ROBERT W. MEREDITH

Department of Biology
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RESEARCH INTERESTS

Vertebrate evolution, bristletail evolution, molecular and morphological systematics including the incorporation of extinct organisms, paleontology/paleobiology, biogeography, molecular dating, molecular evolution with particular interest in teeth, olfactory, and eye genes, pseudogene evolution, morphological evolution, next generation sequencing and applications

ACADEMIC BACKGROUND

Associate Professor	Department of Biology, Montclair State University, Montclair, NJ, Sept. 2017-present.
Visiting Scientist	American Museum of Natural History, New York, NY 2020-present
Assistant Professor	Department of Biology**,** Montclair State University, Montclair, NJ, Sept. 2012- Aug. 2017.
Postdoctoral Researcher	Biology Department, University of California Riverside, Riverside, CA Jan. 2011-July 2012.
Postdoctoral Researcher	Biology Department, University of California Riverside, Riverside, CA Jan. 2008-Dec. 2010.
Ph.D. (Biology)	Biology Department, University of California Riverside, Riverside, CA Dec. 2007.
M.S. (Paleontology)	Department of Geology and Geological Engineering, South Dakota School of Mines & Technology, Rapid City, SD, Aug. 2002.
Non-degree (Geology)	Department of Geology, West Chester University, West Chester, PA Sept. 1998-May 1999.
B.S. (Biology)	Department of Biology, Villanova University, Villanova, PA, May 1998.

RESEARCH EXPERIENCE

Postdoctoral Research. University of California Riverside Biology Department. 2011-2012. Mysticete (baleen whale) evolution.

Advisor: Dr. John Gatesy

Postdoctoral Research. University of California Riverside Biology Department. 2008-2011. Assembling the Tree of Life (AToL)-Molecular systematics component for mammals
Advisor: Dr. Mark S. Springer

Dissertation Research. University of California Riverside Biology Department. 2002-2008. Phylogeny and evolution of diprotodontian marsupials.
Advisor: Dr. Mark S. Springer

Research Assistant. University of California Riverside Biology Department. Life-history evolution of poeciliid fish. 2004-2008.
Advisor: Dr. David Reznick

Research Assistant. University of California Riverside Biology Department. Mammalian phylogenetics and molecular evolution. 2002-2008.
Advisor: Dr. Mark S. Springer

Research Assistant. University of California Riverside Biology Department/South Dakota School of Mines & Technology Department of Geology and Geological Engineering/Paleontological expeditions to the Tirari Desert, Australia. 2004.
Advisors: Dr. Judd A. Case, Dr. James E. Martin

Research Assistant. South Dakota School of Mines & Technology Department of Geology and Geological Engineering/University of California Riverside Biology Department. 2002. Paleontological expedition to Antarctica.
Advisors: Dr. James E. Martin, Dr. Judd A. Case

Masters Research. South Dakota School of Mines & Technology Department of Geology and Geological Engineering. 1999-2002. Osteology and functional morphology of *Murnadon progenitoris*, gen. et. sp. nov. a primitive diprotodontoid marsupial from the late Oligo-Miocene Etadunna Formation of South Australia.
Advisor: Dr. James E. Martin

Research Assistant. South Dakota School of Mines & Technology Department of Geology and Geological Engineering. 2000-2002. Fossil vertebrates of the Oligo-Miocene Etadunna Formation of Australia.
Advisors: Dr. Judd A. Case, Dr. James E. Martin

Research Assistant. South Dakota School of Mines & Technology Department of Geology and Geological Engineering. 2000-2002. Fossils from the Cretaceous Pierre Shale Formation of South Dakota.
Advisor: Dr. James E. Martin

Research Assistant. South Dakota School of Mines & Technology Department of Geology and

Geological Engineering. 2000-2002. NRP Bone Bed Project and Pig Wallow Site Badlands National Park South Dakota
Advisors: Carrie Herbel, Dr. Rachel Benton

Undergraduate Research. Villanova University Department of Biology. 1997-1998. Natural growth lines in echinoid ossicles in the green sea urchin *Strongylocentrotus droebachiensis*.
Advisor: Dr. Michael P. Russell

Research Assistant. Villanova University Department of Biology. 1994-1998. Growth and development of the green sea urchin *Strongylocentrotus droebachiensis.*
Advisor: Dr. Michael P. Russell

GRANTS

Total Grant Funding Since Coming to MSU $1,122,328.00

Full Proposals:

2023:
National Science Foundation:
MRI: Track 1 Acquisition of a Shared Use High Throughput Next-Generation Sequencing Platform Sequencing Platform
(Submitted: TBA)

2022:
National Science Foundation:
REU Training Site: Summer Bioinformatics Research Program
(Submitted: 09/02/22)

2022:
National Science Foundation:
MRI: Acquisition of a Shared Use Integrated High Throughput Next-Generation Sequencing Platform
(Submitted: 01/17/22; Not Funded)

2018:
NJ Department of Environmental Protection
Assessment of the impacts of the Oyster Creek Nuclear Generating Station on gelatinous zooplankton and planktonic community structure. Co-PI with Paul Bologna and Jack Gaynor
(Funded: $200,167.00)

2017:
National Science Foundation:
MRI: Acquisition of a Shared Use Integrated Next-Generation Sequencing Platform

(Funded: $202,125.00)
** Highlighted by Program Director at the NSF Office of Integrative Activities for visiting committee (COV)

2016:
National Science Foundation:
Acquisition of a Shared Use Integrated Next-Generation Sequencing Platform
(Submitted: 01/13/16; Not Funded)

2015:
National Science Foundation:
Collaborative Research: Advancing Bayesian phylogenetic methods for synthesizing paleontological and neontological data
(Funded: $620,036.00; MSU $136,451.00)

2014:
NJ Department of Environmental Protection
Impacts of invasive sea nettles (*Chrysaora quinquecirrha*) and ctenophores on planktonic community structure and bloom prediction of sea nettles using molecular techniques. Co-PI with Paul Bologna and Jack Gaynor
(Funded: $100,000.00)

National Science Foundation:
The evolution of placentas in the fish family Poeciliidae: an empirical study of macroevolution. National Science Foundation
(Submitted: 08/04/14; Not funded)

2013:
National Science Foundation:
The evolution of tooth genes in mammals: integrating genomic data with phylogenetics and the fossil record. National Science Foundation
(Submitted August 4, 2013; Not funded)

Montclair State University
FY2014 Separately Budgeted Research Internal Award
(Funded: $4,000.00)

Preproposals:
2015:
National Science Foundation:
Collaborative Research: Advancing Bayesian phylogenetic methods for synthesizing paleontological and neontological data
(Went to full proposal; Funded)

2014:
National Science Foundation:

Molecular systematics of jumping bristletails: Relationships of North American species and remarkable proliferation of NUMT pseudogenes. National Science Foundation
(Revised submission from 2013; Not funded; Being revised for 2016 resubmission)

The evolution of tooth genes in mammals: integrating genomic data with phylogenetics and the fossil record. National Science Foundation
(Revised submission from 2013; Not funded)

2013:

National Science Foundation:

Molecular systematics of jumping bristletails: Relationships of North American species and remarkable proliferation of NUMT pseudogenes. National Science Foundation
(Not funded)

The evolution of tooth genes in mammals: integrating genomic data with phylogenetics and the fossil record. National Science Foundation
(Accepted for full proposal; Not funded)

National Sea Grant:

Stock Assessment of *Mercenaria mercenaria* Population Genetics and Prevalence of Pathogens Using Next Generation Sequencing Technologies. National Sea Grant
(Not funded)

HONORS AND AWARDS

Nominated for Montclair State Advising Awards 2020-2021

Montclair State University College of Science and Mathematics Faculty Research Award 2017

Montclair State University Travel grant 2015-2016. College of Science and Mathematics ($1155.00)

Montclair State University Travel grant 2014-2015. College of Science and Mathematics ($1190.00)

Montclair State University Travel grant 2013-2014. College of Science and Mathematics ($1083.50)

Montclair State University Travel grant 2012-2013. College of Science and Mathematics ($1735.50)

Nominated for best teaching assistant in biology University of California Riverside. 2006.

Graduates Dean's Fellowship Award, University of California Riverside. 2002-2004.

National Science Foundation Antarctica Service Medal. 2002.

William Griffith Scholarship, South Dakota School of Mines & Technology. 2001-2002.

Academic Dean's List, Department of Biology, Villanova University. 1997-1998.

POPULAR PRESS

Science 2.0: Edentulism: Tooth Loss In Birds Occurred About 116 Million Years Ago. Dec. 2014.

The Huffington Post: Birds 'Lost Their Teeth' Over 100 Million Years Ago, Scientists Say. Dec. 2014.

Nature World News: Teeth to Beak: When Birds Lost Their Smile. Dec. 2014.

Scientific American: Massive Genetic Effort Confirms Bird Songs Related to Human Speech. Dec. 2014.

Tech Times: Mystery Why Birds Don't Have Teeth Finally Solved: Inactive Genes. Dec. 2014.

ABC.net.au: 'Dead' genes reveal toothless bird origin. Dec. 2014.

Science Daily: Tooth loss in birds occurred about 116 million years ago. Dec. 2014.

Science Daily: 'Big Bang' of bird evolution mapped: Genes reveal deep histories of bird origins, feathers, flight and song. Dec. 2014.

National Science Foundation: 'Big bang' of bird evolution mapped by international research team. Dec. 2014.

The Scientist Magazine: Bird Genomes Abound. Dec. 2014.

National Geographic: Phenomena, Placenta evolution and a sexual Cold War. July 2014.

Science Daily: Biologists link sexual selection, placenta formation. July 2014.

SitNews: Bear species' genetic relationships determined. March 2014.

Polar Bear Science: New genetic study confirms polar bears survived several warm Interglacials. March 2014.

Science Daily: Evolutionary tree of life for mammals greatly improved. Sept. 2011.

NewScientist, Crocodiles swam the Atlantic to reach America. May 2011.

Science Daily: First genetic evidence for loss of teeth in the common ancestor of baleen whales.

Oct. 2010.

The New York Times: Blue whales with pearly whites, once upon a time. Oct. 2010.

Discover Magazine Blogs: Losing teeth, but keeping genes. Sept. 2009.

BROADER IMPACTS OF RESEARCH

Ongoing research into evolutionary relationships of mammals is now incorporated into several college level textbooks:

Mammalogy: Adaptation, Diversity, Ecology 4th Edition; George A. Feldhamer, Lee C. Drickamer, Stephen H. Vessey, Joseph F. Merritt, Carey Krajewski. In preparation

Campbell Biology 10th Edition; Jane B. Reece, Lisa A. Urry, Michael L. Cain, Steven A. Wasserman, Peter V. Minorsky, Robert B. Jackson. Nov. 2013

Evolution: Making Sense of Life; Carl Zimmer, Douglas Emlen. 2012

CONSULTANT

Michael Cain co-author of Campbell Biology (Dec. 2012): Mammalian phylogeny section for Campbell Biology (10th edition, Nov. 2013)

Wendy Williams (American science writer under contract with Scientific American/Farrar Straus Giroux) (Nov. 2012): Cretaceous Terrestrial Revolution and its impact on horse evolution for a popular science book about the science of horses

TEACHING EXPERIENCE

Faculty Instructor (Montclair State University). 2012-present.

Freshman Seminar in Biology	Biol 199	FA12
Genetics (lecture and lab)	Biol 380	FA12, SP13, FA13, SP14
Gross Mammalian Anatomy (lecture and lab)	Biol 440	SP13, FA14, SP15, FA15, SP16, SU16, FA16, SP17, FA18-22, SP18-23
Evolutionary Biology	Biol 417	FA13, SP15, SP16, SU18-22, WI18-23
Evolutionary Mechanisms	Biol 580	FA13, SP15, SP16
Anatomy and Physiology I	Biol 244	FA20-21, SU17-21
Anatomy and Physiology II	Biol 245	SP22, SU17-21
Selected Techniques in Molecular Biology	Biol 598	SP13, FA17

Biology Independent Research	Biol 418	SP13, FA13, SP14, FA14, SU15, SP16, SP17, SP19, FA19
Research: Biological Literature	Bio 597	FA14, W16, FA17, WI17, FA19, SP21
Externship Biology Research-COOP ED	Biol 409	SP13, SP14, SP15, SP16
Selected Topics in Biology (Paleoecology)	Biol 486	SP14, SP17
Selected Advanced Topics in Biology (Paleoecology)	Biol 586	SP14, SP17

Postdoctoral Instructor (co-taught; University of California Riverside). 2010.
Theory of Systematics

Teaching Assistant (University of California Riverside). 2004-2006.
Functional Anatomy of the Vertebrates (laboratory, 3 times)
Functional Anatomy of the Vertebrates (laboratory 1 hour lecture, 1 time)
Introduction to Evolution and Ecology (2 times)
Introduction to Organismal Biology (laboratory)

Teaching Assistant (South Dakota School of Mines and Technology). 2001.
Introduction to Geology (laboratory)

MENTORING

Montclair State University

<u>Undergraduate:</u>

Sebstian Ruiz	The independent evolution of toothlessness in lower vertebrates, particularly *Anuras*.	SP20-2021
Devansi Patel	Using Bioinformatics to Further Analyze *FOXP2*	SP17
Rebecca Isabel Dhawan	A Comparative Analysis of the *ZAP-70* Gene in Mammals (literature review and laboratory work)	SP16
Parisa Hashemi-sohi	Bioinformatics: BLASTing DNA Sequences (literature review and laboratory work)	SU15
Israa Y. Maani	Comparative and analysis of *MMP20* gene in different mammals Comparative Analysis of *COL1A1* Gene in Different Mammals (literature review and laboratory work)	SP15; SP16
Ariana Merari	Gene identification and functional significance of genes involved in differentiation of brown,	FA13; SP14 FA14

	black, and polar bears. (literature review and laboratory work)	
Nadine Darwichen	Evolution of enamel specific genes in bears (literature review and laboratory work)	SP13; SU13; FA13
Mohamedhakim Elakhrass	Population genetics of the sea grass *Thalassia* found at St. John, Virgin Islands. (literature review and laboratory work)	SP13; SU13; FA13
Abdelrhman Abozed	Gene identification and functional significance of genes involved in differentiation of brown, black, and polar bears. (literature review and laboratory work)	SU13; FA13
Michael Samaniego	Tooth gene evolution in mammals (literature review and laboratory work)	SP13

Graduate:

Kristina Ollo	The Genetic Response of a Declining Falcon Population to a Changing Environment	FA22
Moonia Ammari (Thesis committee)	Examination of Changes in Gene Family Size in Carnivorous Plants through Genomic Analysis	SU22
Adam Parker (Graduate student)	A metagenomic comparison of genetic sequencing using targeted 16S and whole genome shotgun NGS on benthic DNA samples	SP21
Alorah Bliese (Thesis committee)	Transcriptomic Identification of Venom Candidates in the Clinging Jellyfish *Gonionemus vertens*	FA20
Nicholas Morelli (Graduate student)	A Phylogenetic assembly and positive selection analysis of the *DMP1* gene in Aves, Testudines and Crocodilia	SP20
Justin Wheelan (Thesis committee)	Targeted resequencing of CRISP-CAS9 mediated ICER knockout in SK-MEL-24 cells	SP19
Alexandria DiGiacomo (Graduate student)	Bayesian timetree for Crocodylia	FA16, SP17

Julia Dondero (Graduate student)	Evolution of *DMP1* in birds	SP16, SP17
Nelson Casanova (Thesis committee)	Love that dirty water: Potential microbial diversity in on-street hot dog water	SU16
Amanda Bowser (Graduate student)	Amyotrophic Lateral Sclerosis: The Genes Responsible	SP15
George Shchegolev (Thesis committee)	Genetics of the sea nettle *Chrysaora quinquecirrha* (laboratory work)	SP13; FA14
Juan Victor Miranda (Graduate student)	Evolution of eye genes (literature review and laboratory work)	FA13; SP14; FA14; SP15
Anna Slusarczyk (Thesis committee)	Sequencing of *Synechococcus* sp. IU 625 plasmid and bioinformatics analyses of genes (laboratory work)	SU13; SP13

PhD Committee:

Justin Wheelan	Genome-wide analysis of ICER occupancy and function in melanoma	SP21-Present
Kelly Zimmerman	Comparative Biology of North American Invasive Aedes Mosquitos	FA20-Present
Dena Restaino	Molecular Ecology and Management of Nuisance and Invasive Marine Species: *Chrysaora chesapeakei*, *Moerisia sp.,* and *Gonionemus vertens* and jellyfish projects	SU16; FA16; SP17

Non-thesis Committee Member:

Katlyn Buschgans	Mitogenomics of the Atlantic Sea Nettle, *Chrysaora quinquecirrha*	SU13
Shuang Song	Arginine Decarboxylase (ADC) – a Key Player for Seed Development in Maize	SU13

GS-LSAMP Program:

Ernest Dimbo	Loss of tooth genes in birds	SU14, SP16
	Mercenaria trancriptome	FA15

University of California Riverside

Undergraduate:

University of California Riverside Medical Scholars Program

Hiroko Akuzawa: Biogeography of phalangerids (Marsupialia: Diprotodontia). 2010.

Miguel Mendoza: Molecular evolution of the brain size controlling gene microcephalin (*MCPH1*) in elephants and other afrotherian mammals. 2009.

Miguel Mendoza: A Phylogeny and timescale for pseudocheirid (Marsupialia: Diprotodontia) evolution in Australia and New Guinea. 2008.

University of California Riverside Department of Biology

Jong Park (graduate school University of Washington): Evolution and pseudogenization of I-Gulono-gamma-lactone oxidase (*GULO*) within Mammalia-a critical enzyme involved in the production of vitamin C. 2010-2011.

Jong Park (graduate school University of Washington): Molecular evolution of mammalian Tuftelin (*Tuft1*). 2010 -2011.

Joyce Cheng (graduate school UC Berkeley): Evolution of the cholesterol gene *APOB* in Mammals. 2010 -2011.

Joyce Cheng (graduate school UC Berkeley): Molecular evolution of matrix metalloproteinase-20 (*MMP-20*, enamelysin) in cetaceans. 2009 -2010.

David Chandler (US Fisheries): A phylogeny and timescale of fruit bats. 2008-2010.

Graduate:

University of California Riverside Department of Biology

Andrew Furness (Ph.D. student): Adaptations to ephemeral environments in African and South American killifish. 2011-present.

Chris Emerling (Ph.D. student): Biogeography of Chiroptera. 2010-2011.

Amanda Hollowell (Ph.D. student): Cetacean rates of molecular evolution. 2009.

INVITED SYMPOSIA

No evidence for a delayed rise in placental mammals during the Eocene. 2014. Montclair State University. Paleogene mini-symposium: Climatic and biotic evolution near the end of the Greenhouse.

Historical biogeography of mammals: A review of techniques**.** 2010. National Science Foundation Austral Portals Workshop: Tectonics, Paleogeography and Biogeography.

Australia A return to Oz. 2000. Museum of Geology Powmen Fund Raiser, South Dakota School of Mines and Technology.

INVITED TALKS

Villanova University, Villanova, PA 2022
Philadelphia Academy of Natural Science: Delaware Valley Paleontological Society (DVPS), PA March 2016.
Seton Hall, NJ. February 2013
Montclair State University, NJ. December 2011.
University of California Riverside, CA May 2011.

PROFESSIONAL AFFILIATIONS

Society of Vertebrate Paleontology
Society for the Study of Evolution
Society of Systematic Biologists
International Crocodilian Genomes Working Group
Avian Genome Group
Sigma Xi

PROFESSIONAL SERVICE

Service to Department/University

2022-	Revision and Standardization of Anatomy and Physiology I & II (BIOL244, 245)
2022-	On-line MS degree in Computational Biology Committee
2022-	MS Physiology Concentration Review
2022-	Biology 3-year plan
2022	Faculty Search Committee: Systems Physiologists
2021-	DPAC
2021	Building Committee, Biology Department, MSU
2017-SP21	Biology Undergraduate Advisor
2019	Faculty Search Committee: Computational Biologists
2017-2020	DPAC
2018	Biology and CSAM representative for Separately Budgeted Research, MSU

2018	Curriculum Committee
2016-2017	Representative for MSU Student Research Symposium committee
2016	Faculty Search Committee: Disease Ecologist
2015-2016	MSU Student Research Symposium Reviewer
2014-2017	Committee Member: Wehner Fund Scholarship
2013-17	Sigma Xi: Vice President Montclair State University Chapter
2013-2015	Organizing Department of Biology Seminar Series
2013-2014	Committee Member: Science Honors Innovation Program (SHIP)
2013	Faculty Search Committee: Physiologist/Energy
2012-Present	Participant in discussions focused on revising the biology curriculum
2012-Present	Graduate Assistant selection

Service to Profession

Journal Referee:

Journal of Animal Ecology
BMC Bioinformatics
Systematic Biology
Peer J
Heredity
Journal of Heredity
Frontiers in Ecology and Evolution, section Behavioral and Evolutionary Ecology
Frontiers in Ecology and Evolution, section Phylogenetics, Phylogenomics, and Systematics
Mitochondrial DNA Part A
Biology Letters
Journal of Dentistry and Oral Hygiene
Journal of Mammalian Evolution
Molecular Biology and Evolution
American Naturalist
Evolution
Molecular Phylogenetics and Evolution
PLoS Biology
Palaios
Journal of Dental Research
Zoologica Scripta
Molecular Genetics and Genomics
Journal of Biogeography
Mammalian Genome
Proceedings of the Royal Society of London Series B
Molecular Genetics and Genomics
PLoS ONE
The American Naturalist

Society of Systematic Biologists Workshop

NSF grant DEB-1556615 helped to sponsor travel awards for the RevBayes: Analysis of

Fossil and Molecular Data at the Society of Systematic Biologists Standalone Meeting in Baton Rouge Jan. 7-8, 2017.

National Science Foundation Proposal Reviewer
Systematics and Biodiversity Sciences Cluster

Review Editorial Board of Frontiers:
Phylogenetics, Phylogenomics, and Systematics

Professional International Meeting Judge:
W. D. Hamilton Award for Outstanding Student Presentation Judge; Evolution Meeting 2016.

W. D. Hamilton Award for Outstanding Student Presentation Judge; Evolution Meeting 2014.

W. D. Hamilton Award for Outstanding Student Presentation Judge; Evolution Meeting 2013.

Professional International Meeting Session Chair:
Evolution 2014 Annual Meeting, Raleigh, North Carolina.

Professional Organization Officer:
Sigma Xi Vice President Montclair State University Chapter. 2013-215

COMMUNITY SERVICE

Weston Science Scholars Program (6 students), NGS and what's in Barnegat Bay; Montclair State University, Summer 2022

9th Annual Weston Prep Lab, CSI: Montclair; Montclair State University, Oct 2021

Weston Science Scholars Program (5 students), NGS and what's in Barnegat Bay; Montclair State University, Summer 2021

Weston Science Scholars Program (8 students), What's in Barnegat Bay; Montclair State University, Summer 2020

Weston Science Scholars Program (6 students), What's in Barnegat Bay; Montclair State University, Summer 2019

Weston Science Scholars Program (5 students), What's in Barnegat Bay; Montclair State University, Summer 2018

8th Annual Weston Prep Lab, Brain size evolution in primates; Montclair State University,

March 2019

Weston Science Scholars Program (6 students), Squamate Phylogeny; Montclair State University, Summer 2018

7th Annual Weston Prep Lab, Brain size evolution in primates; Montclair State University, March 2018

6th Annual Weston Prep Lab, Brain size evolution in primates; Montclair State University, March 2017

Weston Science Scholars Program (4 students), Loss of teeth in birds; Montclair State University, Summer 2017

Weston Science Scholars Program (4 students), Loss of teeth in birds; Montclair State University, Summer 2016

Louis Stokes Alliances for Minority Participation (LSAMP) Participant: Mentor of Ernest Dimbo, Summer 2014, Fall 2015, Spring 2016

Weston Afternoon Lab: Inferring mammalian relationships through their skull morphology Summer 2016

5th Annual Weston Prep Lab, Brain size evolution in primates; Montclair State University, March 2016

Weston Science Scholars Program (4 students), Crocs, Birds, Dinosaurs Oh my!; Montclair State University, Summer 2015

4th Annual Weston Prep Lab, Brain size evolution in primates; Montclair State University, May 2015

Weston Science Scholars Program (4 students), Birds. Dinosaurs without teeth?; Montclair State University, Summer 2014

3rd Annual Weston Prep Lab, Brain size evolution in primates; Montclair State University, May 2014

Weston Science Scholars Program (4 students), Why birds do not have teeth?; Montclair State University, Summer 2013

2nd Annual Weston Prep Lab (2 sessions of ~30 students), CSI: Montclair; Montclair State University, May 2013

Polar Dinosaurs tour guide. South Dakota School of Mines and Technology Museum of Geology. 2001

Fossil identification day. South Dakota School of Mines and Technology Museum of Geology. 2000

PUBLICATIONS 48 (47 journal articles, 1 book chapter)
(Students underlined)

In Press/Published:

49. Hidalgo, R., A. DeVito, N. Salah, A. S. Varde, **R. W. Meredith**. 2022. Inferring Phylogenetic Relationships using the Smith-Waterman Algorithm and Hierarchical Clustering. 2022 IEEE International Conference on Big Data.

48. Hekkala, E., J. Gatesy, A Narechania, **Robert W. Meredith**, M Russello, ML Aardema, E Jensen, S Montanari, C Brochu, M Norell, G Amato. 2021. Paleogenomics illuminates the evolutionary history of the extinct Holocene "horned" crocodile of Madagascar, *Voay robustus*. Communications Biology. 4, 1-11. Citations: 15

47. Furness, A.I., Pollux, B.J.A., **Robert W. Meredith**, M. Springer, D. Reznick. 2019. How conflict shapes evolution in poeciliid fishes. Nature Communications 10, 3335. https://doi.org/10.1038/s41467-019-11307-5. Citations: 24

46. Bologna P, Gaynor JJ, **Robert W. Meredith**, Restaino D, Barry C. 2018. Stochastic event alters gelatinous zooplankton community structure: impacts of Hurricane Sandy in a Mid Atlantic estuary. Mar Ecol Prog Ser 591:217-227. https://doi.org/10.3354/meps12262. Citations: 8

45. Reznick DN, Furness AI, **Robert W. Meredith**, Springer MS. 2017. The origin and biogeographic diversification of fishes in the family Poeciliidae. PLoS ONE 12(3): e0172546. https://doi.org/10.1371/journal.pone.0172546. Citations: 78

44. Springer, Mark S., Christopher A. Emerling, **Robert W. Meredith**, Jan E. Janecka, William J. Murphy 2017. Waking the undead: implications of a soft explosive model for the timing of placental mammal diversification. Molecular Phylogenetics and Evolution. 106, 86-102. Citations: 48

43. **Meredith, Robert W.**, John J. Gaynor, Paul A. X. Bologna. 2016. Diet Assessment of the Atlantic Sea Nettle *Chrysaora quinquecirrha* in Barnegat Bay, New Jersey using Next Generation Sequencing. Molecular Ecology. DOI: 10.1111/mec.13918. Citations: 13

42. Gatesy, John, **Robert W. Meredith**, Jan E. Janecka, Mark P. Simmons, William J. Murphy, Mark S. Springer. 2016. Resolution of a concatenation/coalescence kerfuffle: partitioned coalescence support and a robust family level tree for Mammalia. DOI:10.1111/cla.12170. Citations: 53

41. Emerling, Christopher A, Hieu T Huynh, Minh A Nguyen, **Robert W Meredith**, Mark S Springer. 2015. Spectral shifts of mammalian ultraviolet-sensitive pigments (short wavelength-sensitive opsin 1) are associated with eye length and photic niche evolution. Proceedings of the Royal Society B: Biological Sciences 282(1819). Citations: 51

40. Michael Westerman, Carey Krajewski, Benjamin P. Kear, Lucy Meehan, **Robert W. Meredith**, Christopher A. Emerling, Mark S. Springer 2015. Phylogenetic relationships of dasyuromorphian marsupials revisited. Zoological Journal of the Linnean Society. 176, 686-701. Citations: 44

39. Furness, Andrew I., David N. Reznick, Mark S. Springer, **Robert W. Meredith**. 2015. Convergent evolution of alternative developmental trajectories associated with diapause in African and South American killifish. Proceedings of the Royal Society of London B: Biological Sciences 282, 1-9. Citations: 105

38. Campanella, James J., Paul AX Bologna, Maria Carvalho, John V. Smalley, Mohamedhakim Elakhrass, **Robert W. Meredith**, Nadia Zaben. 2015. Clonal diversity and connectedness of turtle grass (*Thalassia testudinum*) populations in a UNESCO Biosphere Reserve." Aquatic Botany. 123, 76-82. Citations: 3

37. Springer, Mark S., Anthony V. Signore, Johanna LA Paijmans, Jorge Vélez-Juarbe, Daryl P. Domning, Cameron E. Bauer, Kai He, Lorelei Crerar, Paula F. Campos, William J. Murphy, **Robert W. Meredith**, John Gatesy, Eske Willerslev, Ross D.E. MacPhee, Michael Hofreiter, Kevin L. Campbell. 2015. Interordinal gene capture, the phylogenetic position of Steller's sea cow based on molecular and morphological data, and the macroevolutionary history of Sirenia. Molecular Phylogenetics and Evolution. 91, 178-193. Citations: 56

36. **Meredith, Robert W.**, Guojie Zhang, M. Thomas P. Gilbert, Erich D. Jarvis, and Mark S. Springer. 2014. Evidence for a single loss of mineralized teeth in the common avian ancestor. Science 346, no. 6215 (2014): 1254390. Citations: 101

    **Featured in online media outlets (e.g. Science Daily)
    **F1000Prime paper

35. Zhang, Guojie, Cai Li, Qiye Li, Bo Li, Denis M. Larkin, Chul Lee, Jay F. Storz, Agostinho Antunes, Matthew J. Greenwold, **Robert W. Meredith**, and et al. (93 additional authors). 2015. Comparative genomics reveals insights into avian genome evolution and adaptation. Science 346, 1311-1320. Citations: 902

    **Featured in online media outlets (e.g. Science Daily)
    **Web of Science top 0.1% of papers in its academic field
    **F1000Prime paper

34. Pollux, B. J. A., **Robert W. Meredith**, Mark S. Springer, Theodore Garland, David N.

Reznick. 2014. The evolution of the placenta drives a shift in sexual selection in livebearing fish. Nature. 513, 233-236. Citations: 152

**Featured in online media outlets (e.g. National Geographic, Science Daily)
**F1000Prime paper

33. Oufiero, Christopher E., **Robert W. Meredith**, Kristine Jugo, Paulina Tran, Mark A. Chappell, Mark Springer, David N. Reznick and Theordore Garland, Jr. 2014. The evolution of the sexually selected sword in *Xiphophorus* does not compromise aerobic locomotor performance. Evolution 68, 1806-1823. Citations: 16

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Meredith, Robert W., Jack Gaynor, Paul Bologna, Matthew Schuler. Environmental DNA Biodiversity Assessment of Barnegat Bay, NJ In prep.

Meredith, Robert W., J. Gatesy, G. Amato. Draft Genome Assembly and Annotation of the Cuban Crocodile Crocodylus rhombifer In prep.

PROFESSIONAL REPORTS

Bologna, Paul, John Gaynor, **Robert Meredith**. Matthew Schuler, Alyssa Petidemange. 2021. Assessment of the impacts of OCNGS on gelatinous zooplankton and planktonic community structure NJDEP Final Project Report.

Bologna, Paul, John Gaynor, **Robert Meredith**. Matthew Schuler, Alyssa Petidemange. 2019. Assessment of the impacts of OCNGS on gelatinous zooplankton and planktonic community structure NJDEP Final Project Report. 86p.

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ABSTRACTS AND MEETING PRESENTATIONS

(Students underlined)

Hidalgo, R., A. DeVito, N. Salah, A. S. Varde, **Robert W. Meredith**. 2022. Inferring Phylogenetic Relationships using the Smith-Waterman Algorithm and Hierarchical Clustering. 2022 IEEE International Conference on Big Data.

Casanova, Nelson S., Seol G., Lee Gabriela, A. Sanchez, **Robert Meredith**, Julian Paul Keenan, John J. Gaynor. 2018. Love that Dirty Water: Potential Microbial Diversity in On-Street Manhattan Hot Dog Water. The Theobald Smith Society (ASM) Meeting in Miniature. Seton Hall University.

Alexandria DiGiacomo, Tracy A. Heath, Daniel T. Ksepka, **Robert W. Meredith**. 2017.

Phylogenetic relationships of Crocodyliformes based on morphology and RAG1 sequence data. TREE Poster Presentation.

Alexandria DiGiacomo, Tracy A. Heath, Daniel T. Ksepka, **Robert W. Meredith**. 2017. Phylogenetic relationships of Crocodyliformes based on morphology and RAG1 sequence data.. Evolution Annual Meeting.

Osama Al Safarjalani, Alexandria DiGiacomo, **Robert W. Meredith**. 2018. Phylogenetic relationships of Phocidae based on morphology, molecular, and fossil data.. Montclair State University Annual Student Research Symposium Poster

John J. Gaynor, Anup Khanal, Kenny Pavan, **Robert W. Meredith**, Dena J. Restaino, P.A.X. Bologna. 2018. Molecular Cloning and Expression of a Pore-Forming Protein from the Atlantic Bay Nettle (*Chrysaora chesapeakei*).. Gordon Research Conference on "Venom Evolution, Function and Biomedical Applications. Mt. Snow, VT.

Meredith, Robert W., Tracy Heath, Daniel Ksepka. 2016. Synthesizing paleontological and neontological data. Evolution 2016 Annual Meeting, Raleigh, Texas.

Meredith, Robert W., John J. Gaynor, Paul A.X. Bologna. 2015. Preliminary diet assessment of the Atlantic Sea Nettle *Chrysaora quinquecirrha* in Barnegat Bay, New Jersey using next generation sequencing. 2015 Benthic Ecology Meetings.

Restaino, Deana, Paul A.X. Bologna, John J. Gaynor, **Robert Meredith**. 2015. Temporal and spatial relationship of adult and planula *Chrysaora quinquecirrha* Barnegat Bay, NJ. 2015 Benthic Ecology Meetings.

Castellano, Christie L., Paul A.X. Bologna, John J. Gaynor, **Robert W. Meredith**. 2015. Impacts of major storm events on gelatinous zooplankton and planktonic community structure in Barnegat Bay, NJ. 2015 Benthic Ecology Meetings.

McGinnis, Joseph Robert, Paul Bologna, Jack Gaynor, **Robert Meredith**. 2015. Seagrass wrack as a potential benthic-pelagic link in Barnegat Bay, NJ. 2015 New Jersey Academy of Sciences Meeting.

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Meredith, Robert W., Guojie Zhang, M. Thomas P Gilbert, Erich D. Jarvis, Mark S. Springer. 2014. Evidence for Tooth Loss and the Acquisition of a Horny Beak in the Common Avian Ancestor. Evolution 2014 Annual Meeting, Raleigh, North Carolina.

Furness, Andrew, David Reznick, Mark S. Springer, **Robert W. Meredith.** 2014. Convergent evolution of alternative developmental trajectories associated with diapause in African and South American killifish. Evolution 2014 Annual Meeting, Raleigh, North Carolina.

Zaben, Nadia, Elakhrass Mohamedhakim, Paul A.X. Bologna, **Robert W. Meredith**, James J. Campanella. 2013. Preliminary microsatellite analysis suggests that *Thalassia testudinum* in separated bays on the island of St. John may have greater genetic diversity than previously believed. Metropolitan Association of College and University Biologists. Bergen Community College.

Elakhrass, Mohamedhakim, Nadine Darwiche, **Robert W. Meredith**, Paul Bologna. 2013. Genetic diversity of Thalassia testudinum at St. John, USVI. New Jersey Academy of Science Annual Meeting. Kean University, NJ.

Meredith, Robert W., John Gatesy, Joyce Cheng, Mark S. Springer. 2013. Rod monochromacy and the coevolutionary history of cetacean retinal opsins. Evolution 2013 Annual Meeting, Snowbird, Utah.

Meredith, Robert W., John Gatesy, Mark S. Springer. 2011. Independent pseudogenization of short-wave-sensitive (*SWS1*) in baleen (Mysticeti) and toothed (Odontoceti) whales. Sixth Triennial Conference on Secondary Adaptation of Tetrapods to Life in Water.

Meredith, Robert W. and Mark S. Springer. 2010. Historical biogeography of mammals: A review of techniques. Austral Portals Workshop: Tectonics, Paleogeography and Biogeography.

Meredith, Robert W., Michael Westerman, Judd A. Case, and Mark S. Springer. 2006. A phylogeny and timescale for marsupial evolution based on sequences for five nuclear genes. Society of Vertebrate Paleontology Annual Meeting 2006.

Meredith, Robert W. 2005. New frog material from the Oligo-Miocene Etadunna Formation of South Australia. Society of Vertebrate Paleontology Annual Meeting October 2005.

Meredith, Robert W., Paul N. Wegleitner, James E. Martin. 2004. The largest mosasaur (Squamata; Reptilia) from the Missouri River area (Late Cretaceous; Pierre Shale) of South Dakota. Geological Society of America Rocky Mountain and Cordilleran Joint Meeting 2004.

Meredith, Robert W. 2004. New chelid turtle material from South Australia. Society of Vertebrate Paleontology Annual Meeting October 2004.

Meredith, Robert W. A new genus and species of primitive diprotodontoid from the late Oligo-Miocene Etadunna Formation of South Australia. Society of Vertebrate Paleontology Annual Meeting October 2003.

Meredith, Robert W. 2002. A madtsoiid snake from the Etadunna Formation and possible implications for biogeography. Society of Vertebrate Paleontology Annual Meeting 2002.

Meredith, Robert W. and Jennifer Cavin. 2002. A new meandering stream complex from the Big Badlands of South Dakota. South Dakota Academy of Sciences 2002.

James E. Martin and **Robert W. Meredith (co-presenter). 2000.** Australia A return to Oz. Museum of Geology Powmen Fund Raiser.

Meredith, Robert W. 1998. Calibrating natural growth lines, in the green sea urchin *Strongylocentrotus droebachiensis* (Oral presentation at the 26th Annual Benthic Ecology Meeting in Florida, March 1998)

MONTCLAIR STATE UNIVERSITY STUDENT RESEARCH SYMPOSIUMS

(Students underlined)

Parker, Adam and Robert W. Meredith. 2021. A metagenomic comparison of genetic sequencing using targeted 16S and shotgun NGS on benthic DNA. 2021. Darwin Day

Catherine Elia, Merve Bidav, Alexandria DiGiacomo, **Robert W. Meredith**. 2018. A phylogenetic hypothesis for extinct and extant Cetartiodactyla. Montclair State University Annual Student Research Symposium Poster.

Sahar Alkhudairi, Violette Kiryako, Alexandria DiGiacomo, **Robert W. Meredith**. 2018. A phylogenetic hypothesis for extinct and extant primates. Montclair State University Annual Student Research Symposium Poster.

Dhawan, Rebecca, **Robert W. Meredith**. 2016. A Comparative analysis of the ZAP-70 Gene in mammals.

Maani, Israa, **Robert W. Meredith**. 2016. Comparative Analysis of COL1A1 Gene in Different Mammals.

Maani, Israa, **Robert W. Meredith**. 2015. Comparative analysis of *MMP20* gene in different mammals.

Restaino, Deana, Paul A.X. Bologna, John J. Gaynor, **Robert Meredith**. 2015. Temporal and spatial relationship of adult and planula *Chrysaora quinquecirrha* Barnegat Bay, NJ.

McGinnis, Joseph Robert, Paul Bologna, Jack Gaynor, **Robert Meredith**. 2015. Seagrass wrack as a potential benthic-pelagic link in Barnegat Bay, NJ.

Rajchel, Jessica, Annamaria De Bari, Nelson Casanova, Isabella Pastor, Julian Keenan, **Robert W. Meredith**, John J. Gaynor. 2015. Love that dirty water: Potential microbial diversity in on-street Manhattan hot dog water.

Abo-Zed, Abdelrhman, **Robert W. Meredith.** 2014. Molecular evolution of opsin genes in bears.

Miranda, Juan, **Robert W. Meredith.** 2014. Molecular evolution of amphibian visual genes.

Merari, Ariana, **Robert W. Meredith.** 2014. Molecular evolution of nuclear hormone receptor subfamily 3 in vertebrates