

ELIZABETH BORDA, PHD

Department of Natural Sciences, Texas A&M University–San Antonio

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Lab Website: [Borda Lab](#)

ACADEMIC APPOINTMENTS

Texas A&M University–San Antonio, Department of Natural Sciences

Associate Professor	2024–Present
Graduate Coordinator of Biology	2021–Present
Assistant Professor	2018–2024

Texas A&M University at Galveston, Marine Biology

Chair of Undergraduate Research	2016–2018
Program Coordinator, NSF-REU: OCEANUS	2016–2018
Lecturer	2013–2018
Postdoctoral Research Associate	2011–2012

Scripps Institution of Oceanography

Encyclopedia of Life Rubenstein Fellow	2010–2011
National Science Foundation Minority Postdoctoral Research Fellow	2009–2010

Auburn University

National Science Foundation Minority Postdoctoral Research Fellow	2007–2009
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EDUCATION

Ph.D., Biology	2007
<i>City University of New York–Graduate Center</i>	
B.S., Biology	1998
<i>Stony Brook University</i>	

FEDERAL & INTERNATIONAL FUNDING

Total raised at A&M-SA: **\$379,152** [Total Overall: \$769,411]

Texas A&M University–San Antonio

Binational Science Foundation (BSF)

BSF Research Grant. \$300,000

Comparative evolution and functional ecology of stygobiont crustacean–microbe interactions along sulfide gradients in subterranean ecosystems.

Role: PI (US) [Collaboration with Israel Oceanographic and Limnological Research and Stephen F. Austin State University]

Due:
December 3,
2025

National Science Foundation

Systematics and Biodiversity Sciences. \$876,109

Collaborative Proposal: Integrative Speleogenomics for Species Discovery and Phylogenomic Clarification of Pancrustacean Subterranean Biodiversity.

Role: PI [Collaboration with Stephen F. Austin State University]

Submitted

Biological Oceanography. \$379,152.

OCE: 2136322. Collaborative Proposal: Illuminating cave benthos in subterranean estuaries–biodiversity, ecology, and role in coastal ecosystem functioning.

Role: PI [Collaboration with Woods Hole Oceanographic Institution; \$620,321]

2022–Present

Texas A&M University Galveston

Education and Human Resources, Ocean Sciences. \$390,259

OCE: 1560242. REU Site: Ocean and Coastal Research Experiences for Undergraduates (OCEANUS). PI: Patrick Louchouart. Role: CoPI & Program Coordinator

2016–2018

INSTITUTIONAL AND FOUNDATION SUPPORT

Total raised at A&M-SA: \$72,813 [Total Overall: \$246,813]	
<i>Texas A&M University–San Antonio</i>	
Department of Natural Sciences. \$7,000	2025–Present
Continuing support for the A&M–SA diving operations	
Offices of the Provost and Vice Provost for Research and Health Sciences, Department of Natural Sciences. \$31,750.	2024–2025
Seed funds to establish the Scientific Diving Program.	
Texas A&M–San Antonio Foundation. \$7,000.	2024–2025
Seed funds to establish the Scientific Diving Program.	
Research Council Grant. \$9,108.	2024–2025
Diversity and mitogenomics of <i>Chloeia</i> species from biodiversity hotspots. Role: PI	
College of Arts & Sciences Research Grant. \$9,995.	2024–2025
Using artificial intelligence to enhance urban ecosystem studies in south San Antonio.	
Role: CoPI; PI: Teufel A; CoPI: Valdez J	
College of Arts and Sciences Summer Faculty Research Grant. \$3,000.	2020
Evolution in the Mayan Underworld: diversity, adaptation, and gene expression in <i>Typhlatya</i> cave shrimp of the Yucatán Peninsula, Mexico. Role: PI	
Research Council Grant. \$4,960.	2019
Evolution in the Mayan Underworld: diversity, adaptation, and gene expression in <i>Typhlatya</i> cave shrimp of the Yucatán Peninsula, Mexico. Role: PI	
<i>Texas A&M University Galveston</i>	
Office of the Provost. \$90,000.	2016–2018
Aggies Commit to Excellence Scholarship (ACES)–Scholarship (Undergraduates)	
Role: Scholarship Program Coordinator	
Texas A&M University System Louis Stokes Alliance for Minority Participation. \$84,000	2016–2018
Role: Scholarship Program Coordinator for Galveston Campus; TAMU liaison.	

OTHER AWARDS

Total Overall: \$43,550	
University of California Institute for Mexico and the United States. \$15,000.	2010
Faculty Grants–Towards a molecular baseline for marine invertebrates of the Gulf of California: an assessment of biodiversity, evolution, and conservation.	
[PI: Greg Rouse; Borda authored proposal]	
Harvard University Ernst Mayr Travel Grant. \$1,000.	2009
Photo-documentation and databasing of museum types of fireworms (Annelida: Amphinomida).	
Census of Marine Life Training Award for New Investigators (TAWNI). \$5,000	2009
Deep-sea fireworms: morphological evaluation of the cosmopolitan <i>Archinome</i> , with descriptions and new records of amphinomids from cold seeps.	
The Society for Integrative and Comparative Biology Broadening Participation Professional Development Travel Award. \$500.	2009
Society of Systematic Biologists Mini-PEET Award. \$2,050.	2008
Taxonomic Training in Amphinomida.	
City University of New York NSF–Alliance for Graduate Education and the Professoriate Award. \$20,000.	2003–2005

FELLOWSHIPS

Total raised at A&M-SA: **\$20,406** [Total Overall: \$265,596]

Texas A&M University–San Antonio Summer Fellowship for Research Grant Writing	Texas A&M University–San Antonio Summer Research Fellowship	A&M–SA College of Arts and Sciences Summer Faculty Research Fellowship
2023, \$7,406	2021, \$5,000	2020, \$3,000
Texas A&M University Office of Academic Enhancement Faculty Fellowship	Encyclopedia of Life Rubenstein Fellowship	National Science Foundation Minority Postdoctoral Research Fellowship
2014, \$5,000	2010–2011, \$18,190	2007–2010, \$189,000
City University of New York Mario Capelloni Dissertation Fellowship	City University of New York Science Alliance Fellowship	
2006	2002–2004	
\$20,000	\$18,000	

PUBLICATIONS

Peer-reviewed publications: 24; Book chapters: 7; Cover articles: 3; h-index: 18. [Google Scholar](#)

¹Undergraduate; ²Graduate; ³Corresponding Author; ⁴Senior Author, ⁵Contributing Author, ⁶Postdoc

1. ^{3,6}Calderón-Gutiérrez F, ⁶Gonzalez B, Iliffe TM, Labonté J, Mejía-Ortiz LM and ⁴**Borda E**. 2024
Cryptic diversity patterns of subterranean estuaries. *Proceedings of the Royal Society of London B: Biological Sciences* 291: 20241483.
2. ²Fernández-Lereé CG, Ávila-García A, Sánchez C, ⁵**Borda E**, López-Vivas JM, Huato-Soberanis L, and Gómez-Gutiérrez J. *Zenopontonia soror* caridean shrimp exhibits dynamical mimicry with sea star host switching. *Journal of Experimental Marine Biology and Ecology* 568: 151936. 2023
3. ⁶Calderón Gutiérrez F, Iliffe TM, ⁵**Borda E**, Yañez G and Labonté J. Resilience of the karst subterranean estuary to precipitation impacts. *Ecology and Evolution* 13(8): e10415. 2023
4. ²Ballou L, ²Chávez Solís E, ⁶Brankovits D, Chavez Diaz, JM, ⁶Gonzalez B, ¹Rohret S, ¹Salinas A, ¹Liu A, Simoes N, Alvarez F, Miglietta MP, Iliffe T and **Borda E**^{3,4}. An integrative re-evaluation of the shrimp *Typhlatya* within the Yucatán Peninsula. *Scientific Reports* 12 (1): 5302. 2022
5. ²Müller J, Schumacher A, ⁵**Borda E**, Rouse GW, Bartolomaeus T and Tilic E. “Brittleworms”: Ultra-structure and arrangement of the calcified chaetae of *Euphrosine* (Amphinomida, Annelida). *Invertebrate Biology* 140(4): e12353. 2021
6. ²Ávila-García A, Sánchez CA, ⁵**Borda E**, González-Acosta B, Huato-Soberanis L, and Gómez-Gutiérrez J. From five to one: *Sandyella* species (Palaemonidae) are distinct ontogenetic stages of a single species. *Zoologica Scripta* 49(4): 488-498. 2020
7. Siddall ME, ¹Barkdull M, ²Tessler M, ⁶Brugler MR, ⁵**Borda E**, and Hekkala E. Ideating iDNA: Lessons and limitations from leeches in legacy collections. *PLOS ONE* 14 (2): e0212226. 2019
8. ²Gonzalez BC, Martinez A, ⁵**Borda E**, Iliffe TM, Fontaneto D and Worsaae K. Phylogeny and systematics of the Aphroditiformia based on total evidence. *Cladistics* 34 (3): 225–259. 2018
9. ²Gonzalez BC, Martinez A, ⁵**Borda E**, Iliffe TM, Fontaneto D and Worsaae K. Genetic spatial structure of an anchialine annelid indicates the presence of a crevicular spelean corridor within - but not between - islands of the Great Bahama Bank. *Molecular Phylogenetics and Evolution* 109: 259–270. 2018

PUBLICATIONS

- ¹Undergraduate; ²Graduate; ³Corresponding Author; ⁴Senior Author, ⁵Contributing Author, ⁶Postdoc
10. ²Tessler M, ¹Barrio A, ⁵**Borda E**, Rood-Goldman R, Hill M and Siddall ME. Description of an extant soft-bodied invertebrate with microcomputed tomography and phylogenetic revision of duognathous terrestrial leeches (Chthonobdella). *Zoologica Scripta* 45 (5): 552–565. 2016
 11. ³**Borda E**, ²Yáñez-Rivera B, ¹Ochoa GM, Kudenov JD, Sanchez-Ortiz C, Schulze A and Rouse G. Revamping Amphinomidae (Annelida: Amphinomida), with the inclusion of Notopygos. *Zoologica Scripta* 44 (3): 324–333. 2015
 12. ⁶Kot BW, Sears R, Zbinden D, ⁵**Borda E** and Gordon MS. Rorqual whale (Balaenopteridae) surface lunge-feeding behaviors: standardized classification, repertoire diversity and evolutionary analysis. *Marine Mammal Science* 30(4): 1335–1357. ****Cover Article****
 13. **Borda E** and Kudenov JD. Euphrosinidae (Annelida: Amphinomida) collected from Antarctica by the R/V Polarstern in 1984 and 1986, with comments on the generic placement of *Euphrosine magellanica*. *Proceedings of the Biological Society of Washington* 126(4): 299–311. 2014
 14. ³**Borda E**, Kudenov JD, Blake JA, Chevaldonné P, Desbruyères D, Hourdez S, Fabri M-C, Pleijel F, Schulze A, Shank T, Wilson NG and Rouse GW. Cryptic species of *Archinome* (Annelida: Amphinomida) from vents and seeps. *Proceedings of the Royal Society of London B: Biological Sciences* 280(1770): 20131876. 2013
 15. ²Ahrens J, ⁵**Borda E**, ²Barroso R, ¹Campbell AM, ²Wolf A, Nugues M, Paiva P, Rouse GW and Schulze A. The curious case of *Hermodice carunculata* (Annelida: Amphinomidae): evidence for genetic homogeneity throughout the Atlantic Ocean and associated basins. *Molecular Ecology* 22(8): 2280–2291. ****Cover Article**** 2013
 16. ³**Borda E**, Kudenov JD, Beinhold C and Rouse GW. Towards a revised Amphinomidae (Annelida, Amphinomida): description and affinities of a new genus and species from the Nile Deep-sea Fan, Mediterranean Sea. *Zoologica Scripta* 40(3): 307–325. 2012
 17. ³**Borda E** and Siddall ME. Insights into the evolutionary history of Indo-Pacific blood feeding terrestrial leeches (Hirudinida: Arhynchobdellida: Haemadipsidae). *Invertebrate Systematics* 24(5): 456–472. ****Cover Article**** 2011
 18. ³**Borda E**, Oceguera-Figueroa A, and Siddall ME. On the classification, evolution and biogeography of terrestrial haemadipsoid leeches (Hirudinida: Arhynchobdellida: Hirudiniformes). *Molecular Phylogenetics and Evolution* 46(1): 142–154. 2008
 19. ³**Borda E**. Revision of the Malagabdelinae (Arhynchobdellida: Domanibdellidae), with a description of a new species, *Malagabdella niarchosorum*, from Ranomafana National Park, Madagascar. *American Museum Novitates* 3531: 1–13. 2006
 20. Siddall ME, ¹Budinoff RB and ⁵**Borda E**. Phylogenetic evaluation of systematics and biogeography of the leech family Glossiphoniidae. *Invertebrate Systematics* 19(2): 105–112. 2005
 21. ³**Borda E** and Siddall ME. Arhynchobdellida (Annelida: Oligochaeta: Hirudinida): phylogenetic relationships and evolution. *Molecular Phylogenetics and Evolution* 30: 213–225. 2004
 22. Siddall ME and **Borda E**. Leech collections from Chile including two new species of Helobdella. *American Museum Novitates* 3457: 1–18. 2004
 23. ³**Borda E** and Siddall ME. Review of the evolution of life history strategies of the Hirudinida (Annelida: Oligochaeta). *Lauterbornia* 52: 5–25. 2004
 24. Siddall ME and **Borda E**. Phylogeny of the leech genus Helobdella (Hirudinea: Glossiphoniidae) based on mitochondrial gene sequences and morphological data and a special consideration of the triserialis complex. *Zoologica Scripta* 32: 23–33. 2003

PUBLICATIONS

Peer Reviewed Book Chapters

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| 25. Yáñez-Rivera B and Borda E . Euphrosinidae Williams, 1851. In: Poliquetos (Annelida: Polychaeta) de México y América Tropical, con un adendum a los Clitelata, 2a Eds. de León-González JA, Bastida-Zavala JR, Carrera-Parra LF, García-Garza ME, Salazar-Vallejo SI, Solís-Weiss V and Tovar-Hernández MA (Eds.). Universidad Autónoma de Nuevo León, Monterrey, México. | 2021 |
| 26. Yáñez-Rivera B and Borda E . Amphinomidae Savigny 1818. In: Poliquetos (Annelida: Polychaeta) de México y América Tropical, con un adendum a los Clitelata, 2a Eds. de León-González JA, Bastida-Zavala JR, Carrera-Parra LF, García-Garza ME, Salazar-Vallejo SI, Solís-Weiss V and Tovar-Hernández MA (Eds.). Universidad Autónoma de Nuevo León, Monterrey, México. | 2021 |
| 27. Schulze A, ¹ Hipes J, ⁵ Borda E and Rice ME. Who's who in sipunculans? Matching larvae and adults using DNA. In: Proceedings of the Second International Symposium on the Biology of the Sipuncula. 83–93. Washington, D.C.: Smithsonian Institution Scholarly Press. In Smithsonian Contributions to the Marine Sciences, 42. | 2019 |
| 28. Borda E . Hirudinida. In: Crustacea, Platyhelminthes, Nematoda, Annelida, Rotifera and Tardigrada of the Seychelles islands. Siri Scientific Press, Manchester. Gerlach J (ed.). | 2011 |
| 29. Halanych KM and Borda E . Developing models for lophotrochozoan and annelid biology. In: Annelids in Modern Biology. Shaine D (ed) John Wiley & Sons. Indianapolis, IN. | 2009 |
| 30. Siddall ME, Bely AE and ⁵ Borda E . Hirudinida. In: Reproductive Biology and Phylogeny of Annelida. Rouse G and Pleijel F (eds.) Enfield, NH. | 2006 |
| 31. Siddall ME, ⁵ Borda E and Rouse GW. Towards a Tree of Life for the Annelida. In: Assembling the Tree of Life. Cracraft J and Donoghue M (eds.) Oxford University. | 2004 |

Research Notes and Short Communications

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| 33. Stegenga BS, Jarboe A, Stevenson DJ and ⁵ Borda E . Parasitism of the two-toed Amphiuma (Amphiuma means Garden) by the macrobdellid leech Macrobdella ditetra Moore. <i>Southeastern Naturalist</i> 20 (1), N1. | 2021 |
| 34. ² Rocha R, ⁵ Borda E , Andreone F and Rosa GM. First reports of leech parasitism in Malagasy anurans. <i>Comparative Parasitology</i> 79(2): 352-356. | 2012 |
| 35. ² Graham SP, ⁵ Borda E and ¹ Connell MR. Agkistrodon piscivorous (Cottonmouth). Ectoparasite. <i>Herpetological Review</i> . 41 (1): 88. | 2010 |
| 36. ² Graham SP and Borda E . First report of leech parasitism in the amphibian family Sirenidae. <i>Comparative Parasitology</i> 77(1): 105–107. | 2010 |

Dissertation

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| Systematics and biodiversity of Arhynchobdellida (Oligochaeta: Hirudinida), with a focus on the evolutionary history of blood feeding terrestrial leeches. | 2007 |
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City University of New York Graduate Center

ADVISOR: Mark E. Siddall, American Museum of Natural History

TEACHING EXPERIENCE

Texas A&M University San Antonio

Graduate

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| 2021–Present | BIOL 5310: <i>Scientific Scholarship (3 cr.)</i> | Fall |
| 2024–2025 | BIOL 5370: <i>Scientific Writing and Communication (3 cr.)</i> | Spring |

TEACHING EXPERIENCE

Texas A&M University San Antonio

Graduate

2025	BIOL 5309: <i>Advanced Topics in Cell and Molec. Biol.</i> —Co-Instructor	Fall
2024	BIOL 5470: <i>Evolutionary Ecology</i> —Co-Instructor	Fall
2022	BIOL 5311: <i>Molecular Ecology</i> (3 cr.)	Fall
2021, 2024	BIOL 5370: <i>Advanced Topics in Biology</i> (3 cr.)—Co-Instructor	Fall

Undergraduate

2018–Present	BIOL 3402: <i>Evolution and Evolution Lab</i> (4 cr.)	Fa/Sp/Su
2024	BIOL 4103: <i>Seminar—Zoology</i> (1 cr.)	Fall
2023	BIOL 4101: <i>Seminar—Integrative Biology</i> (1 cr.)	Fall
2020	BIOL 3401: <i>Invertebrate Zoology</i> (4 cr.)	Spring
2019–2021	BIOL 1306: <i>General Biology I</i> (3 cr.)	Fall/Spring
2019	STEM 1401: <i>Jaguar Tracks IV</i> (1 cr.)	Spring
2018	BIOL 1106: <i>General Biology I Lab</i> (1 cr.)	Fall

Directed Studies

2018–Present	BIOL 4104: <i>Research Experience in Biology</i> (1 cr.)	Fall/Spring
2018–Present	BIOL 4304: <i>Undergraduate Research in Biology</i> (3 cr.)	Fall/Spring

Texas A&M University at Galveston

Graduate

2016–2018	MARB 681: <i>Graduate Seminar in Marine Biology</i> (1 cr.)	Fall/Spring
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Undergraduate

2015–2018	MARB 482: <i>Seminar in Marine Biology</i> (1 cr.)	Fall/Spring
2014–2018	MARB 466: <i>Evolutionary Biology</i> (3 cr.)	Fall
2014–2016	MARB 301: <i>Genetics Lab</i> (1 cr.)	Fall/Spring
2013	MARB 301: <i>Genetics</i> (3 cr.)	Spring/Fall

MENTORSHIP AND ADVISING

Texas A&M University San Antonio

Postdoctoral Researcher

Dr. Fernando Calderón-Gutiérrez	2022–2025
NSF-funded postdoctoral researcher; Now: Assistant Professor at Stephen F. Austin State University	

Ph.D. Students

Texas A&M University at Galveston

Fernando Calderón-Gutiérrez	2017–2022
<i>Dissertation: Characterizing the Ecosystem Function and Biodiversity in the Anchialine Caves of the Caribbean Coast of the Yucatán Peninsula and Marine Caves of Belize.</i>	
Role: Committee Member	
Lauren Ballou	2016–2021
<i>Dissertation: Exploring the Evolution and Biogeographic Distribution of Anchialine Fauna</i>	
Role: Committee Member. Now: Assistant Professor, Berea College, Berea, KY	

MENTORSHIP AND ADVISING

Visiting Ph.D. Students

Texas A&M University San Antonio	
Shari Rohret (Ph.D.), Massachusetts Institute of Technology–Woods Hole Oceanographic Institution (MIT–WHOI) Joint Program.	2022–2023
<i>Dissertation: Benthic meiofaunal and micro-eukaryotic inhabitation of extreme environments: submerged caves and hydrocarbon seeps</i>	
Efrain Chávez Solís (Ph.D.), Universidad Autonoma de Mexico–Sisal	2019
<i>Evolution, physiology and transcriptomics of <u>Typhlatya</u> shrimp</i>	
Texas A&M University at Galveston	
Ariadna Avila (Ph.D.), Universidad Autonoma de Baja California Sur	2016
<i>Genetic, Morphological Evaluation and Ecology of Symbiotic Caridean Shrimp of the Gulf of California, Mexico.</i>	

M.S. Students

Texas A&M University San Antonio	
Bernard Mbithi	2024–Present
<i>Thesis: Diversity and mitogenomics of <u>Chloeia</u> species from biodiversity hotspots.</i>	
Committee: Drs. Elizabeth Borda (Chair), Ashley Teufel, Beatriz Yanez-Rivera (external)	
Gabrielle Vaughn	2021–2024
<i>Thesis: Insights Into Subterranean Connectivity Within the Aquifer of the Yucatán Peninsula: Population Genetics and Distribution of <u>Typhlatya</u> Species.</i>	
Committee: Drs. Elizabeth Borda (Chair), Charles Watson, Fernando Calderón-Gutiérrez, Nuno Simoes (external). Now: Adjunct Lecturer, Texas A&M University–San Antonio	
Iliana Reyes	2024–Present
<i>Thesis: Diversity of Aquatic Invertebrates of the San Antonio River</i>	
Committee: Drs. Jose Valdez (Chair), Elizabeth Borda, Ben Hutchins (external)	
Ashlynn Smyth	2024–Present
<i>Thesis: Diversity of Leafhoppers and <u>Phytoplasma</u> in Associated with Texas Grasslands</i>	
Committee: Drs. Jose Valdez (Chair), Elizabeth Borda, TBA (external)	
Alejandro Nunez Cardenas (Non-Thesis)	2022–2024
<i>Structure and 3D Modeling of Mitochondrial Genomes of <u>Typhlatya</u> Shrimp Species.</i>	
Committee: Drs. Elizabeth Borda (Chair), Ashley Teufel, Alan Daniels (external)	
Danielle Rios	2021–2024
<i>Thesis: Investigating the Presence of Bacterial Phytoplasma Disease in Grasses of Central Texas and their Associated Hemiptera</i>	
Committee: Drs. Jose Valdez (Chair), Elizabeth Borda, Davida Smyth, Kelly Lyons (external)	
Ashley Aguilar	2022–2024
<i>Thesis: Mosquito Species Composition and Host Choice at Two Zoological Parks in Texas.</i>	
Committee: Drs. Megan Wise (Chair), Elizabeth Borda, Ashley Teufel, Jason Pitts (external)	
Texas A&M University at Galveston	
Caroline Emery (Non-Thesis)	2018–2019
<i>Marine Invertebrate Fossil Composition of Eight Major Sea Level Change Events in Texas during the Late Cretaceous Period and Their Potential as Risk Indicators for Anthropocene Sea Level Rise.</i>	
Committee: Drs. John Schwarz, Leah Levay, Elizabeth Borda (external)	
Visiting M.S. Students	
Ramiro de Jesus Arcos Aguilar (M.S.)–Universidad Autonoma de Baja California Sur	2015
<i>Population Genetics of the Stag Horned Hermit Crab (<u>Manucomplanus</u>) and the Hydroid Symbiont (<u>Janaria</u>) from the Gulf of California.</i>	

MENTORSHIP AND ADVISING

Undergraduate Students

Mentored over 40 undergraduates through directed studies, research assistantships, and thesis projects. Many have presented at regional and national conferences, co-authored publications, or continued to graduate programs in marine biology, environmental science, and health related fields.

The following is a list of select students:

Texas A&M University San Antonio

NSF Scholarships in STEM

Muntadher Mashaan. *Metagenomics of Benthic Metazoa from Anchialine Caves*. 2022–Present

Co-Mentor: Dr. Fernando Calderón-Gutiérrez

Danielle Bragg. *Transcriptomics of Typhlatya from Anchialine Caves of the Yucatán Peninsula*. 2021–2024

Now: M.S. Student, Stephen F. Austin State University

Co-Mentor: Dr. Fernando Calderón-Gutiérrez

Directed Studies

Connor Grizzle and Marco Rodriguez. *Toward Genomic Pipelines for Characterizing Biodiversity from Species to Communities*. Co-Mentor: Dr. Fernando Calderón-Gutiérrez. 2025–Present

Omar Carrillo. *Transcriptomics of Cave Shrimp*. 2020–2021

B.S. Biology, '21; M.S. University of Texas Rio Grande Valley, '23; Now: Ph.D. University of Texas

Autonomous University of Yucatan

Ann Paula Marin. *Mitogenómica comparativa del género Typhlatya en la Península de Yucatán*. Licenciatura en Biología, Thesis; Co-Mentor: Dr. Alfredo Oliver Barrera-Guzmán 2025–Present

Texas A&M University Galveston

Arianna Bartlett. *Transcriptomics of Fireworms*. 2017

B.S. Marine Biology, '17; Ph.D. Cornell University, '23

LAUNCH Undergraduate Research Scholar. Co-Mentor: Dr. Jessica Labonté

Shari Rohret (B.S. Marine Biology, '18; Ph.D. MIT–WHOI, '25) 2017– 2018

Lexy Salina (B.S. Marine Biology, '18; M.S. University of Notre Dame, '22)

Cryptic Species of Typhlatya Cave Shrimp from Yucatán Cenotes.

LAUNCH Undergraduate Research Scholar.

Aimee Cook. *Population genetics of deep-sea fishes from the Northern Atlantic and Gulf of Mexico*. B.S. Marine Biology, '17; Now: Ph.D. University of Hawaii, Manoa 2016

Louis Stokes Alliance for Minority Participation Research Scholar. Co-Mentor: Dr. Ron Eytan.

Gabriela M. Ochoa. *Phylogeny of Archinominae (Amphinomidae)*. 2012

(B.S. Marine Biology, '12; Now: PhD Student, Florida International University)

NSF TAMUG Research Experiences for Undergraduates. Co-Mentor: Anja Schulze.

SERVICE AND LEADERSHIP

Texas A&M University–San Antonio

University

Chair, A&M–SA Dive Safety Board–Office of Research Compliance 2025–Present

Vice Chair, IACUC Committee 2022–Present

Member, A&M–SA Dive Safety Board–Office of Research Compliance 2024–2025

Chair, Working Committee to establish the Dive Control Board–Office of Research Compliance 2024

Member, Search Committee–Dean of Graduate Studies 2023

Panel Member, Artificial Intelligence at A&M–SA 2023

SERVICE AND LEADERSHIP

Texas A&M University–San Antonio

University

Research Scientist Member, IACUC Committee	2019–2022
Member, Academic Development Committee	2018–2021

College

Faculty Mentor, NSF Scholarships in STEM	2021–Present
Faculty Mentor, NSF LSAMP–CIMA (Alamo Colleges)	2023–2024
Member, College of Arts and Sciences Honors Committee	2020–2021

Department/Program

Graduate Program Coordinator in Biology, Master of Science	2021–Present
Member, Search Committee–Cell and Developmental Biology (Tenure-Track)	2023–2024
Member, Search Committee–Bioinformatics (Tenure-Track)	2020–2021
Member, Search Committee–Microbiology (Tenure-Track)	2020–2021
Member, Search Committee–Anatomy and Physiology (Instructional Track)	2020–2021
Faculty Mentor, TAMUSA Biology Club	2018–2021

Texas and San Antonio Community

Host, Texas Groundwater Invertebrate Forum at A&M–SA	2025
Organization Committee Member, Texas Groundwater Invertebrate Forum	2024–Present
Event Coordinator, Science Olympiad (Regional)	2019–Present
Panel Member, Women in Science–MARC U*STAR Program, St. Mary's University	2022

Professional Service

<i>Subject Editor, Journal of Subterranean biology</i>	2024–Present
<i>Journal Reviewer</i> *within the last five years	

Acta Zoologica, Acta Zoologica Mexicana, American Museum Novitates, Aquatic Biology, Biological Journal of the Linnean Society, Ecology, Ecology and Evolution (2019), Invertebrate Systematics (2021, 2023)*, Journal of the Marine Biological Association of the United Kingdom (2021)*, Journal of Parasitology, Journal of Thermal Biology (2024)*, Marine Biodiversity Records, Marine Biology Research, Molecular Phylogenetics and Evolution, Systematics and Biodiversity (2025)*, Ocean and Coastal Research (2023)*, Parasitology (2020)*, PLOS ONE, Revista Mexicana de Biodiversidad, Zoological Science, Zoologica Scripta (2019), Zootaxa (2020)*

FIELD AND EXPEDITION EXPERIENCE

Subterranean Invertebrates

MEXICO: Yucatán, Quintana Roo, Cozumel Is.	2019–Present
Multiple expeditions sampling meiofauna and macrofauna, sediment, and water; installation of long-term data loggers.	

Marine Invertebrates

MEXICO: Gulf of California, Baja California Sur, La Paz–Los Cabos (2012); USA: Cape Hatteras–NSF WormNet2 Research Cruise (2011); COSTA RICA: Research Cruise <i>WHOI R/V Atlantis</i> , Costa Rica Margin (2010); INDONESIA: Bali, Sulawesi, Sumatra– <i>NSF Coral Triangle PIRE</i> (2010); PANAMA: Bocas del Toro <i>Smithsonian Tropical Research Institute</i> (2009); MEXICO: Gulf of California–SIO–UABCS cruise (2009) MEXICO: Quintana Roo (2008)	2008–2012
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FIELD AND EXPEDITION EXPERIENCE

Freshwater and Terrestrial Leeches

AUSTRALIA: New South Wales, Queensland, Northern Territory (2006); THAILAND: Chiang Mai, Kachanburi, Prachinburi, Surat Thani (2006); MALAYSIA: Kelantan, Tioman Island (2005); CANADA: Ontario (2001, 2002, 2003, 2006); USA: Louisiana (2004); FRANCE: Rennes (2004); SEYCHELLES: Mahé, Silhouette (2002); MADAGASCAR: Fianarantsoa, Fort Dauphin, Moramanga (2002); SOUTH AFRICA: Hoedspruit (2001); CHILE: Chiloé, Los Lagos, Santiago, Valdivia (2001)

Lemurs

MADAGASCAR: Ranomafana National Park, Stony Brook University Study Abroad Program (1996) 1996

INVITED TALKS

- The University of Texas at Tyler–Tyler, TX. *From Topsy Turvy to Upright: How Genomics is Illuminating the Way Towards Characterizing Biodiversity in Aquatic Subterranean Ecosystems.* 2024
- University of Texas Rio Grande Valley–Edinburg, TX. *Diversity Patterns in Extreme Environments.* 2023
- St. Mary's University–San Antonio, TX. *Diversity and Evolution in Extreme Environments.* 2023
- Trinity University–San Antonio, TX. *Tales from the Mayan Underworld: Invertebrate Diversity and Evolution within the Aquifer of the Yucatán Peninsula (and Cozumel Island).* 2022
- Louisiana State University–Baton Rouge, LA. *Diversity and Evolution in the Dark: An Integrative Evaluation of Typhlatya Cave Shrimp from the Yucatán Peninsula, Mexico.* 2022
- Texas Groundwater Invertebrate Forum, Virtual. *Integrative Systematics and Groundwater Evolution: A Case Study Using Typhlatya Shrimp (Atyidae) as a Model.* 2021
- Texas A&M University–College Station, TX. Ecology and Evolution Graduate Seminar. *Identity Crisis in the Mayan Underworld: A Re-evaluation of Typhlatya Cave Shrimp.* 2020
- Texas A&M University–San Antonio, TAMUSA Ten Year Anniversary Faculty Lecture Series–San Antonio, TX. *Cryptic Critters: Using Genetic Tools to Uncover Hidden Diversity and Evolution.* 2019
- Universidad Nacional Autónoma de México, Sisal–Yucatán, MX. 1st International Anchialine Ecosystems Workshop Merida, Mexico. *Into Darkness: Using Genetics to Illuminate Connectivity, Evolution and Hidden Diversity within Anchialine Caves of the Yucatán Peninsula.* 2019
- Texas A&M University–San Antonio, Department of Science and Mathematics–San Antonio, TX. *Lessons from Invertebrates: Evolution, Adaptations and Cryptic Species.* 2018
- St. Edwards University, Department of Biology–Austin, TX. *Unraveling Invertebrate Diversity and Evolution.* 2015
- Texas A&M University, First Annual Evolution Symposium–College Station, TX. *Cryptic Species of Archinome (Annelida: Amphinomida) from Vents and Seeps.* 2013
- Smithsonian Institution National Museum of Natural History, Department of Invertebrate Zoology–Washington, DC. *Unraveling Annelid Diversity from Land to the Deep Sea.* 2013
- Texas A&M University at Galveston, Department of Marine Biology–Galveston, TX. *Cryptic Fireworms: Deep Divergences, Old Origins and Overlooked Diversity.* 2012
- Texas A&M University, Department of Wildlife and Fisheries–College Station, TX. *From Bloodsuckers to Stinging Fireworms: Unraveling Annelid Biodiversity Patterns from Land to the Deep Sea.* 2011

INVITED TALKS

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- [Harvard University](#), Department of Organismic and Evolutionary Biology–Cambridge, MA. 2010
Neglected Invertebrates: Using Integrative Systematics to Elucidate Patterns in Biodiversity from Land to the Deep Sea.
 - [University of California San Diego](#), Leech Fest–San Diego, CA. 2010
On the Amazing Diversity of Bloodsucking Land Leeches (Hirudinida: Arhynchobdellida: Haemadipsidae).
 - [Scripps Institution of Oceanography](#), Marine Biology Research Division–La Jolla, CA. 2010
Neglected Invertebrates: Using Integrative Systematics to Elucidate Patterns in Biodiversity from Land to the Deep Sea.
 - [Scripps Institution of Oceanography](#), Marine Biology Research Division–La Jolla, CA. 2009
Biogeography and Evolution of Jungle Leeches (Hirudinida: Arhynchobdellida: Haemadipsidae): the Paradox of Trans-oceanic Dispersal of Indo-Pacific Terrestrial Annelids.
 - [Smithsonian Institution National Museum of Natural History](#), Department of Invertebrate Zoology–Washington, DC. 2007
Systematics and Biodiversity of Arhynchobdellida (Oligochaeta: Hirudinida) with a Focus on the Evolutionary History of Blood Feeding Terrestrial Leeches.
 - [Universidad de Buenos Aires](#), Departamento de Biodiversidad y Biología Experimental–Buenos Aires, Argentina. 2005
Arhynchobdellida: Phylogeny and Evolution.
 - [City University of New York Graduate School and University Center Minority Access/Graduate Networking in the Sciences, Technology, Engineering and Mathematics](#)–New York, NY. 2004
Diversity, Phylogeny and Evolution of Arhynchobdellid Leeches (Oligochaeta: Hirudinida).

CONTRIBUTED TALKS

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- *Insights from Genome Skimming on Remipedia (Xibalbanus spp.).* Society for Integrative and Comparative Biology–Atlanta, GA. 2025
 - *Insights from Genome Skimming on Remipedia (Xibalbanus spp.).* 26th International Conference on Subterranean Biology and 6th International Conference on Anchialine Ecosystems–Sardinia, Italy. 2024
 - *Remipedes: A Story of Cenotes, Pseudogenes, and The Species That Never Existed.* Texas Groundwater Invertebrate Forum, Virtual. 2023
 - *DNA Barcoding Reveals Cryptic Diversity Hidden Within the Aquifers of the Yucatán Peninsula and Cozumel Island, Mexico.* Southwestern Association of Naturalists–San Antonio, TX. 2023
 - *DNA Barcoding Reveals Cryptic Diversity Hidden Within the Aquifers of the Yucatán Peninsula and Cozumel Island, Mexico.* 5th International Symposium on Anchialine Ecosystems–Hilo, HI. 2022
 - *Cryptic species of Archinome (Amphinomida) from Hydrothermal Vents and Cold Seeps.* Annual Meeting, Society for Integrative and Comparative Biology–Charleston, SC. 2012
 - *Phylogenetic Evaluation of the Cosmopolitan Hydrothermal Vent Amphinomid, Archinome rosacea (Aciculata: Amphinomida).* The 10th International Polychaete Conference–Lecce, Italy. 2010
 - *Fireworms from the Chemosynthetic Deep: A Phylogenetic Evaluation of the Cosmopolitan Archinome rosacea.* Hennig XXIX.–Honolulu, HI. 2010
 - *Mitochondrial Genome Evolution of Amphinomidae (Annelida: Amphinomida).* The Society for Integrative and Comparative Biology–Boston, MA. 2009
 - *Biogeography and Evolution of Haemadipsidae (Hirudinida: Arhynchobdellida: Hirudiniformes): The Paradox of Transoceanic Dispersion of Indo-Pacific Terrestrial Annelids.* Evolution–Minneapolis, MN. 2008

CONTRIBUTED TALKS

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- *Systematics and Diversity of Arhynchobdellida (Oligochaeta: Hirudinida), with a Focus on the Evolutionary History of Blood Feeding Terrestrial Leeches*. The Society for Integrative and Comparative Biology–San Antonio, TX. 2008
 - *Systematics and Biogeography of IndoPacific Blood Feeding Terrestrial Leeches (Oligochaeta: Hirudinida: Arhynchobdellida)*. Hennig XXVI–New Orleans, LA. 2007
 - *Systematics and Biogeography of IndoPacific Blood Feeding Terrestrial Leeches (Oligochaeta: Hirudinida: Arhynchobdellida)*. 82nd Annual Meeting of the American Society of Parasitologists–Merida, Mexico. 2007
 - *Systematics and Biogeography of Blood Feeding Terrestrial Leeches (Oligochaeta: Hirudinida: Arhynchobdellida)*. Evolution–Stony Brook, NY. 2006
 - *Diversity, Phylogeny and Evolution of Arhynchobdellid Leeches (Annelida: Oligochaeta: Hirudinida)*. Evolution–Ft. Collins, CO. 2004
 - *Phylogeny of Arhynchobdellida (Annelida: Oligochaeta: Hirudinida) and the Evolution of Blood Feeding and Terrestrialism*. 1st International Meeting on Evolution, Development and Neurobiology of the Leech–Villeneuve d'Ascq, France. 2004
 - *Arhynchobdellida: Diversity, Phylogeny and Evolution (Annelida: Oligochaeta: Hirudinida)*. 78th Annual Meeting of the American Society of Parasitologists–Halifax, Nova Scotia. 2003

POSTDOC, GRADUATE AND UNDERGRADUATE PRESENTATIONS

Since 2012, I have mentored over 60 undergraduate, graduate student and postdoc presentations at local, regional, national, and international meetings, including the Texas Groundwater Invertebrate Forum (TGIF), Society for Integrative and Comparative Biology, Southwestern Association of Naturalists (SWAN), International Conference on Subterranean Biology, International Conference on Anchialine Ecosystems, TAMU Ecological Integration Symposium and Student Research Symposia at Texas A&M University–San Antonio, Texas A&M University Galveston and Texas A&M University. Student presentations have consistently represented A&M–SA at external conferences, with several earning presentation awards. The following are select recent presentations:

¹Undergraduate, ²Graduate, ³Postdoc

Texas A&M University–San Antonio

- ²Vaughn, G, Ballou L, Brankovits D, Chávez Solís E, ³Calderón-Gutiérrez F, Iliffe TM, Simões N, and **Borda E**. [Oral]. *Insights into subterranean connectivity within the aquifer of the Yucatán Peninsula: population genetics and distribution of Typhlatya species*. Texas Groundwater Invertebrate Forum–San Antonio, TX. 2025
- ¹Mashaan M, ¹Bragg D, ³Calderón-Gutiérrez F and **Borda E** [Oral]. *Biodiversity assessment of the metazoan communities of undisturbed and disturbed cenotes of the Yucatán Peninsula*. Texas Groundwater Invertebrate Forum–San Antonio, TX. 2025
- ¹Casias M, ¹Grizzle C, ¹Rodríguez M, ³Calderón-Gutiérrez F and **Borda E** [Poster]. *Toward speleogenomic pipelines: characterizing biodiversity from species to communities*. Texas Groundwater Invertebrate Forum–San Antonio, TX. 2025
- ¹Mashaan M, ¹Bragg D, ³Calderón-Gutiérrez F and **Borda E** [Oral]. *Biodiversity assessment of the metazoan communities of undisturbed and disturbed cenotes of the Yucatán Peninsula*. A&M–SA Student Research Symposium–San Antonio, TX. ****First Place–Undergraduate Oral Presentation**** 2025
- ²Bernard M and **Borda E** [Oral]. *Diversity and mitogenomics of Chloelia species (Amphinomidae) from biodiversity hotspots*. A&M–SA Student Research Symposium–San Antonio, TX. ****First Place–Graduate Oral Presentation**** 2025

POSTDOC, GRADUATE AND UNDERGRADUATE PRESENTATIONS

- ¹Casias M, ¹Grizzle C, ¹Rodríguez M, ³Calderón-Gutiérrez F and **Borda E** [Poster]. *Toward speleogenomic pipelines: characterizing biodiversity from species to communities*. A&M–SA Student Research Symposium–San Antonio, TX. 2025
- ²Vaughn, G, Ballou L, Brankovits D, Chávez Solís E, ³Calderón-Gutiérrez F, Iliffe TM, Simões N, and **Borda E**. [Oral]. *Insights into subterranean connectivity within the aquifer of the Yucatán Peninsula: population genetics and distribution of *Typhlatya* species*. Society for Integrative and Comparative Biology–Atlanta, GA. 2025
- ³Calderón-Gutiérrez F, ²Rohret S, ¹Bragg D and **Borda E**. *Using genomic tools to enhance biodiversity assessments in anchialine caves*. Society for Integrative and Comparative Biology–Atlanta, GA. 2025
- ¹Mashaan M, ¹Bragg D, ³Calderón-Gutiérrez F³ and **Borda E**. [Poster] *Biodiversity assessment of the metazoan communities of undisturbed and disturbed cenotes of the Yucatán Peninsula*. Society for Integrative and Comparative Biology–Atlanta, GA. 2025

RECENT COLLABORATIVE PRESENTATIONS

- Yáñez Rivera B, **Borda E**, Calderón-Gutiérrez F³ and Gómez S. [Poster] *Copépodos del género Apodopsyllus Huys, 2009 (Harpacticoida: Paramesochridae) del cenote Crustacea, Sistema Aayin Aak, Quintana Roo*. Reunión Nacional Alejandro Villalobos–Mérida, Yucatán, México. 2025
- Martínez A, Dragomir C, Cancellario T, Adamo M, Angyal D, Anicic N, Aouadi A, Araújo TQ, Arifin U, Balázs G, Ballou L, Bass D, Bogomolova M, **Borda E**, Cabello-Yeves PJ, ³Calderón-Gutiérrez F, Calvaruso S, Çakıl ZV, Cañadas LE, Centurião TD, Chávez-Solís EM, Chertoprud EM, Chi Y, Colinas N, Copilaş-Ciocianu D, Cresi L, Dányi L, Davidson AM, Di Lorenzo T, Díez Y, Digenis M, Du Preez G, Durucan F, Evtimova, VV, Ferrari, E, Ferreira R, Taybi A, Fresno-López Z, Fujita Y, Galli, A, García-Gómez G, Garlaschè G, Garzoli L, Gasiorowski L, Gavish-Regev E, Gerovasileiou V, Goldschmidt T, Gonzalez, BC, Grego, J, Griebler, C, Guseva P, Hamed MH, Humphreys WF, Husana DE, Iepure S, Iliffe TM, Ivanenko VN, Jalžić B, Kajihara H, Kakui K, Karpowicz M, Katsushima H, Kitayama H, Kovač-Konrad P, Lamson M, Lasso CA, Liang S, Lopez MDL, Lunghi E, Mabrouki Y, Majdi N, Malek-Hosseini MJ, Mercado-Salas N, Messana G, Middleton JA, Moldovan OT, Nataša M, Murakami R, Nakata M, Nicolosi G, Niemiller M, Okanishi M, Paragamian K, Park J, Pavlek M, Peralta M, Perina G, Petrunina A, Pešić V, Proudlove GS, Rasidifard M, Rasoloariniaina JR, Reddell JR, Rendoš M, Rodríguez-Gijón A, Rubio-López A, Sa-ardit P, Saccò M, Sakihara T, Sánchez N, Saticq MB, Savić A, Septelka R, Setubal RB, Sforzi T, Shaik S, Shimomura M, Simov N, Stemme T, Suhling F Thapa B, Trujillo D, Weber D, Yamao H, Yamasaki H, Yurikova D, Zaupa S, Zhao Y, Moosdorf N, Brankovits D, Rosati I, Tarallo A, Mammola S, Fontaneto D. [Oral] *Stygofauna Mundi: a global comprehensive biodiversity database of groundwater-related habitats across marine and freshwater realms*. 26th International Conference on Subterranean Biology and 6th International Conference on Anchialine Ecosystems–Sardinia, Italy. 2024

PROFESSIONAL AFFILIATIONS

American Academy of Underwater Sciences (AAUS); Society for Systematic Biologists (SSB); Society for Integrative and Comparative Biology (SICB); Evolution; International Society of Subterranean Biology

MEDIA AND OUTREACH

<i>Descubriendo el acuífero a través de su fauna.</i> co-presentation Borda and Calderón-Gutiérrez [In Spanish] to local community in Playa del Carmen, Quintan Roo, Mexico. Host: <i>Cenotes Urbanos</i>	2025
<i>Scientific scuba diving? Texas A&M–San Antonio can teach you how to do it.</i> San Antonio Express News. S.A. May 29 (A&M–SA Scientific Diving course)	2025
<i>On the Record with Randy Beamer</i> , KLRN Television. January 16 (Borda)	2025
<i>Completely different world.</i> San Antonio Express News. S.A. Life Section E. January 4 (Borda Lab)	2025
<i>Beneath the Surface.</i> The Growler. December 10 (Borda Lab)	2024
<i>Beneath the Surface.</i> A&M SA Today. November 20 (Borda Lab)	2024
<i>Cave of Crustaceans Crawling with HUGE Remipedes!</i> BlueWorldTV (YouTube). June 1 (Calderon-Gutierrez)	2024
<i>Strip searches, Alien creatures, and Giant Holes - Day 1 in Mexico.</i> DiveTalk (YouTube). June 23 . (Borda Lab)	2023
<i>Deep Exploration, surveying, and a new Cenote! - Day 2 in Mexico.</i> DiveTalk (YouTube). July 7 . (Borda Lab)	2023
<i>Scorpions, giant spiders, and a new cool cave to explore - Day 3 in Mexico.</i> DiveTalk (YouTube). July 28 . (Borda Lab)	2023
<i>We found an underwater Lair! - Day 4 in Mexico.</i> DiveTalk (YouTube). September 1 . (Borda Lab)	2023

CERTIFICATIONS

<i>Specialty Diver–Advanced Buoyancy Control, Basic and Advanced Underwater Navigation, RAPID Rescue, Deep Sport Diving, Narcosis Management, Limited Visibility training–A&M-SA, San Antonio, TX</i>	2025
<i>Divers Alert Network Diver First Aid–First Aid, CPR, AED, and Oxygen Administration–A&M-SA, San Antonio, TX</i>	2025
<i>American Academy of Underwater Sciences Scientific Diver training</i> , Scripps Institution of Oceanography–La Jolla, CA	2008
<i>Open Water Diver.</i> SCUBA Schools International, Adventure Sports Inc.–Auburn, AL	2008
<i>Specialty Diver–Stress and Rescue.</i> SCUBA Schools International, Adventure Sports Inc.–Auburn, AL	2008
<i>Specialty Diver–Enriched Air Nitrox.</i> SCUBA Schools International, Adventure Sports Inc.–Auburn, AL	2008

WORKSHOPS AND OTHER TRAINING

<i>Facilitating Research.</i> National Research Mentoring Network. University of Wisconsin–Madison–Madison, WI	2018
<i>20th Annual Teaching & Learning in Higher Education Wakonse South Conference. “Activating Student Learning”–Burnet, TX</i>	2017
<i>IndoPacific Polychaete Workshop.</i> Natural History Museum–Paris, France	2016
<i>Bioinformatics and Transcriptomics</i> , Auburn University–Auburn, AL	2013
<i>Fall Marine Taxonomy Workshop: Introduction to the Polychaetes</i> , Florida Association of Benthologists–Tampa, FL	2012
<i>Workshop on Molecular Evolution</i> , Marine Biological Laboratory–Woods Hole, MA	2009
<i>University Development Linkage Project USAID Certificate</i> , Institute for the Conservation of Tropical Environments–Stony Brook, NY / Antananarivo, Madagascar	1996