Broe M, Morandini AC, Migotto AE (*in prep*) Evolution in Ceriantharia (Cnidaria): life cycle plasticity blurs traditional systematics in cerianthids.

GRANTS AND AWARDS

2021-2024 National Science Foundation, Division of Ocean Sciences, Biological Oceanography. "Collaborative Research: Understanding bioerosion from individuals to ecosystems: the impacts of biotic and abiotic stressors on sponge erosion of oyster reefs." Award number 2048449. **$530,000** [**$218,878** to co-PI DeBiasse]

2014 American Genetics Association Ecological Genomics Symposium Travel Award **$500**

2013, 2014 Molecular Ecology Best Reviewer

2013 Smithsonian Tropical Research Institute Short Term Fellowship, "The effects of climate change and species interaction on calcification in the reef building coral *Porites furcata*," **$2,400**

2013 Sigma Xi Grant-in-Aid of Research Award, National Chapter, **$500**

2012 Sigma Xi Grant-in-Aid of Research Award, Louisiana State University Chapter, **$500**

2012 Lerner Gray Grant for Marine Research, **$1,990**

2010 Best Oral Presentation, Louisiana State University Biology Graduate Student Symposium

2009 Research Award, Louisiana State University Biology Graduate Student Association, **$600**

2008-2012 Louisiana Board of Regents Fellowship **$80,000**

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TEACHING EXPERIENCE

Lead Instructor, Comparative Genomics (Fall 2021) Dawson Lab, University of California Merced
Topic: 15-session, hands-on workshop covering high throughput sequencing, high performance computing, genome assembly and comparative analyses of chromosome-level genomes

Guest Lecturer, Marine Science (Fall 2021), School of Natural Sciences, University of California Merced. Topic: ocean acidification and species interactions

Guest Lecturer (via zoom), Bioinformatics (Spring 2021) Dept. of Biology, Radford University
Topic: using RNA-Seq data to understand physiological responses to stress

Guest Lecturer, Biology for non-majors (Fall 2019) Dept. of Biology, Flagler College
Topic: introduction to genomics

Guest Lecturer, Environmental Science (Fall 2019) Dept. of Biology, Flagler College
Topic: ocean acidification

Guest Lecturer, Biology for non-majors (Spring 2019) Dept. of Biology, Flagler College
Topic: species concepts and speciation

Guest Lecturer, Evolution (Spring 2016) Dept. of Biological Sciences, Louisiana State University
Topic: species and speciation

Guest Lecturer, Evolution (Fall 2015) Dept. of Biological Sciences, Louisiana State University
Topic: molecular phylogenetics and evolution

Guest Lecturer, Evolution (Spring 2015) Dept. of Biological Sciences, Louisiana State University
Topic: molecular methods of species delimitation

Guest Lecturer, Evolution (Spring 2014) Dept. of Biological Sciences, Louisiana State University
Topic: species and speciation

Teaching Assistant, Invertebrate Zoology Laboratory (Fall 2013) Dept. of Biological Sciences, Louisiana State University

Teaching Assistant, Introductory Biology Laboratory (Fall 2012, Spring 2013, Spring 2014) Dept. of Biological Sciences, Louisiana State University

Teaching Assistant, Genetics Laboratory (Fall 2005-Spring 2008) Division of Math, Science, and Technology, Nova Southeastern University

STUDENTS MENTORED

2020-	Bailey Carlson	Graduate Student	UC Merced
2020-	Karly Higgins-Poling	Graduate Student	UC Merced
2020-	Non Wutthituntisil	Graduate Student	UC Merced
2020-	Lisa Paggeot	Graduate Student	UC Merced
2020	Dani Hayes	Undergraduate	University of Florida
2019	Jennifer Ortiz	Undergraduate	Iowa State University/REU
2018	Telissa Wilson	Graduate Student	The Evergreen State College
2018	Remi Ketchum	Graduate Student	UNC Charlotte
2018	Ariane Buckenmeyer	Undergraduate	Connecticut College/REU
2017	Michelle McGurr	High School teacher	Darnell-Cookman High School
2017	Aaron Szczepanek	Post-baccalaureate	UF Whitney Laboratory
2017	Claudia Cabrera	Undergraduate	University of Miami/REU
2017	Logan Campbell	Undergraduate	University of Tennessee/REU
2015-2016	Daniel Liu	Undergraduate	Louisiana State University
2015-2016	Colleen Cecola	Undergraduate	Louisiana State University
2015-2016	Vidal Villela	Undergraduate	Louisiana State University
2015-2016	Hope Roberts	Undergraduate	Louisiana State University
2014-2016	Will Murdock	Undergraduate	Louisiana State University

STUDENTS MENTORED CONT.

2014	Byanjana Thapa	Undergraduate	Fairleigh Dickenson/HHMI
2014	Brandon Lawson	Undergraduate	Louisiana State University
2014	Elliot Wheeler	Undergraduate	Louisiana State University
2013-2015	Chelsea Wallace	High School	LSU EnvironMentors
2013	Jamie Gay	Undergraduate	University of Colorado/STRI
2013	Sarah White	Undergraduate	University of Colorado/STRI
2010	Catalina Restrepo	Undergraduate	Louisiana State University
2010	Maria Costantini	Undergraduate	Rowan University/HHMI
2010	Maxine Tan	Undergraduate	Eckerd College/HHMI

INVITED SEMINARS

Boring sponges and glowing ctenophores: genomes reveal how marine invertebrates respond to their environment over minutes and millions of years. University of Alabama, March 2020. Watch my presentation here: https://www.youtube.com/watch?v=pgn5CcBoLEc

Boring sponges and glowing ctenophores: using genomes to understand how marine invertebrates respond to their environment within minutes & over millions of years. Occidental College Biology Department Seminar Series, April 2019

Phylotocol presented as part of the Data Standards and Community Resources Forum, Society of Systematic Biologist Meeting, Columbus, OH, June 2018

What to do with a billion years of evolution. Species Tree Estimation Workshop, Society of Systematic Biologists Meeting, Columbus, OH, June 2018

Detecting convergent sequence evolution using parametric bootstrapping. NGS Polar Organism Workshop, SICB, San Francisco, CA, January 2018

Adaptation to the deep sea in ctenophores, the comb jellies. Daytona State College, Daytona Beach, FL, November 2017

Model-based tests of historical demography and species boundaries in the reef sponge *Callyspongia*. Department of Biology, University of Florida, April 2017

DEEPC: The deep, dark genomic secrets of ctenophores. Florida Museum of Natural History, University of Florida, April 2017

Patterns of genomic and phenotypic variation over evolutionary and ecological timescales in marine invertebrates. Department of Biology, University of North Florida, November 2015

Patterns of genomic and phenotypic variation over evolutionary and ecological timescales in marine invertebrates. Department of Evolution, Ecology and Organismal Biology Seminar Series, The Ohio State University, October 2015

Genomic basis of salinity tolerance in *Tigriopus* copepods. Louisiana State University Museum of Natural Science Seminar Series, Louisiana State University, September 2015

Using transcriptomic data to test biotic and abiotic interactions in marine invertebrates. Keynote speaker for Summer Undergraduate Research Symposium, Louisiana State University, July 2015. Watch my presentation here: http://bit.ly/1GFNcBY

CONFERENCE PRESENTATIONS

DeBiasse MB, Colgan W, Harris L, Davidson B, Ryan JF (2019) The *Corella inflata* genome: reconstructing the ancestral enterogonid tunicate. Evolution, Providence, Rhode Island

DeBiasse MB, Babonis L, Schnitzler C, Koren S, Martindale MQ, Ryan JF (2019) The complete genome sequence of *Beroe ovata*, a tentacle-less, ctenophore-chomping ctenophore. Society for Comparative and Integrative Biology, Tampa, FL

DeBiasse MB Francis W, Thuesen E, Haddock S, Ryan J (2018) DEEPC: adaptation to depth in ctenophores. Society for Comparative and Integrative Biology, San Francisco, CA

CONFERENCE PRESENTATIONS CONT.

DeBiasse MB, Francis W, Thuesen E, Haddock S, Ryan J (2017) DEEPC: The deep, dark genomic secrets of ctenophores. BioGenomics, Washington, DC

DeBiasse MB, Stubler AS, Kelly MW (2017) Testing the effect of ocean acidification on a sponge-coral species interaction. Society for Comparative and Integrative Biology, New Orleans, LA

DeBiasse MB, Kelly, MW (2016) Intraspecific variation in phenotypic and transcriptomic plasticity in *Tigriopus californicus* in response to salinity stress. Evolution, Austin, Texas

DeBiasse MB, Hellberg ME (2015) Discordance between morphological and molecular species boundaries in the sponge genus *Callyspongia*. Society for Systematic Biologists Meeting, Ann Arbor, Michigan

DeBiasse MB, Kelly MW (2014) The genomic basis of adaptation to salinity in the tide pool copepod *Tigriopus californicus*. American Genetics Association Ecological Genomics Symposium, Kansas City, Missouri

DeBiasse MB, Hellberg ME (2012) Mitochondrial and nuclear gene sequences show conflicting patterns of genetic structure in the coral reef sponge *Callyspongia vaginalis*. Evolution, Ottawa, Canada

DeBiasse MB, Hellberg ME (2010) Mitochondrial and nuclear gene sequences show conflicting patterns of divergence among putative cryptic species in the marine sponge *Callyspongia vaginalis*. World Sponge Conference, Girona, Spain

DeBiasse MB, Richards VP, Shivji MS (2008) Genetic connectivity in the branching vase sponge (*Callyspongia vaginalis*) across the Florida reef tract and Caribbean. 11th International Coral Reef Symposium, Fort Lauderdale, Florida

DeBiasse MB, Richards VP, Shivji MS (2007) Genetic assessment of connectivity among populations of the branching vase sponge (*Callyspongia vaginalis*) in the Florida reef tract reveals a strong phylogeographic break at the Middle Keys. Florida Ecology and Evolution Symposium, Lake Placid, Florida

FIELD WORK

November 2021 Santa Cruz Island, Channel Islands National Park. Surveyed and collected several marine invertebrate species from rocky intertidal habitats for conservation genomics project.

December 2016 Monterey Bay Aquarium Research Institute research cruise on the RV Western Flyer. Assisted in the collection of pelagic invertebrates using blue water diving, mid-water trawls, and the ROV Doc Ricketts.

June-August 2013 Smithsonian Tropical Research Institute, Bocas del Toro, Panama. Performed long-term experiments to test the effect of ocean acidification on a sponge/coral species interaction. Project included sample collection and construction and maintenance of 180 mesocosm tanks.

May 2007 Dry Tortugas National Park. Organized and led a 7-day dive trip to sample sponges and brittle stars for phylogeography research.

May 2006 Utila, Bay Islands, Honduras. Organized a 7-day dive trip to collect sponge and coral samples for phylogeography research.

March 2006 Crooked Island, Bahamas. Organized a five-day dive trip to collect coral reef invertebrate samples for phylogeography research.

December 2003 Tampa, Florida. Participated in five-day research cruise for a mark recapture project focusing on sharks from the Gulf of Mexico.

SERVICE

Awards Committee, Society of Systematic Biologists, 2019-present

Reviewer for Society of Systematic Biologists graduate student grant proposals, 2018-2019

Whitney Research Seminar coordinator, 2017-2019

SERVICE CONT.

Darwin Week outreach at local elementary and high schools, Northeastern FL, 2017-2019
Instructor for biotechnology lab outreach, Pedro Menendez High School, St. Augustine, FL, 2017-2019
Mentor for UF Whitney Lab REU program, 2017-2019
Ad hoc reviewer for NSF Division of Environmental Biology, 2016
Contributor to *The Molecular Ecologist* blog, 2014-2016
Founder of LSU Women in Science organization, 2014
Mentor for Louisiana State University Chapter of EnvironMentors, 2012-2015
Mentor for undergraduate Howard Hughes Medical Institute interns, Summers 2009, 2014
Graduate Student Rep for LSU Computational Biology faculty position search committee, 2014
Exhibitor for Louisiana State Sea Grant program Ocean Commotion, 2008-2016
Reviewer for Nature Climate Change, Molecular Ecology, Evolution, Genome Biology and Evolution, Heredity, BMC Evolutionary Biology, BMC Genomics, Integrative and Comparative Biology, Journal of Biogeography, Comparative Biochemistry and Physiology, Coral Reefs, Marine Biology, Journal of the Marine Biological Association of the United Kingdom, Aquatic Biology, PLOS ONE, Peer J, Scientific Reports, Biodiversity and Conservation

PROFESSIONAL REFERENCES

Michael N. Dawson (current postdoc advisor)
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Joseph F. Ryan (previous postdoc advisor)
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904.201.8426

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Michael E. Hellberg (dissertation committee chair)
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Associate Chair, Graduate Studies
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