

**Christina Leigh Belanger**  
 Department of Geology and Geophysics  
 Texas A&M University – College Station

INSTITUTION	MAJOR	DEGREE & YEAR
University of California, Santa Barbara	Creative Studies (Biology)	B.A., 2005
University of Chicago, IL	Geophysical Sciences (Paleoecology)	Ph.D., 2011

**APPOINTMENTS**

2017-present Assistant Professor, Department of Geology & Geophysics, Texas A&M University  
 2012-2017 Assistant Professor, Department of Geology & Geological Engineering, South Dakota School Mines and Technology (SDSM&T)  
 2012-2017 Curator of Microfossils, Museum of Geology, SDSM&T  
 2011-2012 Lecturer, Lake Forest College, Department of Environmental Studies  
 2011-2012 Research Professional, University of Chicago, Department of Geophysical Sciences  
 2006-2011 Teaching Assistant, University of Chicago, Department of Geophysical Sciences  
 2003-2005 Lab Manager and Research Assistant, Earth Sciences Department, University of California, Santa Barbara (for Dr. David Lea)

**AWARDS AND HONORS**

College of Arts and Sciences Research Impact Award (2023)  
 Association of Former Students College-Level Distinguished Achievement Award for Teaching (AY 2021-2022)  
 Montague-Center for Teaching Excellence Scholar (AY 2021-2022)

**ACTIVE EXTERNAL GRANT**

CAREER: Leveraging benthic foraminiferal biogeography to recognize ecosystem responses to climate change and engage first-generation students in scientific inquiry, \$506,000, NSF-EAR-SGP (June 2022-May 2027). – P.I. Belanger

**PAST FUNDED EXTERNAL GRANTS**

EXP: FossilSketch, a new educational software application for teaching micropaleontology (Foraminifera and Ostracoda), \$300,000, NSF-DUE-IUSE Exploration & Design: Engaged Student Learning, (January 2020-December 2022) P.I. Hammond, Co-PIs Stepanova, Belanger, Raven.  
 Collaborative Research: Distinguishing the drivers of benthic foraminiferal faunal change to improve mechanistic interpretations of abrupt hypoxic events in the North Pacific, \$479,338, NSF-P2C2 (September 2015-August 2019) – P.I. Belanger, Co-PI Mix (Oregon State University)  
 Curation and Digitization of Newly Acquired Modern and Fossil Invertebrate and Protist Research Collections at the SDSM&T Museum of Geology, \$499,887, NSF-DBI Collections in Support of Biological Research (2014-2019) – P.I. Anderson, Co-P.I.s Belanger, Pagnac, Shelton  
 Dynamics and drivers of faunal changes in relation to productivity and oxygenation through glacial-interglacial cycles, \$14,981, COL-NSF-IODP-USSP (awarded 2014) – P.I. Belanger  
 Advancing Collections Digitization, Integration, and Access for the SDSM&T Museum of Geology, \$149,028, IMLS Museums for America (2013-2018) – P.I. Anderson, Co-P.I.s Belanger, Pagnac, Price, Shelton  
 Expedition 341 Basic Subaward Agreement, \$20,955, COL-NSF-IODP-USSP (awarded 2013)  
 Biological Responses to Climate Change: Physiological and Community-level Responses to the Miocene Climate Optimum (Early Miocene Astoria Formation, Oregon), \$13,995, NSF DDIG (2008-2011)  
 NSF Graduate Research Fellowship, \$120,000 (awarded 2005)

**PAST FUNDED INTERNAL GRANT**

Hydrologic influences on the ecologic and sedimentary history of Matagorda Bay, \$32,000, TAMU T3 Round 3, (January 2020-December 2022). P.I. Belanger, Co-PIs Dellapenna, Eytan.

**PEER-REVIEWED PUBLICATIONS** #=post-doctoral mentee \*=graduate mentee; \*\*=undergraduate mentee

For current citations, please see: <https://scholar.google.com/citations?user=C5SgGiQAAAAJ&hl=en>

- #Bryant, R. and C.L. Belanger, 2023. Spatial heterogeneity in benthic foraminiferal assemblages track regional impacts of paleoenvironmental change across Cretaceous OAE2. *Paleobiology*.  
<https://www.doi.org/10.1017/pab.2022.47>
- #Bryant, R., K. Meehan, and C.L. Belanger, 2023. Are ancient seep environments distinguishable by benthic foraminiferal assemblages? A case study of the Cretaceous Western Interior Seaway. *Cretaceous Research*. <https://doi.org/10.1016/j.cretres.2023.105476>
- Du, J., A.C. Mix, B.A. Haley, C.L. Belanger, \*Sharon, 2022. Volcanic trigger of Northeast Pacific deoxygenation during Cordilleran Ice Sheet retreat. *Nature*, 611 (7934), 74-80.  
<https://doi.org/10.1038/s41586-022-05267-y>
- Belanger, C. L., 2022. Volumetric analysis of benthic foraminifera: Intraspecific test size and growth patterns related to embryonic size and food resources. *Marine Micropaleontology*, 176, 102170.  
<https://doi.org/10.1016/j.marmicro.2022.102170>
- \*Sharon, C. L. Belanger, 2022. Placing North Pacific paleo-oxygen records on a common scale using multivariate analysis of benthic foraminiferal assemblages. *Quaternary Science Reviews*, 280.  
<https://doi.org/10.1016/j.quascirev.2022.107412>.
- Velle, J.H., M.H Walczak, B. Reilly, G. St-Onge, J.S. Stoner, S. Fallon, A.C. Mix, C. Belanger, and M. Forwick, 2022. High resolution inclination records from the Gulf of Alaska, IODP Expedition 341 Sites U1418 and U1419. *Geophysical Journal International*, 229(1): 345-358.
- \*Sims, E. and C.L. Belanger, 2021. Quantifying Late Pennsylvanian multivariate morphological change in the fusulinid genus *Triticites* from the Central and Southwestern United States. *Journal of Foraminiferal Research*, 51(3): 165-181.
- \*\*Payne, C. and C. L. Belanger, 2021. Enhanced carbonate dissolution associated with deglacial dysoxic events in the subpolar North Pacific. *Paleoceanography and Paleoclimatology*.  
<https://doi.org/10.1029/2020PA004206>
- \*Sharon, C.L. Belanger, J. Du, A. Mix, 2021. Reconstructing paleo-oxygenation for the last 54,000 years in the Gulf of Alaska using cross-validated benthic foraminiferal and geochemical records. *Paleoceanography and Paleoclimatology*. <https://doi.org/10.1029/2020PA003986>
- Belanger, C.L., \*Sharon, J. Du, \*C. Payne, A. Mix, 2020. North Pacific deep-sea ecosystem responses reflect post-glacial switch to pulsed export productivity, deoxygenation, and destratification. *Deep Sea Research* 164, 103341. <https://doi.org/10.1016/j.dsr.2020.103341>
- \*Laird, J. and C. Belanger, 2019. Quantifying successional change and ecological similarity among Cretaceous and modern cold-seep faunas. *Paleobiology* 45:114-135.
- Belanger, C., \*O. Orhun, and \*\*C. Schiller, 2016. Benthic foraminiferal faunas reveal transport dynamics and no-analog environments on a glaciated margin (Gulf of Alaska). *Palaeogeography, Palaeoclimatology, Palaeoecology* 454: 54-64.
- Gulick, Sean P.S., J. M. Jaeger, A. C. Mix, H. Asahi, H. Bahlburg, C. Belanger, G. B. B. Berbel, L. Childress, E. Cowan, M. H. Davies, L. Drab, F. Dottori, M. Forwick, A. Fukumura, S. Ge, S. Gupta, A. Kioka, S. Konno, L. LeVay, C. März, K. Matsuzaki, E. McClymont, C. Moy, J. Müller, A. Nakamura, T. Ojima, K. Ridgway, O. Romero, A. Slagle, J. Stoner, G. St-Onge, I. Suto, L. Worthington, I. Bailey, E. Enkelmann, and R. Reece, 2015. Nonlinear feedback between tectonic uplift and glacial erosion constrained by Gulf of Alaska sedimentary record. *Proceedings of the National Academy of Sciences* 112: 15042-15047.
- Jaeger, J.M., Gulick, S.P.S., LeVay, L.J., and the Expedition 341 Scientists, 2014. *Proceedings of the Integrated Ocean Drilling Program, 341: College Station, TX.* doi:10.2204/iodp.proc.341.2014
- Expedition 341 Scientists, 2014. *Southern Alaska Margin: interactions of tectonics, climate, and sedimentation. IODP Preliminary Report, 341.* doi:10.2204/iodp.pr.341.2014

- Belanger, C. and \*M. Villarosa Garcia, 2014. Differential drivers of benthic foraminiferal and molluscan community composition from a multivariate record of Early Miocene environmental change. *Paleobiology*, 40 (3): 398-416.
- Seddon, A.W.R., A.W. Mackay, A.G. Baker, H.J.B. Birks, E. Breman, C.E. Buck, E.C. Ellis, C.A. Froyd, J.L. Gill, L. Gillson, E.A. Johnson, V.J. Jones, S. Juggins, M. Macias-Fauria, K. Mills, J.L. Morris, D. Nogués-Bravo, S.W. Punyasena, T.P. Roland, A.J. Tanentzap, K.J. Willis, M. Aberhan, E.N. Asperen, W.E.N. Austin, R.W. Battarbee, S. Bhagwat, C.L. Belanger, K.D. Bennett, H.H. Birks, C.B. Ramsey, S.J. Brooks, M. Bruyn, P.G. Butler, F.M. Chambers, S.J. Clarke, A.L. Davies, J.A. Dearing, T.H.G. Ezard, A. Feurdean, R.J. Flower, P. Gell, S. Hausmann, E.J. Hogan, M.J. Hopkins, E.S. Jeffers, A. A. Korhola, R. Marchant, T. Kiefer, M. Lamentowicz, I. Larocque-Tobler, L. López-Merino, L.H. Liow, S. McGowan, J.H. Miller, E. Montoya, O. Morton, S. Nogué, C. Onoufriou, L.P. Boush, F. Rodriguez-Sanchez, N. L. Rose, C. D. Sayer, H. E. Shaw, R. Payne, G. Simpson, K. Sohar, N.J. Whitehouse, J.W. Williams, A. Witkowski, 2014. Looking forward through the past: Identification of fifty priority research questions in palaeoecology. *Journal of Ecology*, 102: 256-267.
- Jablonski, D., C. Belanger, S. K. Berke, S. Huang, A. Z. Krug, K. Roy, A. Tomasovych, J. W. Valentine, 2013. Out of the tropics, but how? Fossils, bridge species, and thermal ranges in the dynamics of the marine latitudinal diversity gradient. *Proceedings of the National Academy of Sciences* 110:10487-10494, doi:10.1073/pnas.1308997110.
- Belanger, C., 2012. Individual to community-level faunal responses to environmental change from a marine fossil record of Early Miocene global warming. *PLoS ONE*, doi:10.1371/journal.pone.0036290.
- Belanger, C., D. Jablonski, K. Roy, S. K. Berke, A. Z. Krug, and J. W. Valentine, 2012. Global environmental predictors of benthic marine biogeographic structure. *Proceedings of the National Academy of Sciences* 109: 14046-14051, doi:10.1073/pnas.1212381109.
- Belanger, C., 2011. Evaluating taphonomic effects on paleoecological analyses of a fossil benthic foraminiferal fauna using taphonomic grading. *PALAIOS* 26: 767-788.
- Belanger, C., 2011. Coastal dysoxia accompanies Early Miocene warming based on benthic foraminifera and sedimentary records from Oregon. *Marine Micropaleontology* 80: 101-113.
- Kristjánisdóttir, G. B., D. W. Lea, A. E. Jennings, D. K. Pak, and C. Belanger, 2007. New spatial Mg/Ca-temperature calibrations for three Arctic, benthic foraminifera and reconstruction of north Iceland shelf temperature for the past 4000 years, *Geochem. Geophys. Geosyst.*, 8, Q03P21, doi:10.1029/2006GC001425
- Lea, D. W, D. K. Pak, C. L. Belanger, H. J. Spero, M. A. Hall and N. J. Shackleton, 2006. Paleoclimate history of Galápagos surface waters over the last 135,000 yr. *Quaternary Science Reviews* 25(11-12): 1152-1167.

#### **SUBMITTED MANUSCRIPTS (ACTIVE ONLY)**

- Stepanova, A., S. Anwar, C. Belanger, C. Stanley, J. Cherian, T. Hammond, *in review*. Impact of using interactive software FossilSketch for teaching micropaleontology on undergraduate student sentiments. *International Journal of STEM Education*.
- Stepanova, A., C. Belanger, S. Anwar, C. Stanley, A. Nash, J. Cherian, T. Hammond, *in revision*. Using the interactive software FossilSketch to teach micropaleontology to undergraduate students in and beyond the classroom. *Journal of Geoscience Education*.
- Belanger, C. L. and D. W. Bapst, *in revision*. Simulating our ability to accurately detect abrupt changes in assemblage-based paleoenvironmental proxies. *Palaeontologica Electronica*.

### **INVITED TALKS**

- Biotic Responses to past environmental change offer glimpses of future ecosystems. College of Arts and Sciences “Life on a Dynamic Planet Symposium”, Texas A&M – College Station (February 2023)
- Paleoecological and morphological responses of benthic foraminifera reveal causes of North Pacific dysoxic events. University of Miami’s Rosenstiel School of Marine, Atmospheric, and Earth Science (October 2022)
- Decoding paleoenvironmental change with benthic foraminifera: linking dysoxia and organic carbon export in the Gulf of Alaska, Department of Geology and Geological Engineering, The University of Mississippi (March 2021)
- Deglacial deoxygenation and organic matter export alter high-latitude deep-sea ecosystem, Department of Oceanography at Texas A&M – College Station (September 2019)
- Finding analogs for ancient ecosystems – merging modern and fossil data, Ecology and Evolutionary Biology at Texas A&M – College Station (March 2019)
- Benthic foraminifera decode the severity and drivers of oxygen minimum zone expansion in the Gulf of Alaska, Geosciences at Baylor University (March 2019)
- Benthic foraminifera record the repeated expansion and intensification of the oxygen minimum zone in the Gulf of Alaska and associated increases in phytodetritus, Geological Society of America, Indianapolis Indiana (November 2018)
- Finding analogs for unseen ecosystems: merging modern and fossil data, Drexel University (March 2017)
- Searching for our Past Together, Academy of Nature and Science, Philadelphia (March 2017)
- Ecology on geologic timescales – detecting hypoxia driven faunal change during warming events, Geology and Geophysics at Texas A&M – College Station (January 2017)
- What is natural? Using the fossil record to understand modern ecosystems, University of Iowa (April 2015)
- Disentangling the Environmental Drivers of Biotic Patterns through Time and Space, University of Utah (January 2015)
- Biology on Geologic Timescales: Studying Biological Responses to Past Environmental Change, Black Hills State University (November 2014)
- Detecting the Drivers of Low-oxygen Environments with Benthic Foraminifera, Darton Geological Society (October 2012)
- Ecology on Geologic Timescales: Drivers and Dynamics of Biotic Responses to Climate Change, South Dakota School of Mines and Technology (April 2012)

### **CONFERENCE ABSTRACTS** #post-doctoral mentee, \*=graduate mentee, \*\*=undergraduate mentee

- Du, J., A. Mix, B.A. Haley, C. L. Belanger, Sharon. Volcanic trigger of Northeast Pacific Deoxygenation during Cordilleran Ice Sheet Retreat. American Geophysical Union Fall Meeting. Chicago, IL. December 2022.
- Belanger, C. Adult morphology in benthic foraminifera is controlled by embryo size and food resources along a steep oxygenation gradient. Geological Society of America Connects. Paper No. 48-5. Denver Colorado. October 2022.
- Bapst, D. and C. Belanger. Simulating ecological change in the stratigraphic record: when can abrupt environmental change be resolved by faunal proxies? Geological Society Connects. Paper No. 191-4. Denver Colorado. October 2022.
- Stepanova, A., C. Belanger, S. Anwar, T. Hammond, C. Stanley, J. Cherian, A. Nath. FossilSketch – An interactive software that improves student ability to learn microfossil identification independently. Geological Society of America Connects. Paper No. 59-16 Denver Colorado. October 2022.
- #Bryant, R. and C. Belanger. Ecological Analyses of Foraminiferal Bioevents reveal spatial variation in the response to OAE2. Geological Society of America Connects. Paper No. 41-9. Portland Oregon. October 2021.

- Belanger, C. and D. Bapst. It happened, but will we see it? Simulating our ability to detect the true magnitude of abrupt changes in faunal proxies under different sampling scenarios. AGU Annual Meeting. New Orleans, LA. Paper No. PP45E-1144. December 2021.
- Stepanova, A., C. Belanger, T. Hammond, B. Williford, R. Lara-Garduno. FossilSketch - an innovative way to teach micropaleontology in undergraduate geoscience classes. AGU Annual Meeting. New Orleans, LA. Paper No. ED15B-0535. December 2021.
- \*Payne, C., C. Belanger, T. Dellapenna, E. Grossman, C. Lowery. Evidence for the recent development of low-oxygen conditions on the Texas Shelf from Benthic foraminiferal assemblages. AGU Annual Meeting. New Orleans, LA. Paper no. PP15E-0966. December 2021.
- \*Sharon and C. Belanger. Quantitative comparisons among North Pacific paleo-oxygenation records using multivariate analyses on taxonomically standardized benthic foraminiferal assemblages. AGU Annual Meeting. New Orleans, LA. Paper no. PP45D-1136. December 2021.
- \*Sims E. and C. Belanger. Morphometric analysis of biostratigraphically significant fusulinid foraminiferan *Triticites* across the Pennsylvanian-Permian boundary in the central and southwestern United States. GSA South-Central Section Meeting. Fort Worth Texas. March 2020.
- Belanger, C.L., \*S. Sharon, \*C. Payne. Bathyal and abyssal ecological changes indicate increased seasonal organic carbon fluxes following glacial retreat. AGU Ocean Sciences. San Diego, California. February 2020.
- \*Payne, C., C.L. Belanger, \*S. Sharon. Size-Normalized Shell Weights in Foraminifera Indicate Changes in Carbonate Dissolution and in Organism Physiology during Deglacial Deoxygenation. AGU Ocean Sciences. San Diego, California. February 2020.
- \*\*Gezovich, L. J., \*J. Sarao, C. L. Belanger, F. Marcantonio. Cross-validation of xsBa and Benthic foraminiferal assemblages as proxies of organic matter flux in the Equatorial Pacific. AGU Ocean Sciences. San Diego, California. February 2020.
- Belanger, C.L., \*S. Sharon, \*\*C. Payne. Path analyses of faunal change: Deconvolving environmental drivers of benthic foraminiferal community change to demonstrate similarities at intermediate and abyssal depths in the Pleistocene Gulf of Alaska. North American Paleontological Convention. Riverside, California. June 2019.
- \*Laird, J. D., C. L. Belanger. Community succession in Cretaceous cold-seep faunas: using a guild-based modern-analog approach to recognize ecological parallels with modern seeps. Geological Society of America, Indianapolis, Indiana. November 2018.
- Belanger, C.L., \*S. Sharon, C. Payne\*\*, J. Du, A. Mix. Benthic foraminifera record the repeated expansion and intensification of the oxygen minimum zone in the Gulf of Alaska and associated increases in phytodetritus, Geological Society of America, Indianapolis, Indiana, November 2018.  
*This was an invited presentation to a topical session.*
- Belanger, C.L., \*S. Sharon, \*J. Du, A. Mix. Integrating (paleo)ecological and (paleo)environmental data to characterize the severity of hypoxia in the Gulf of Alaska. American Geophysical Union Oceans Meeting. Portland, Oregon. February 2018.
- \*Sharon, S., C. L. Belanger, \*J. Du, A. Mix. Benthic Foraminiferal Test Size Influences the Interpretation of Hypoxic Events in the Gulf of Alaska, North Pacific Over the Past 60,000 Years. American Geophysical Union Oceans Meeting. Portland, Oregon. February 2018.
- Mix A. C., M. Walczak, H. Asahi, C. L. Belanger, E. A. Cowan, J. Du, S. Fallon, L. K. Fifield, T. Hobern, J. M. Jaeger, B. J. L. Jensen, J. L. McKay, J. Padman, A. Ross, S. Sharon, J. S. Stoner, S. Zellers, 2017. Multi-core, multi-constraint chronostratigraphic framework over past 50,000 years places high-resolution Gulf of Alaska ocean-ice-sediment history into a global framework. American Geophysical Union Annual Meeting. New Orleans, LA.
- \*Sharon, S., C. Belanger, \*J. Du, and A. Mix, 2016. Dysoxia at slope and bathyal settings in the Gulf of Alaska evinced by benthic foraminiferal assemblages and redox-sensitive trace elements during deglacial and glacial intervals. American Geophysical Union Annual Meeting, San Francisco, CA.

- Anderson, L. C., D. Pagnac, C. Belanger, S. Shelton, M. Price, 2015. Digitizing ancient seas to advance student research and public outreach through the SD Mines Museum of Geology. Geological Society of America Annual Meeting, Baltimore, MD.
- Belanger, C. L. and \*O. Orhun, 2015. Benthic foraminiferal faunas reveal transport dynamics and non-analog environments on a glaciated margin (Gulf of Alaska). Geological Society of America Annual Meeting, Baltimore, MD. (Session: Integration of Microfossils and Sedimentology in Stratigraphic Analysis)
- \*Laird, J. and C. L. Belanger, 2015. Functional ecology comparisons between Cretaceous Black Hills and modern Gulf of Mexico cold-seep communities. Geological Society of America Annual Meeting, Baltimore, MD. (Session: Topics in Paleocology: Modern Analogues and Ancient Systems)
- \*Orhun, O. and C. L. Belanger, 2015. Body size and abundance of benthic foraminifera as indicators of low oxygen conditions in the Gulf of Alaska. Geological Society of America Annual Meeting, Baltimore, MD. (Session: Insights from Microfossils, from Traditional to Novel Approaches)
- Belanger, C.L. 2014. Disentangling the drivers of temporal and spatial biotic patterns. American Geophysical Union Annual Meeting. (Session: A Living Planet: Biotic Responses to Past Changes in Earth's Climate and Geology.) San Francisco CA.
- Pagnac, D., Anderson, L., Price, M., Shelton, S., Belanger, C., 2014. Transforming beginners into experts: student-driven digitization efforts at the Museum of Geology, South Dakota School of Mines and Technology. Geological Society of America Annual Meeting, Vancouver, BC.
- Suto, I., Asahi, H., Belanger, C., \*Fukumura, A., Gupta, S., Konno, S., Matsuzaki, K., Romero, O. and Expedition 341 Scientists, 2014. Preliminary results from shipboard micropaleontology research during IODP Expedition 341 (Alaska Tectonics, Climate and Sedimentation). Micropaleontological Reference Center (MRC) JAMSTEC, Yokohama.
- Belanger, C. L. and \*M. Villarosa Garcia, 2014. Disentangling the drivers of biotic responses to climate change using a multivariate environmental proxy record. North American Paleontological Convention, Gainesville, Florida. (Session: Critical paleobiological transitions in Earth history: The value of multidisciplinary approaches.)
- Mix, A. C., M. H. Davies, S. Praetorius, M. S. Cook, F. G. Prahl, A. Schmittner, H. Asahi, C. L. Belanger, J. S. Stoner, G. St-Onge, J. M. Jaeger, S. P. Gulick, 2013. From the Pacific to the Arctic: Paleoclimatic History of the Gulf of Alaska and the Bering Sea. American Geophysical Union Annual Meeting.
- \*\*Chiang, S., C. L. Belanger, S. K. Berke, D. Jablonski, 2013. Does oceanography constrain marine bivalve invasions? Society for Integrative and Comparative Biology Annual Meeting.
- Belanger, C., 2012. Drivers and Dynamics of Ecological Responses to Abrupt Environmental Change on the Early Miocene Oregon Shelf. American Geophysical Union Annual Meeting. San Francisco.
- Belanger, C., 2011. Ecology on geologic timescales: threshold dynamics in response to climate change. Geological Society of American Annual Meeting. Minneapolis, MN.
- Belanger, C., 2010. Multiple levels of faunal response to the development of high-organic, dysoxic shallow-water benthos during Early Miocene Warming (Astoria Formation, Oregon). Geological Society of America Annual Meeting. Denver, CO.
- Belanger, C., 2010. Growth rates provide evidence of physiological responses of fossil marine bivalves to long-term climate warming. Eos Trans. AGU, 91(26), Ocean Sciences Meeting Suppl., Abstract B041A-02.
- Belanger, C., 2009. Evaluation nearshore biotic responses to climate change using a coastal benthic foraminiferal paleoclimate record (Early Miocene Astoria Formation, Oregon). Cincinnati Museum Center Scientific Contribution No.3: 10. North American Paleontological Conference, Cincinnati, Ohio.
- Belanger, C., 2009. Regional coastal climate reconstruction of the Miocene Climate Optimum and its effects on marine benthic faunas (Astoria Formation, Oregon). PAGES 3rd Open Science Meeting, Corvallis Oregon.
- Belanger, C., 2006. Shell plasticity in *Saxidomus nuttalli* (Bivalvia: Veneridae) from fossil rock-boring

and modern sand-burrowing habits and its implications for morphological interpretation. Geological Society of America Abstracts with Programs, 38(7): 172.

### **UNIVERSITY COURSES TAUGHT AS FACULTY AT TEXAS A&M**

#### **Core Curriculum:**

- GEOL 208 – Life on a Dynamic Planet (2x, *designed and proposed*)
- SCEN 101 – Contemp. Issues in Science: Cosmos, Earth and Humanity (3x, *co-designed, co-taught*)
- SCEN 102 – Contemporary Issues in Science - The Environment (3x, *co-designed, co-taught*)

#### **Geology Undergraduate:**

- GEOL 152 – History of the Earth
- GEOL 305 – Paleobiology
- GEOL 311 – Geological Writing
- GEOL 314 – Paleontology and Geobiology (5x)
- GEOL 450 – Geology Senior Project (*co-taught with postdoctoral mentee*)
- GEOL 489 – Life on a Dynamic Planet

#### **Geology Graduate:**

- GEOL 650 – Paleoecology (2x)
- GEOL 651 – Paleoecological Community Analysis (2x, *co-taught*)
- GEOL 689 – Micropaleontology

### **OTHER UNIVERSITY COURSES TAUGHT AS FACULTY**

SDSM&T: Geol 110 – Explorations in Geology; Geol 323 – Search for Our Past (Earth History, 5x);  
Geol 361 – Oceanography (2x); Geol 461/461L – Invertebrate Paleontology (4x); Geol 672/672L  
– Micropaleontology (2x); Geol 692 - Topics in Taphonomy (2x); Geol 773 – Quantitative  
Methods in Paleontology; Geol 774 – Paleoenvironments (2x)  
Lake Forest College: ES 116 – Introduction to Geology; ES 261 – Global Environmental History

### **POST-DOCTORAL MENTORING**

Bryant, Raquel. Fall 2020-Summer 2022. Texas A&M University Geosciences Future Faculty Fellow.

### **PH.D DISSERTATIONS SUPERVISED**

Nkwain, Gael Ndi. Fall 2021-present. Reconstructing productivity and ice sheet dynamics in the Arctic through glacial-interglacial cycles.  
Sharon. Graduated August 2021. Distinguishing the drivers of benthic foraminiferal faunal change to improve mechanistic interpretations of abrupt hypoxic events in the North Pacific.

### **MASTERS THESES SUPERVISED**

Klug, Paige. Fall 2022-present. Anthropogenic impacts on Matagorda Bay: a foraminiferal perspective.  
Fonville, Tanner. Fall 2022-present. Oxygenation and organic carbon flux in the Miocene Ocean.  
Richardson, Brandon. Fall 2020-present. Environmental controls of foraminiferal biogeography.  
Payne, Calie. Graduated August 2021. Reconstructing hypoxia on the Texas Coast using benthic foraminifera.  
Sims, Eileah. Graduated August 2020. Quantitative morphological differentiation of biostratigraphically important fusulinids from Pennsylvanian-Permian strata of the Wolf Camp Hills.  
Wilkins, William. Graduated August 2017. Vertebrate microfossil and invertebrate macrofossil assemblages associated with mammoth preservation on Santa Rosa Island.  
Laird, Josh. Graduated May 2016. Modern Gulf of Mexico cold-seeps provide ecological analogs for Cretaceous Black Hills Tepee Buttes.

Korn, Alysia. Graduated May 2016 (co-advised with Dr. Darrin Pagnac). Investigation of the preferential occurrence of concretionary preservation in mosasaurs of the lower and middle Pierre Shale of South Dakota.

Hastings, Rebecka. Graduated May 2016 (co-advised with Dr. Lisa Kunza). Ocean-atmosphere links controlling carbon-cycle processes in the Gulf of Alaska.

Orhun, Ozlem. Graduated December 2015. Drivers of benthic foraminiferal faunal changes in the Gulf of Alaska.

Gardner, Christine. Graduated December 2015. (co-advised with Dr. Clint Boyd) Taxonomic diversity and stratigraphic distribution of Hypertragulinae within the Great Plains Region of North America.

Clarke, Laura. Graduated May 2014. Actualistic analyses of the drivers of exceptional preservation in leaves and insects.

Dunn, Colin. Graduated December 2014. Freshwater pulmonate gastropods as indicators of littoral microhabitats and climate change during the Eocene-Oligocene transition.

#### **SERVICE ON OTHER GRADUATE THESIS/DISSERTATION COMMITTEES**

**Geology and Geophysics** (9): PhD - Danielle Schimmenti (current), John Sarao (current), Samuel Neely (graduated 2022), Mohamed Imsalem (graduated 2021), Maya Reimi (graduated 2018); MS - Melanie Brewer (current), Wyatt Scott (2021-2022), Divya Saxena (2020), Ryan Hostak (graduated 2019)

**Ecology and Evolutionary Biology** (3): PhD research - Maria Alejandra Hurtado Materon (current); PhD comprehensive exam - Erin Nygen (2020), Amanda Beckman (2019)

**Texas A&M Galveston** (2): PhD - Yoonho Jung (current); Shawna Little (graduated 2022)

**Wesleyan University** (1): MS - Daniel Caldera (current)

**SDSM&T** (7): Amber Johnsen-Carroll; David Lee, Matthew Howard, Huai-Pin Hu, Benjamin Elliot, Brooke Long, Broc Kokesh (all prior to 2017)

#### **UNDERGRADUATE THESIS SUPERVISED**

Payne, Calie. 2019. Coupling of ocean acidification and oxygen depletion in the Gulf of Alaska.

Muilenburg, Kayleigh. 2017. The *Dakoticancer* assemblage: comparing the differences in preservation, assemblage type, and the gender ratio across localities.

Dennis, Nicholas. 2017. Interpretation of lithological members using foraminiferal assemblages from the Pierre Shale, Lyman County, South Dakota.

Langenbau, Kaitlynn. 2016. Determining diversity patterns in marine organisms in the West Atlantic during the Neogene through bulk sample analysis.

Mishoulam, James. 2016. Mosasaur stomach contents: diet composition of different mosasaurs.

Mraz, Montana. 2015. Quantifying the similarities in shark faunas in the Western Interior Seaway (Cenomanian-Turonian).

Jorgensen, Darrah. 2015. The correlation among suture complexity, body size, and geologic range in species of Cretaceous *Baculites*.

Beebe, Eric. 2015. The use of benthic foraminifera as low oxygen indicators through body size.

Brady, Aidan. 2014. Understanding brachiopod diversity at changing icehouse and greenhouse conditions.

Brightwell, Conner. 2014. Temporal changes in the size and diversity of grassland mammals from the Miocene to the Quaternary.

Laird, Josh. 2014. Faunal assemblage variation in Tepee Butte carbonate caps near Newell, SD.

Sobieraji, Stephanie. 2012. Environmental and faunal gradients in the Cedar Mountain Formation (Utah).



### **UNDERGRADUATE RESEARCH SUPERVISION AS COURSEWORK (ALL WET-LAB)**

Fehrenbach, Danielle. Spring 2023, Summer and Fall 2021. Geol 491, 5 credits total. Reconstructing salinity in Matagorda Bay using benthic foraminiferal faunal assemblages.

Bowling, J.T. Fall 2022. Geol 491, 1 credit. Foraminifera of Espiritu Santo Bay, Texas.

Sanchez, M. Fall 2022. Geol 491, 1 credit. Microplastic extraction from estuarine sediments.

Mozisek, Anna Marie. Spring, 2023, Spring and Fall 2022. Geol 491, 4 credits total. Ecological stress in Matagorda Bay over space and time.

Clore, Zach. Spring and Summer 2022. Geol 491, 3 credits total. Benthic foraminiferal changes in Tres Palacios Bay.

Jackson, Christian. Spring 2022. Stable isotope analyses of estuarine benthic foraminifera from Cox Bay.

Gezovich, Luke. Summer 2019. Geol 491, 3 credits. Foraminiferal morphological and ecological responses to productivity in the Eastern Equatorial Pacific.

Payne, Calie. Spring 2018. Geol 491, 2 credits; Geol 311, 1 credit. Opportunistic foraminiferal responses related to hypoxic events in the Gulf of Alaska.

Morse, Michael. Spring 2018. Geol 491, 3 credits. Using sedimentology and faunal change to verify seismic boundaries.

### **UNDERGRADUATE RESEARCH ASSISTANTS SUPERVISED (PAID POSITIONS)**

Laboratory (wet-lab) work: Isa Richardson, Spring 2023, Trenton Heise, Spring 2023; Michael Sanchez, Summer 2022; Pablo Cavazos, Fall 2017-Fall 2018; Aiden Sweeney and Perry Chesebro, Spring 2016; Christopher Schiller, Spring 2013-Spring 2015

First<sup>2</sup>Rise Mentees\* (computer databasing, dry-lab research, Fall 2022): Abigail Day, Deborah Carballo, Gavin Dealy, Isa Richardson, Bella Griffo, Jadicee Mendel, Katherine Argueta, Meagan Sonsel, Menya Bird, Sophie Rubio, Trenton Heise \**First Year First Generation Research in geoScience Experience is a research mentoring program Belanger developed as part of her CAREER grant*

### **PROFESSIONAL DEVELOPMENT IN TEACHING AND MENTORING**

- Texas A&M University Faculty Mentoring Academy (*completed 7 competencies*, Summer 2022)
- Unlearning Racism in the Geosciences (URGE) workshop participant (*completed bi-weekly reading and virtual discussion curriculum; worked with others at Texas A&M in the geosciences to draft action plans*, Spring 2021)
- National Association of Geoscience Teachers InTeGrate Webinar: Supporting all students through active learning (December 2018)

### **SERVICE TO THE DEPARTMENT GEOLOGY AND GEOPHYSICS AT TEXAS A&M**

- Strategic Planning Steering Committee (May 2022-March 2023)
- Executive Committee (Spring 2021-present)
- Graduate Admissions Committee (Fall 2018-Fall 2022)
- Graduate Curriculum Subcommittee (Spring 2020)
- Communications Committee (Fall 2019)
- By Laws Committee (member, 2018)
- Microscope Committee (member, Fall 2017-present)

### **SERVICE TO THE COLLEGE OF GEOSCIENCES AT TEXAS A&M**

- Selection Committees:
  - Association of Former Students Distinguished Achievement Award -Teaching (chair, 2022)
  - Montague-Center for Teaching Excellence (member, 2022)
  - Geosciences Future Faculty Fellowship (member, 2021)
- High school outreach and recruiting: *GeoX*, Belanger designed and ran hands-on paleontology activities for high school students in-person and virtually (Summers 2018-2021)

### **SERVICE TO INTERDISCIPLINARY PROGRAMS AT TEXAS A&M**

- Ecology and Evolutionary Biology Core Faculty Member: *Belanger teaches and advises within an interdisciplinary doctoral degree program* (Spring 2019-present)
- Member of the EEB Assessment and Reporting Committee (Spring 2022-present)
- Contemporary Issues in Science Course Development Committee: design course modules for the new core curriculum courses SCEN 101 and SCEN 102. *Belanger teaches three class session per course, grades related assignments, and contributed to overall curriculum* (Fall 2019-present)

### **SERVICE TO THE DEPARTMENT, UNIVERSITY, AND COMMUNITY WHILE AT SDSM&T**

- Geology B.S. Program Committee Chair (Fall 2013-Summer 2017)
- University Inclusion Committee (member, Fall 2014-Summer 2017)
- Women in Science Mentor Coordinator (Spring 2014-Summer 2017)
- Graduate Admissions Committee (Spring 2013-Spring 2017)
- Paleontology M.S. Curriculum Committee (member, Fall 2012-Spring 2014)
- Geology and Geological Engineering Graduate Curriculum Committee (member, Fall 2012-2013)
- Women in Science conference presenter, designed and ran hands-on paleontology activities for middle school girls (Rapid City, SD, annually 2013-2017)
- Girl Scout Volunteer, introduced elementary-school-age scouts to paleontological careers and local fossils at Red Cloud School on Pine Ridge Reservation and at Youth and Family Services in Rapid City, SD (2016)

### **INTERNATIONAL OCEAN DISCOVERY EXPEDITIONS**

- Expedition 341: Southern Alaskan Margin. Summer 2013. Shipboard micropaleontologist.
  - Served on Editorial Board for Expedition 341 Proceedings
  - Live webcaster to public museums and K-12 classrooms from aboard the *JOIDES Resolution*
- Expedition 377: Arctic Ocean Paleooceanography (ArcOP). Selected in 2021 as benthic foraminiferal micropaleontologist, expedition canceled for safety concerns due to Russia's war.

### **OTHER SERVICE TO THE PROFESSION**

- Mikrotax Benthic Foraminiferal Database Working Group (August 2022, ongoing)
  - *Co-designing and populating an illustrated, online, taxonomic key to benthic foraminiferal species important to oceanographic and paleoceanographic research*
- Member of Paleontological Society Student Grants Committee (2022-present)
- Member of the Paleontological Society Newell Grants Review Committee (2021 & 2022)
- Session Convener at American Geophysical Union Annual Meeting (2021): Paleooceanographic Insights from Biomineralizers: Advancing Proxy Applications via Process-Based Understanding
- Reviewer for peer review publications: *Acta Palaeontologica Polonica* (Institute of Paleobiology of the Polish Academy of Sciences), *Diversity*, *Earth System Science Data*, *Ecogeography*, *Geology*, *Geosciences Journal*, *Global Environmental Change*, *Journal of Biogeography*, *Marine and Freshwater Research*, *PALAIOS*, *Paleobiology*, *Paleontological Research* (Palaeontological Society of Japan)
- Reviewer for proposals and Panelist: NSF Directorate for Biological Sciences; NSF Division of Ocean Sciences; NSF Division of Biological Infrastructure; FONDECYT – Chile