**LAUREN E. FUESS, Ph.D.**

Assistant Professor

Texas State University

San Marcos, TX 78640

e-mail: lfuess@txstate.edu

website: fuesslab.wp.txstate.edu

**EDUCATION**

PhD, University of Texas at Arlington, Quantitative Biology **2013-2018**

B.S., College of Charleston, Marine Biology **2008-2012**

**ACADEMIC APPOINTMENTS**

Assistant Professor, Texas State University **2020-present**

Postdoctoral Research Associate , University of Connecticut **2018-2020**

Graduate Assistant, University of Texas at Arlington **2013-2018**

Researcher, Marine Invasive Species Lab, Discovery Bay, Jamaica **2012-2013**

**FUNDED GRANTS/CONTRACTS** total awarded ~ $2,335,000

National Science Foundation (**2025-2030**). *CAREER: Characterizing the mechanisms linking bleaching recovery to pathogen susceptibility in a model cnidarian system*. **PI: L. Fuess***.* **~$675,000**. *budget cut 41% due to NSF reductions*

Florida Department of Environmental Protection (**2024-2025**). *An integrative approach to identify and experimentally validate environmental variables which affect SCTLD outcomes.* PI: N. Jones (NSU), co-PI: L. Fuess **$61,223**

Florida Department of Environmental Protection (**2024-2025**). *An Integrative 'Omic Approach Leveraging Historical SCTLD Data to Identify Predictive Markers of SCTLD Resistance* PI: L. Fuess, co-PIs: G. Klinges (ASU), A. Veglia (UPRM), A. Rossin (UM). **$178,703**

National Science Foundation (**2023-2025**). *RAPID: Leveraging a natural bleaching event to assess links between bleaching and disease*. PI: L. Fuess, co-PI: S. Gignoux-Wolfsohn (UML). **$199,134**

 **Supplement:** GEO-REPS DCL (**2024-2025**). *Supporting one postbac student @ UML*. **$46,250**

National Science Foundation (**2024-2026**). *BRC-BIO: Establishing Astrangia poculata as a study system to understand how multi-partner symbiotic interactions affect pathogen response in cnidarians*. PI: L. Fuess, co-PI: K. Sharp (RWU). **$490,280**

National Science Foundation (**2023-2025**). *Planning: CREST Center in Biological Informatics*. PI: L. Fuess, co-PI: C. Gabor (TXST). **$199,960**

Florida Department of Environmental Protection (**2023-2024**). *Tracking Bacterial, Viral, and Gene Expression Shifts throughout SCTLD Development in the Dry Tortugas*. PI: L. Fuess, co-PIs: G. Klinges (ASU), D. Holstein (LSU), A. Veglia (UPRM). **$259,253**

MARC Instrumentation Grant (**2022**). *Acquisition of tissue processing and embedding machines to produce fixed-paraffin-embedded blocks of biological tissues.* PI: M. Huertas (TXST), co-PI: L. Fuess **$52,500**

Paul M. Angell Foundation Grant (**2021-2022**). *Investigating biomarkers of resistance to Stony Coral Tissue Loss Disease.* PI: S. Gignoux-Wolfsohn (UML); Senior Personnel: L. Fuess **$75,000**

Gulf Research Program Early Career Researcher Fellowship (**2021-2023**). PI: L. Fuess **$76,000**

TXST ORSP Research Accelerator Fund (**2021-2023**). *Effects of aquatic nitrite on maternal immune transfer and offspring development in a live-bearing species*. co-PIs: M. Huertas, L. Fuess & C. Gabor. **$16,487**

Texas State University Research Enhancement Program (**2021-2022**). *Identifying predictors of host response to a novel coral disease*. PI: L. Fuess. **$8,000**

**RESEARCH FELLOWSHIPS** total awarded ~ $205,000

American Association of Immunologists, Intersect Fellowship **2019**

National Science Foundation, Graduate Research Fellowship **2015**

Fulbright Foundation, Full Grant- Jamaica **2012**

**PUBLICATIONS** h-index: 16; citations: 812

\* - undergraduate author, + - graduate author, $ - equally contributing author

**24.** Bolnick, DI, **Fuess LE**, Graham AL, Khan I, Steinel NC, Vaziri G. 2025. Evolutionary Immunology. *Annual Review of Ecology, Evolution, and Systematics*. 56:27–51. DOI: 10.1146/annurev-ecolsys-102723-043048

**23.** Hu J, Weber JN, **Fuess LE**, Steinel NC, Bolnick DI, Wang M. 2025*.* A spectral framework to map QTLs affecting joint differential networks of gene co-expression. *PLoS Computational Biology.* 21: e1012953. DOI: 10.1371/journal.pcbi.1012953

**22.** Emery MA, Gutierrez-Andrade D, Changsut IV+ , Swain H, **Fuess LE**, Mydlarz LD. 2024. Immune System Components in Cnidarians. In: Reference Module in Life Sciences. Elsevier Ltd. DOI: 10.1016/B978-0-128-24465-4.00122-8

**21.** Diaz de Villegas SC+$, Borbee E$, Abeldaki P\*, **Fuess LE**. 2024*.* Prior heat stress affects pathogen susceptibility in the model cnidarian, *Exaiptasia diaphana*. *Communications Biology*. 7:1328. DOI: 10.1038/s42003-024-07005-8

**20.** Changsut IV+, Borbee E, Womack HR\*, Shickle A, Sharp KH, **Fuess LE**. 2024. Photosymbiont density is correlated with constitutive and induced immunity in the facultatively symbiotic coral, *Astrangia poculata*. *Integrative and Comparative Biology*. icae036. DOI: 10.1093/icb/icae036

**19.** Villafranca N+, Changsut IV+, Diaz de Villegas SC+, Womack HR\*, **Fuess LE**. 2023. Characterization of trade-offs between immunity and reproduction in *Astrangia poculata*. *PeerJ*. 11: e16586. DOI: 10.7717/peerj.16586

**18. Fuess LE** and Bolnick DI. 2023. Single-cell RNA sequencing of teleost immune organ reveals micro-evolution of immune system. *Genome Biology & Evolution*. 15: evad053. DOI: 10.1093/gbe/evad053.

**17.** Davies S. *et al.* 2023. Building consensus around the assessment and interpretation of Symbiodiniaceae diversity. *PeerJ*. 11: e15023. DOI: 10.7717/peerj.15023.

**16.** Changsut IV+, Womack HR\*, Schickle A, Sharp KH, **Fuess LE.**2022. Comparison of immune phenotypes of colonies of *Astrangia poculata* with variable symbiont densities. *Biology Letters.* 18. DOI: 10.1098/rsbl.2022.0273

**15.** Weber JN, Steinel NC, Peng F, Shim KC, Lohman BK, **Fuess LE**, Subramanian S, de Lisle S, Bolnick DI. 2022. Evolutionary gain and loss of a pathological immune response to parasitism. *Science*. 377: 1206-1211. DOI: 10.1126/science.abo3411

**14.** Hund AK, **Fuess LE**, Kenney ML, Maciejewski MF, Marini JM, Shim KC, Bolnick DI. 2022*.*. Population-level variation in parasite resistance due to differences in immune initiation and rate of response. *Evolution Letters.* 6: 162-177. DOI: 10.1002/evl3.274

**13. Fuess LE**, Weber JN, den Haan S, Steinel NC, Shim KC, Bolnick DI. 2021. Between-population differences in constitutive and infection-induced gene expression in threespine stickleback. *Molecular Ecology.* 30: 6791–6805. DOI: 10.1111/mec.16197.

**12. Fuess LE,** den Haan S, Ling F, Weber JN, Steinel NC, Bolnick DI. 2021. Immune gene expression covaries with gut microbiome composition in stickleback. *mBio*. 2: e00145-21. DOI: 10.1128/mBio.00145-21

**11.** MacKnight N, Cobleigh K, Lasseign, D, Chaves-Fonnegra A, Gutting A, Dimos BA, Antoine J, **Fuess LE**, Ricci CA, Butler CC\*, Muller EM, Mydlarz LD, Brandt, ME. 2021. Microbial dysbiosis reflects disease resistance in diverse coral species. *Communications Biology.* 4: 679. DOI: 10.1038/s42003-021-02163-5

**10.** **Fuess LE**, Palacio-Castro AM, Butler CC\*, Baker AC, Mydlarz LD. 2020. Increased algal symbiont density reduces host immunity in a threatened Caribbean coral species, *Orbicella faveolata*. *Frontiers in Ecology and Evolution*.8: 369. DOI: 10.3389/fevo.2020.572942

**9. Fuess LE,** Butler CC\*, Brandt ME, Mydlarz LD. 2020. Investigating the roles of transforming growth factor-beta on immune response of *Orbicella faveloata*, a sceleractinian coral. *Developmental and Comparative Immunology*.107: 103639. DOI: 10.1016/j.dci.2020.103639

**8.** Dimos B, Mahmud SA, **Fuess LE**, Mydlarz LD, Pellegrino MW. 2019. Uncovering a mitochondrial unfolded protein response in corals and its role in adapting to a changing world. *Proceedings of the Royal Society B: Biological Sciences* 286: 20190470. DOI: 10.1098/rspb.2019.0470

**7.** Ricci CA, Kamal AMH, Chakrabarty JK, **Fuess LE**, Mann WT, Jinks LR\*, Brinkhuis V, Chowdhury SM, Mydlarz LD. 2019. Proteomic investigation of a diseased gorgonian coral indicated disruption of essential cell function and investment in inflammatory and immune processes. *Integrative and Comparative Biology*. icz107. DOI: 10.1093/icb/icz107

**6. Fuess LE**, Mann WT, Jinks LR\*, Brinkhuis V, Mydlarz LD. 2018. Transcriptional analyses provide new insight into the late-stage immune response of a diseased Caribbean coral. *Royal Society Open Science*. 5: 172062. DOI: 10.1098/rsos.172062

**5.** Williams LM, **Fuess LE**, *et al.* 2018. A conserved Toll-like receptor-to-NF-κB signaling pathway in the endangered coral *Orbicella faveolata. Developmental and Comparative Immunology*.79: 128-136. DOI: 10.1016/j.dci.2017.10.016

**4. Fuess LE**, Pinzon JC, Weil E, Ginshpon RD, Mydlarz, LD. 2017. Life or death: Disease resistant coral species activate autophagy following immune challenge. *Proceedings of the Royal Society B: Biological Sciences*. 284: 20170771. DOI: 10.1098/rspb.2017.0771

**3. Fuess LE**, Pinzon JC, Weil E, Mydlarz, LD. 2016. Associations between transcriptional changes and protein phenotypes provide insights into immune regulation in corals. *Developmental and Comparative Immunology*. 62: 17-28.DOI: 10.1016/j.dci.2016.04.017

**2.** Mydlarz LD, **Fuess LE**, Mann WT, Pinzon JC, and Gochfeld, DJ. 2016. Cnidarian immunity: from genomes to phenomes. In: The Cnidaria, past, present and future. The world of Medusa and her sisters. Editors: S. Goffredo and Z. Dubinsky. Springer.

**1. Fuess LE**$, Eisenlord ME$, Closek CJ$, Tracy AM$, Mauntz R$, Gignoux-Wolfsohn S$, et al. 2015. Up in arms: Immune and nervous system response to sea star wasting disease. *PLoS ONE*. 10: e0133053. DOI: 10.1371/journal.pone.0133053

**Submitted/In review/In prep manuscripts:**

**25.** Diaz de Villegas SC+, Abeldaki P\*, **Fuess LE**. *in review*. Differential regulation of apoptosis and autophagy and changes in Symbiodiniaceae energy transfer mediate the link between bleaching and disease in Exaiptasia diaphana. *Molecular Ecology* (available on [BioRxiv](https://www.biorxiv.org/content/10.1101/2025.04.21.649845v1.full.pdf))

**26.** Flanagan BA, **Fuess LE**, Vrtilek M, Roth-Monzon A, Bolnick DI. *in review*. Macroevolutionary changes in gene expression response to an immune stimulus across the diversity of fishes. *Molecular Biology & Evolution* (available on BioRxiv)

**27.** Rodgers ML, Subramanian S, **Fuess LE**, He W, Scarpino SV, Roth-Monzon A, Jeffries D, Seignon M, Milligan-McClellan K, Carrier R, Steinel NC, Bolnick DI. *in revision*. Rates of evolution differ between cell types identified by single-cell RNAseq in threespine stickleback. (available on BioRxiv)

**28.** Borbee EM, Changsut IV+, Bernabe K, Shickle A, Sharp KH, **Fuess LE**. *in review*. Coral larvae have unique transcriptomic responses to pathogenic and probiotic bacteria. *Coral Reefs*.

**29.** **Fuess LE**, Hund AK, Kenney ML, Maciejewski MF, Marini JM, Bolnick DI. *in prep*. Changes in gene regulation are associated with the evolution of resistance to a novel parasite. **Target Journal:** *Frontiers in Immunology*

**FINAL REPORTS**

1. **Fuess, LE,** Klinges G, Veglia A,Rossin A, Studivan M, Ushijima B. 2025. An Integrative 'Omic Approach Leveraging Historical SCTLD Data to Identify Predictive Markers of SCTLD Resistance. Florida DEP. Miami, FL. 69.
2. Jones NP, **Fuess LE**, Dutton S, Shilling E+. 2025. An integrative approach to identify and experimentally validate environmental variables which affect SCTLD outcomes. Florida DEP. Miami, FL. 30.
3. Klinges G, **Fuess LE**, Veglia A, Rossin A, Holstein D. 2024. Tracking Bacterial, Viral, and Gene Expression Shifts throughout SCTLD Development in the Dry Tortugas. Florida DEP. Miami, FL. 37.

**PRESENTATIONS**

T- talk, P- poster, presenting author, +student author

74. Diaz de Villegas SC=, Abdelbaki P=, Tjandra N=, Shilling EN=, Gignoux-Wolfsohn S, Harper L, **Fuess LE.** 2025. Characterizing the impacts of environmentally-induced symbiosis breakdown/recovery on pathogen defense across cnidarians. Animal-Microbe Gordon Research Conference. Portland, ME. (T)- *invited short talk selected from abstracts*

73. Tjandra N+ & **Fuess LE.**  2025. Impacts of temperature stress on coral symbiosis and immunity using the model *Exaiptasia diaphana*. Benthic Ecology Meeting. Mobile, AL. (T)

72. Borbee EN, Jalil R+, **Fuess LE**. 2025. Transcriptomics reveal energetic, immune tradeoffs associated with coral-algal symbiosis. Benthic Ecology Meeting. Mobile, AL. (T)

71. Acero JD+, Martinez, AP+, Changsut I+, **Fuess LE**. 2025. Characterizing baseline immunity across various populations in *Astrangia poculata*. Texas State Biology Department Colloquium. (T)

70. Oviedo L+, Borbee EM, **Fuess LE**. 2025. Using a multi-omics approach to investigate immune regulation of host-symbiont dynamics. Texas State Biology Department Colloquium. (T)

69. Tjandra N+ & **Fuess LE.**  2025. Investigating the impacts of temperature stress on coral-algal symbiosis and immunity using the cnidarian model *Exaiptasia diaphana*. Texas State Biology Department Colloquium. (T)

68. Shilling E+, Harper L, Gignoux-Wolfsohn S, **Fuess LE**. 2025. Gene expression of corals throughout a stony coral tissue loss disease outbreak indicates varying mechanisms of resistance. Texas State Biology Department Colloquium. (T)

67. Diaz de Villegas SC+, Abdelbaki P=, **Fuess LE**. 2025. Differential regulatioin of apoptosis and autophagy mediates the link between bleaching and disease in *Exaiptasia diaphana*. Texas State Biology Department Colloquium. (T)

66. Changsut I+, Borbee EM, Sharp KS, **Fuess LE**. 2025. Transcriptomic analysis of immune system ontogeny in a temperate coral. Society for Integrative and Comparative Biology Annual Meeting. Atlanta, GA. (T)

65. Borbee EN, Jalil R+ , **Fuess LE**. 2025. Investigation of immune, energetic tradeoffs associated with the coral-algal symbiosis. Society for Integrative and Comparative Biology Annual Meeting. Atlanta, GA. (T)

64. Acero JD+, Martinez, AP+ , Changsut I+, **Fuess LE**. 2025. Variations in key immune factors across latitudinally different populations of *Astrangia poculata*. Society for Integrative and Comparative Biology Annual Meeting. Atlanta, GA. (P)

63. Martinez AP+, Acero, JD+, Changsut I+, **Fuess LE**. 2025. Prophenoloxidase as an immune indicator in geographically distinct populations of *Astrangia poculata*. Society for Integrative and Comparative Biology Annual Meeting. Atlanta, GA. (P)

62. **Fuess LE**, Shilling E+ , Diaz de Villegas SC+ , Harper L, Gignoux-Wolfsohn S. 2025. Long-term sampling provides powerful insight regarding mechanisms of co

61. Flanagan B, **Fuess LE**, Vrtilek M, Monzon A, Bolnick DI. 2024. Gene expression evolution in response to an immune adjuvant across the phylogeny of ray-finned fishes. 3rd Joint Congress on Evolutionary Biology. Montreal, Canada (T)

60. Diaz de Villegas SC+, Shilling E+, Harper L, Gignoux-Wolfsohn S, **Fuess LE**. 2024. Leveraging a natural bleaching event to investigate the mechanistic link between bleaching and disease in tropical corals. European Coral Reef Society Meeting. Naples, Italy. (T)

59. Shilling E+, Harper L, Gignoux-Wolfsohn S, **Fuess LE**. 2024. Gene expression of corals throughout a stony coral tissue loss disease outbreak indicates varying mechanisms of resistance. European Coral Reef Society Meeting. Naples, Italy. (T)

58. **Fuess LE**, Shilling E+, Harper L, Gignoux-Wolfsohn S. 2024. Leveraging historic data and long-term monitoring to identify markers of coral multi-stressor resilience. European Coral Reef Society Meeting. Naples, Italy. (T)

57. Tjandra, N+, **Fuess LE**. 2024. Investigating the impacts of environmentally-induced dynamic changes in symbiont density on cnidarian immunity. Benthic Ecology Meeting. Charleston, SC. (P)

56. Diaz de Villegas SC+, Abdelbaki P=, **Fuess LE**. 2024. Characterizing the mechanisms linking sequential heat stress and disease susceptibility in cnidarians. Benthic Ecology Meeting. Charleston, SC. (T)

55. Shilling E+, Klinges G, **Fuess LE**. 2024. Gene expression of corals throughout the stony coral tissue loss disease outbreak in the Dry Tortugas National Park, Florida. Benthic Ecology Meeting. Charleston, SC. (T)

54. Changsut I+, Borbee EM, **Fuess LE**. 2024. Characterizing immunity through larval development in the temperate coral, *Astrangia poculata*. Benthic Ecology Meeting. Charleston, SC. (T)

53. Borbee EM, Oviedo L+, **Fuess LE**. 2024. Insight on regulation of the coral-algal symbiosis using a multi-omics approach. Benthic Ecology Meeting. Charleston, SC. (T)

52. Shilling E+, Sienkiewicz B+, Aaronson F, Harper L, Veglia A, Klinges G, Gignoux-Wolfsohn S, **Fuess LE**. 2024. A time series-based approach to characterize coral holobiont adaptation following SCTLD outbreaks. Benthic Ecology Meeting. Charleston, SC. (T)

51. Abdelbaki, P+, Borbee EM, **Fuess LE**. 2024. Tracking symbiont uptake rates and immunity in a model anemone *Exaiptasia diaphana*. Texas State Biology Department Colloquium. (P)

50. Oviedo L+, Borbee EM, **Fuess LE**. 2024. Using a facultatively symbiotic coral to investigate immune regulation of host-symbiont dynamics. Texas State Biology Department Colloquium. (P)

49. Changsut I+, Womack HR+, Schickle A, Sharp KH, **Fuess LE**. 2024. Pathogen challenge reveals clear links between photo-symbiont density and host immunity in the facultatively symbiotic coral, *Astrangia poculata*. Texas State Biology Department Colloquium. (T)

48. **Fuess LE**. 2024. Facultatively symbiotic species as models for exploring immune-symbiosis interplay. Society for Integrative and Comparative Biology Annual Meeting. Seattle, WA. (T)- *symposium talk*

47. Oviedo L+, Borbee EM, **Fuess LE**. 2024. Using a facultatively symbiotic coral to investigate immune regulation of host-symbiont dynamics. Society for Integrative and Comparative Biology Annual Meeting. Seattle, WA. (P)

46. Borbee EM, Oviedo L+, **Fuess LE**. 2024. A multi-omics approach investigating regulation of symbiont state in a facultatively symbiotic coral. Society for Integrative and Comparative Biology Annual Meeting. Seattle, WA. (T)

45. Strike, MJ+, Borbee EM, Diaz de Villegas SC+, **Fuess LE**. 2024. Immune response to temperature and light-induced bleaching in the model anemone *Exaiptasia diaphana*. Society for Integrative and Comparative Biology Annual Meeting. Seattle, WA. (P)

44. Abdelbaki, P+, Borbee EM, **Fuess LE**. 2024. Tracking symbiont uptake rates and immunity in a model anemone *Exaiptasia diaphana*. Society for Integrative and Comparative Biology Annual Meeting. Seattle, WA. (P)

43. Changsut I+, Ushijima B, **Fuess LE**. 2023. The potential for immunological priming in the hard coral, *Astrangia poculata*. SACNAS National Diversity in STEM Conference. Portland, OR (P)

42. **Fuess LE**. 2023. Symbiommunity lab: investigating symbiosis-immune interplay in vulnerable cnidarians. Gulf of Mexico Reefs Conference. Galveston, TX (T) *lightning talk*

41. Flanagan B, **Fuess LE**, Vrtilek M, Bolnick DI. 2023. Ray-finned fish gene expression evolution in response to an immunological adjuvant. Evolution Meeting. Albuquerque, NM. (P)

40. Shilling E+ & **Fuess LE**. 2023. Evolution of coral physiology and holobiont composition in response to stony coral tissue loss disease in the Caribbean. Evolution Meeting. Albuquerque, NM. (P)

39. **Fuess LE,** Hund AK, Bolnick DI. 2023. Variation in immune response entails changes in both timing and magnitude of gene expression. Evolution Meeting. Albuquerque, NM. (T)

38. Shilling E+ & **Fuess LE**. 2023. Evolution of the coral holobiont makeup and physiology in response to disease pressure in the Caribbean. Benthic Ecology Meeting. Miami, FL. (P)

37. Womack HR+, Borbee E, **Fuess LE.** 2023. Investigating immunity post heat stress in the model cnidarian, *Exaiptasia diaphana*. Benthic Ecology Meeting. Miami, FL. (P)

36. Changsut I+, Womack HR+, Schickle A, Sharp KH, **Fuess LE**. 2023. Characterizing the induced immune response in the facultatively symbiotic coral, *Astrangia poculata*. Benthic Ecology Meeting. Miami, FL. (T)

35. Diaz de Villegas SC+, Peyton Abdelbaki+, **Fuess LE**. 2023. Prior heat stress affects disease susceptibility in the cnidarian model *Exaiptasia diaphana*. Benthic Ecology Meeting. Miami, FL. (T)

34. Borbee E, Changsut I+, Bernabe K+, Schickle A, Nelson D, Sharp KH, **Fuess LE**. 2023. Coral larvae show unique transcriptomic responses to pathogen and probiotic exposure. Benthic Ecology Meeting. Miami, FL. (T)

33. Diaz de Villegas SC+, Peyton Abdelbaki+, **Fuess LE**. 2023. Investigating the role of bleaching in cnidarian host disease susceptibility using the model *Exaiptasia diaphana.* Texas State Biology Department Colloquium. (T)

32. **Fuess LE,** Hund AK, Bolnick DI. 2023. Investigating mechanisms of variation in parasite resistance using experimental immune challenge. Society for Integrative and Comparative Biology Annual Meeting. Austin, TX. (T)

31. Borbee E, Changsut I+, Bernabe K+, Schickle A, Nelson D, Sharp KH, **Fuess LE**. 2023. New insights on immunity in temperate coral larvae in response to pathogenic and probiotic bacteria. Society for Integrative and Comparative Biology Annual Meeting. Austin, TX. (T)

30. Villafranca N+, Diaz de Villega SC+, Changsut I+, Womack HR+, Schickle A, Sharp KH, **Fuess LE**. 2023. Investigation of trade-offs associated with immunity and reproduction in *Astrangia poculata*. Society for Integrative and Comparative Biology Annual Meeting. Austin, TX. (P)

29. Womack HR+, Borbee E, **Fuess LE**. 2023. Investigating immunity post heat stress in the model cnidarian, *Exaiptasia diaphana*. Society for Integrative and Comparative Biology Annual Meeting. Austin, TX. (P)

28. Changsut I+, Womack HR+, Schickle A, Sharp KH, **Fuess LE**. 2023. A comparison of constitutive and induced immune response in coral of variable symbiont densities. Society for Integrative and Comparative Biology Annual Meeting. Austin, TX. (T)

27. Diaz de Villegas SC+ & **Fuess LE**. 2023. Investigating the effects of bleaching on host disease susceptibility in a model Cnidarian. Society for Integrative and Comparative Biology Annual Meeting. Austin, TX. (P)

26. Villafranca N+, Diaz de Villega SC+, Changsut I+, Womack HR+, Schickle A, Sharp KH, **Fuess LE**. 2022. Investigation of trade-offs associated with immunity and reproduction in *Astrangia poculata*. SACNAS National Diversity in STEM Conference. San Juan, PR. (P)

25. **Fuess LE.** 2022. Complex associations between immunity and symbiont density in the facultatively symbiotic coral, Astrangia poculata. International Symbiosis Symposium/Holobiont Joint Meeting. Lyon, France (T)

24. **Fuess LE** & Changsut IC+. 2022. Investigating the effects of variable symbiont density on immune response in the facultatively symbiotic coral, *Astrangia poculata*. Benthic Ecology Meeting: Portsmouth, NH (T)

23. Changsut IC+, Schickle A, Sharp K, **Fuess LE**. 2022. Comparison of immune phenotypes of colonies of Astrangia poculata with variable symbiont densities. Benthic Ecology Meeting; Portsmouth, NH (T)

22. Changsut IC+, Schickle A, Sharp K, **Fuess LE**. 2022. Comparison of immune phenotypes of colonies of Astrangia poculata with variable symbiont densities. Texas State Biology Department Colloquium. (T)

21. Changsut IC+, Schickle A, Sharp K, **Fuess LE**. 2022. Comparison of immune phenotypes of colonies of Astrangia poculata with variable symbiont densities. Society for Integrative and Comparative Biology Annual Meeting. (T) *virtual due to COVID-19*

20. **Fuess LE**, Bolnick DI. 2022. Single cell transcriptomics reveal microevolution of immune cells across populations of three-spined stickleback. Society for Integrative and Comparative Biology Annual Meeting. (T) *virtual due to COVID-19*

19. **Fuess LE**. 2021. Meta-analysis reveals complex relationships between symbiosis, immunity, and the transforming growth factorβ pathway in a Caribbean coral. 14th International Coral Reef Symposium. (T) *virtual due to COVID-19*

18. **Fuess LE**. 2021. Symbiommunity Lab: Understanding symbiosis-immune interplay in Cnidarians. Temperate Coral Research Conference. (T) *virtual due to COVID-19*

17. Changsut IC+, Pugh J+, Schickle A, Sharp K, **Fuess LE**. 2021. Comparison of immune phenotypes of colonies of Astrangia poculata with variable symbiont densities. Temperate Coral Research Conference. (T) *virtual due to COVID-19*

16. **Fuess LE**, Bolnick, DI. 2021. Single cell transcriptomics reveal microevolution of immune cells across populations of three-spined stickleback. Evolution. (T) *virtual due to COVID-19*

15. **Fuess LE**, den Haan S, Ling F, Weber J, Steinel NC, Bolnick DI. 2021. Immune gene expression covaries with gut microbiome composition in stickleback. American Society of Naturalists Virtual Asilomar. (T) *virtual due to COVID-19*

14. **Fuess LE**, den Haan S, Ling F, Weber J, Steinel NC, Bolnick DI. 2021. Immune gene expression covaries with gut microbiome composition in stickleback. Society for Integrative and Comparative Biology Annual Meeting. (T) *virtual due to COVID-19*

13. **Fuess LE**, Weber J, Steinel NC, den haan S, Bolnick DI. 2020. Transcriptomic analyses of *Gasterosteus aculeatus* parasite response reveal mechanisms of resistance. Society For Integrative And Comparative Biology Annual Meeting; Austin, TX (T)

12. **Fuess LE**, Palacio A, Butler CC+, Brandt ME, Baker AC, Mydlarz LD. 2019. Multiple experiments reveal complex relationships between symbiosis, immunity, and the transforming growth factor-beta pathway in a Caribbean coral, *Orbicella faveolata*. Society For Integrative And Comparative Biology Annual Meeting; Tampa, FL (T)

11. **Fuess LE** & Bolnick DI. 2019. Fibroblast culture and gene editing methods to investigate evolution and cellular mechanisms of parasite resistance in *Gasterosteus aculeatus*. NSF EDGE Grant PI Meeting. Alexandria, VA (P)

10. **Fuess LE**, Webber J, Steinel N, Den Haan S, Bolnick DI. 2019 Transcriptional analysis of the effects of genetic variation on response of *Gasterosteus aculeatus* (three spined stickleback) to a cestode parasite. Evolution; Providence, RI (T)

9. **Fuess LE**, Palacio A, Butler CC+, Brandt ME, Baker AC, Mydlarz LD. 2018. A multi-experiment approach to investigate the relationship between symbiosis, immunity, and the transforming growth factor-beta pathway in a Caribbean coral, *Orbicella faveolata*. International Symbiosis Society Conference; Corvalis, OR (T)

8. **Fuess LE**, Palacio A, Baker AC, Mydlarz LD. 2018. Frenemies: *Symbiodinium* density negatively affects immune response in the Caribbean coral *Orbicella faveolata*. Society For Integrative And Comparative Biology Annual Meeting; San Francisco, CA (T)

7. **Fuess LE**, Pinzon JC, Ricci CA, Weil E, Mydlarz LD. 2017. No free lunch: Implications of symbiotic relationships on the coral immune response via the transforming growth factor-beta signaling pathway. Biomedical & Comparative Immunology Symposium; Fort Lauderdale, FL (T)

6. **Fuess LE**, Mann WT, Brinkhuis V, Stacy C+, Mydlarz LD. 2017. Octocorals demonstrate fitness tradeoffs associated with response to a disease outbreak. Society For Integrative And Comparative Biology Annual Meeting; New Orleans, LA (T)

5. **Fuess LE**, Pinzon JC, Ricci CA, Weil E, Mydlarz LD. 2016 No free lunch: Implications of symbiotic relationships on the coral immune response via the transforming growth factor-beta signaling pathway. International Coral Reef Symposium; Honolulu, HI (T)

4. **Fuess LE**, Pinzon JC, Weil E, Mydlarz LD. 2016. Comparison of immune phenotypes and changes in gene expression provides new insight into pathways of coral immunity. Society For Integrative And Comparative Biology Annual Meeting;

3. **Fuess LE**, Eisenlord ME, Closek CJ, Tracy AM, Mauntz R, Gignoux-Wolfsohn S, Mortish MM, Yoshioka R. A\* farewell to arms: Sea star transcriptome reveals insights into immune response. Ecology of Infectious Marine Diseases Research Coordination Network Meeting; Friday Harbor, WA (T)

2. **Fuess LE**, Jiang L. 2012. Top down and bottom up regulation of community assembly. Ecological Society of America Annual Meeting; Portland, OR (P)

1. **Fuess LE**, Shedlock AM, Wham FC, Dustan P. 2012. A molecular assay for the cause of bleaching in the temperate Atlantic coral species *Oculina arbuscula*. Society For Integrative and Comparative Biology Annual Meeting; Charleston, SC (P)

**INVITED SEMINARS AND WORKSHOPS**

South Texas Evolutionary Genetics and Genomics Conference; Keynote **2025**

Trinity University Biology Seminar Series; Invited Speaker **2025**

University of South Carolina Biology Seminar Series; Invited Speaker **2025**

UT Knoxville Microbiology Seminar Series; Invited Speaker **2025**

University of Arizona EEB Seminar Series; Invited Speaker **2025**

Dauphin Island Sea Lab Seminar Series; Invited Speaker **2024**

College of Charleston Biology Seminar Series; Invited Speaker **2024**

Ohio University Biology Seminar Series; Invited Speaker **2024**

University of North Texas Biology Seminar Series; Invited Speaker **2024**

Michigan State University IBIO Seminar; Invited Speaker **2024**

SICB Symposium- Immunity in the ‘Omics Age; Organizer & Speaker **2024**

Washington State University, School of Biological Sciences Seminar; Invited Speaker **2023**

University of Massachusetts Lowell Biology Department Seminar; Invited Speaker **2023**

University of Houston Biology Department Seminar Series; Invited Speaker **2022**

Symbiodineaceae Workshop; Invited Participant **2021**

American Society of Microbiologists, Texas Branch Meeting; Invited Speaker **2021**

College of the Holy Cross, Biology Department Seminar Series: Invited Speaker **2019**

NSF Reintegrating Biology Workshop; Invited Participant **2019**

University of Connecticut, EEB Departmental Seminar Series; Invited Speaker **2018**

St. Edwards University, Biology Seminar Series: Invited Speaker **2017**

University of Texas at Arlington Mu Sigma Society Meeting; Invited Speaker **2017**

**AWARDS AND SMALL GRANTS**

TXST COSE Millionaire award **2024**

*In recognition of >$1,000,000 research funding over the past 3 fiscal years*

TXST COSE Achievement Award for Scholarly/Creative Activities **2023**

SICB DEDE Lochmiller Award for Early Career Achievement **2023**

SICB DEE Huey Award for Best Student Presentation, *Finalist* **2018**

Beta Phi Chapter, Phi Sigma Biological Honor Society Travel Grant **2017**

Outstanding Graduate Research Award **2016**

Beta Phi Chapter, Phi Sigma Biological Honor Society Travel Grant **2016**

University of Texas Arlington Dean’s Award for Oral Presentation **2016**

NSF Graduate Research Fellowship Honorable Mention **2015**

Beta Phi Chapter, Phi Sigma Biological Honor Society Travel Grant **2015**

**TEACHING EXPERIENCE**

**Courses Designed and Taught**

BIO 4351J/5351J: Comparative Immunology (undergraduate/graduate)  **2021-2022**

BIO 7361F/7327: Ecoimmunology (graduate)  **2021-2024**

**Courses Taught**

BIO 7360Y: Applied Bioinformatics  **2024**

**TRAINEE MENTORSHIP**

***Postdoctoral Supervision***

**Caleb Butler** **2025-present**

**Rachel Howard 2024-2025**

**Utpal Smart**  **2024**

**Current Position:** *Assistant Professor, Texas A&M San Antonio*

**Erin Borbee**  **2021-2025**

**Current Position:** *Assistant Professor, Southwestern University*

***Postbaccalaureate & Technician Supervision***

**Sydney Dutton 2025**

**Sami Wright 2025**

***Graduate Student Supervision at Texas State***

**Kara James** PhD **2025-present**

**Carly Tavers** M.S **2025-present**

**Sofia Diaz de Villegas** PhD **2023-present**

***Dissertation:*** *Characterizing the mechanisms of sequential bleaching and disease in Cnidaria*

**Isabella Changsut** PhD **2023-present**

***Dissertation:*** *Establishing Astrangia poculata as a model for investigating symbiosis-immune interplay*

**Erin Shilling** PhD **2022-present**

***Dissertation:*** *Evolution of coral physiology and holobiont composition in response to stony coral tissue loss disease in the Caribbean*

**Noah Tjandra** M.S **2023-2025**

***Thesis:*** *Investigation of environmental impacts on cnidarian immunity using the model Exaiptasia diaphana*

**Hannah Hughes** M.S. (co-advised w/ Mar Huertas) **2022-2023**

***Thesis:*** *Effect of chronic nitrite exposure on physiology and maternal transfer in Xiphophorus couchianus*

**Sofia Diaz de Villegas** M.S. **2021-2023**

***Thesis:*** *Investigating the roles of symbiosis and bleaching in Cnidarian host disease susceptibility using the model Exaiptasia diaphana*

**Natalie Villafranca** M.S  **2021-2023**

***Thesis:*** *Disentangling the effects of symbiotic state on reproductive-immune trade-offs in a temperate coral*

**Isabella Changsut** M.S **2021-2022**

***Thesis:*** *Investigating the effects of facultative symbiosis on immunity in a temperate coral*

***Supervisory Committee Membership***

**Sam Godwin** PhD; Texas State **2025-present**

**Megan Flanagan** PhD; Texas State **2025-present**

***Dissertation:*** *Glucocorticoids, microbiomes, and immune interactions in amphibians across life stages*

**Amber Busboom** M.S; Texas State **2024-2025**

***Thesis*:** *Quantitative analysis of aquatic polymicrobial populations on the International Space Station*

**M. Maruf Billah** Ph.D; Texas State **2023-present**

***Dissertation:*** *Pathogen odors elicit distinct neurosteroid and behavioral responses in Rainbow trout (*Oncorhynchus mykiss*)*

**Monica Argueta** M.S; Texas State **2022-present**

***Thesis****: Investigating phylogenetic relationships between intradermal mites infesting amphibians in Texas.*

**Amanda Bryant** Ph.D; Texas State  **2021-2023**

***Dissertation:*** *The effects of agricultural practices on the physiology and immune function of larval amphibians*

**Chloe Troupe** M.S.; Texas State **2021-2023**

***Thesis:*** *Differences in gene expression responses to heat shock between warm- and cool-adapted isolates of Batrachochytrium dendrobatidis*

**Chloe Reeves** M.S.; Texas State **2020-2021**

***Thesis:*** *Natural hybridization and introgression of Berberis trifoliolata and Berberis swaseyi in the Edwards Plateau.*

***Undergraduate Student Research Supervised at Texas State***

**Bethany Garr** (visiting student from OLU) **2025**

**Chloe Poenisch 2025-present**

**Amelia Rae Perez 2025-present**

**Kelsie Phelps de Gala 2025-present**

**Adriana Velez-Brunes 2025-present**

**Audrey Reynolds 2025-present**

**Catie Ritchey 2024-present**

**Chavez Gentles 2024-present**

**Eros Baua 2024-present**

**Austin Sorenson 2024-2025**

**Emily Vanderworth 2024-2025**

**Jaime Acero 2024-2025**

**Anabel Martinez 2024**

**Hannah Urofsky 2024**

**Lindsey Kastner 2023-present**

**Roh-Allah Jalil 2023-present**

**Sami Wright 2023-2025**

**Shelby Carrell 2023-2024**

**MJ Strike** (visiting student from Carleton College) **2023**

**Louis Oviedo 2022-2025**

***Senior Thesis:*** *A multi-omics approach investigating the regulation of symbiont state in a facultatively symbiotic coral*

**Peyton Abdelbaki 2022-2024**

***Honors Thesis:*** *Tracking symbiont uptake rates and immunity in a model anemone Exaiptasia diaphana*

**Heaven Hernandez 2022-2023**

**Haley Womack**   **2021-2023**

***Honors Thesis:*** *Investigating the impacts of thermal stress on host constitutive immunity in a model Cnidarian, Exaiptasia diaphana*

**Jordan Pugh**   **2020-2021**

***Senior Project:*** *Examining constitutive variation in immunity in a facultatively symbiotic coral*

***Undergraduate Students Supervised at Other Institutions***

Sophia Aruna University of Connecticut **2020**

Mita Kale University of Connecticut**2019-2020**
Julia Meenan University of Connecticut**2019-2020**
Gillian McNeil University of Connecticut**2019**
Sarah Tsuro University of Connecticut**2018-2020**
Caleb Butler University of Texas, Arlington **2016-2018**
Margaret Park University of Texas, Arlington **2015**

**MENTEE AWARDS** *total monetary value ~ $600,000*

TXST Biology Colloquium Best Undergrad Talk *Jaime Acero* **2025**

John P Eben and Dorothy Eben Elledge Scholarship *Isabella Changsut* **2025**

George H. Meyer Memorial Scholarship *Isabella Changsut* **2025**

Phillip M. Campbell Scholarship *Erin Shilling* **2025**

PEO Scholars Award *Erin Shilling* **2025**

Dissertation Completion Fellowship (declined) *Erin Shilling* **2025**

SACNAS Travel Award *Isabella Changsut* **2024**

SACNAS Travel Award *Jaime Acero* **2024**

SACNAS Travel Award *Louis Oviedo* **2024**

TXST Doctoral Research Support Fellowship *Erin Shilling* **2024**

TXST DOE-EM Fellowship *Erin Shilling* **2024**

Gwen S. Durrenberger Endowment Scholarship *Isabella Changsut* **2024**

Dorothy Coker Research Fellowship *Erin Shilling* **2024**

TXST Biology Colloquium Award, Honorable Mention *Isabella Changsut* **2024**

TXST Undergraduate Research Fellowship *Louis Oviedo* **2023**

TXST Undergraduate Research Fellowship *Peyton Abdelbaki* **2023**

William E. (Henry) Norris Jr. Scholarship *Sofia Diaz de Villegas* **2023**

Howard D. Schulze Biology Scholarship *Sofia Diaz de Villegas* **2023**

SACNAS Travel Award *Isabella Changsut* **2023**

SACNAS Travel Award *Natalie Villafranca* **2023**

John P Eben and Dorothy Eben Elledge Scholarship *Isabella Changsut* **2023**

AMLC Student Grants in Aid of Research *Erin Shilling* **2023**

John P Eben and Dorothy Eben Elledge Scholarship *Erin Shilling* **2023**

Gwen S. Durrenberger Endowment Scholarship *Erin Shilling* **2023**

Dorothy Coker Research Fellowship *Erin Shilling* **2023**

Denison-Koehn Endowed Scholarship in Science *Erin Shilling* **2023**

TXST Undergraduate Research Fellowship *Haley Womack* **2022**

SACNAS Travel Award *Natalie Villafranca* **2022**

NSF Graduate Research Fellowship *Natalie Villafranca* **2022**

NSF Graduate Research Fellowship *Isabella Changsut* **2022**

TXST Biology Colloquium Award, Honorable Mention *Isabella Changsut* **2022**

TXST COSE Postdoctoral Fellowship *Erin Borbee* **2022**

NSF Postdoctoral Fellowship in Biology *Erin Borbee* **2022**

NSF Graduate Research Fellowship, Honorable Mention *Natalie Villafranca* **2021**

**SELECTED OUTREACH AND SERVICE**

TXST Dissertation Completion Fellowship Review Committee, *member* **2025**

Girl Scout STEM Day at TXST, *host lab (organized by I. Changsut)* **2024-present**

UT STEM Girl Day, *host lab (in partnership w/ TX SWIMS)*  **2024-present**

TXST Shared Research Operations Steering Committee, *member* **2024-present**

TXST Chapter TX SWIMS, *faculty mentor* **2024-present**

SICB Division of Ecoimmunology & Disease Ecology, *chair* **2024-2026**

TXST Biology Aquatic Microbiologist Search Committee, *member* **2024-2025**

TXST Presidential Commission on the Run to R1, *member* **2024-2025**

Touch Tank Outreach in Bristol RI, *co-organizer with RWU* **2024**

Doral Academy Middle School Campus Visit, *organizer* **2024**

TXST Francis Rose Undergraduate Research Award Committee, *chair* **2023-present**

ICRS Mentorship Program, *mentor* **2023-present**

TXST COSE Postdoctoral Committee, *member*  **2023-present**

SICB Division of Ecoimmunology & Disease Ecology, *chair-elect* **2023-2024**

TXST Biology Microbiology Search Committee, *member* **2023-2024**

TXST “You, Me & IDP” Postdoctoral Mentoring Workshop **2023**

*Developed and facilitated workshop on IDP plans for postdocs & mentors (~45 attendees)*

Evolution Conference Mentorship Program, *mentor* **2023**

TXST Biology Evolutionary Ecology Search Committee, *member* **2023**

TXST Lamar & Marilynn Johnson Scholarship Committee, *member* **2022-present**

TXST URISE Research Preceptor **2021-present**

SICB Broadening Participation Mentor Match Program, *mentor* **2021-present**

SICB Meet an Ecoimmunologist/Disease Ecologist Program, *mentor* **2021-present**

American Society of Microbiologists, Texas Branch Meeting, Poster Judge **2020**

SICB Presentation Judge **2019-present**

Skype a Scientist **2019-2020**

EEB Mentor Match **2019**

**PROFESSIONAL ACTIVITIES**

***Grant Review:*** NSF panelist (2022,2023,2024,2025); NSF ad hoc reviewer (2021,2024), Marsden Fund New Zealand ad hoc reviewer (2024)

***Manuscript Review*:** eLife; Coral Reefs; Marine Biology; Scientific Reports; Science Advances; Molecular Ecology; Frontiers in Marine Science; Royal Society Open Science; Genome Biology and Evolution; Journal of Experimental Biology; Proceedings of the Royal Society B: Biological Sciences; Comparative Biochemistry and Physiology Part D: Genomics and Proteomics; Microbiome

***Society Membership:*** International Coral Reef Society;International Symbiosis Society; Society for Integrative and Comparative Biology; Beta Phi Chapter of the Phi Sigma Biological Honors Society