

## LIZZY TROWER – CURRICULUM VITAE

Department of Geological Sciences  
University of Colorado Boulder  
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### PROFESSIONAL EXPERIENCE

2018 – present **Assistant Professor of Geological Sciences**, University of Colorado Boulder  
2015 – 2017 **Agouron Geobiology Postdoctoral Research Fellow**, California Institute of Technology  
2011 – 2014 **Doctoral Candidate**, Stanford University  
2009 – 2012 **NSF Graduate Research Fellow**, Stanford University  
2007 **Summer Undergraduate Research Fellow**, California Institute of Technology

### EDUCATION

2014 **Ph.D. Geological and Environmental Sciences**, Stanford University  
2013 **International Geobiology Course**, Wrigley Institute for the Environment, University of Southern California  
2009 **B.S. Geology**, California Institute of Technology

### PEER-REVIEWED PUBLICATIONS (*student mentee*, *postdoc mentee*, †senior or co-senior author, \*co-first authors)

#### 2024

Smith, B., Mahon, R., *Lincoln, T.*, Hagen, C., *Olsen-Valdez, J.*, Magyar, J., and †**Trower, E. J.** (2024) Wave dynamics and sediment transport in Great Salt Lake: A model-data comparison. In M. Vanden Berg, C. Frantz, R. Ford, H. Harlow, K. Gunderson, and G. Atwood (Eds.), *Great Salt Lake & the Bonneville Basin: Geologic History & Anthropocene Issues*. Utah Geological Association Publication, v. 51, p. 1-18. <https://doi.org/10.31711/ugap.v51i.139>

#### 2023

Rahman, S.\*, and **Trower, E. J.\*** (2023) Probing surface Earth reactive silica cycling using stable Si isotopes: Mass balance, fluxes, and deep time implications. *Science Advances* 9 (49), eadi2440. <https://doi.org/10.1126/sciadv.adi2440>

Stein, N. T., †Grotzinger, J. P., Quinn, D. P., Lingappa, U. F., Present, T. M., **Trower, E. J.**, Gomes, M. L., Orzechowski, E., Cantine, M., Metcalfe, K. S., Fischer, W. W., Ehlmann, B. L., Strauss, J. V., and Knoll, A. H. (2023). Geomorphic and environmental controls on microbial mat fabrics on Little Ambergris Cay, Turks and Caicos Islands. *Sedimentology*. <https://doi.org/10.1111/sed.13100>

**Trower, E. J.\***, *Gutoski, J. R.\**, *Wala, V. T.*, Mackey, T. M., and Simpson, C. (2023) Tonian low-latitude marine ecosystems were cold before Snowball Earth. *Geophysical Research Letters* 50 (5), e2022GL101903. <https://doi.org/10.1029/2022GL101903>

#### 2022

*Lincoln, T.*, Webb, S. M., Present, T. M., Magyar, J. M., and †**Trower, E. J.** (2022). Paragenetic history of multiple mineral phases in ooids from Great Salt Lake, UT. *The Sedimentary Record* 20 (1). <https://doi.org/10.2110/001c.56183>

**Trower, E. J.**, Smith, B. P., Koeshidayatullah, A., and Payne, J. L. (2022). Marine ooid sizes record Phanerozoic seawater carbonate chemistry. *Geophysical Research Letters* 49 (22), e2022GL100800. <https://doi.org/10.1029/2022GL100800>

Aronson, H. S., Monteverde, D., Barnes, B. D., Johnson, B. R., Zawaski, M. J., Speth, D. R., Wang, X. T., Wu, F., Webb, S. M., **Trower, E. J.**, Magyar, J. M., Sessions, A. L., Orphan, V. J., Geobiology Course 2017, Geobiology Course 2018, and †Fischer, W. W. (2022) Sulfur Cycling at Natural Hydrocarbon and Sulfur Seeps in Santa Paula Creek, CA. *Geobiology* 20 (5), 707-725. <https://doi.org/10.1111/gbi.12512>

Koeshidayatullah, A., **Trower, E. J.**, Li, X., Mukerji, T., Lehrmann, D. J., Morsilli, M., Al-Ramadan, K., and †Payne, J. L. (2022). Quantitative evaluation of the roles of ocean chemistry and climate on ooid size across the Phanerozoic: global versus local controls. *Sedimentology* 69 (6), 2486-2506. <https://doi.org/10.1111/sed.12998>

Lingappa, U. F., Stein, N. T., Metcalfe, K. S., Present, T. M., Orphan, V. J., Knoll, A. H., Grotzinger, J. P., †**Trower, E. J.**, †Gomes, M. L., and †Fischer, W. W. (2022). Early impacts of climate change on a microbial mat ecosystem. *Science Advances* 8 (21), eabm7826. <https://doi.org/10.1126/sciadv.abm7826>

Ingalls, M., Fetrow, A. C., Snell, K. E., Frantz, C. M., and †**Trower, E. J.** (2022). Lake level controls the recurrence of giant stromatolite facies. *Sedimentology* 69 (4), 1649-1674. <https://doi.org/10.1111/sed.12967>

## 2021

**Trower, E. J.**, Strauss, J. V., Sperling, E. A., and Fischer, W. W. (2021). Isotope analyses of Ordovician-Silurian siliceous skeletons indicate silica-depleted Paleozoic oceans. *Geobiology* 19(5), 460-472. <https://doi.org/10.1111/gbi.12449>

Present, T. M., Gomes, M. E., **Trower, E. J.**, Stein, N. T., Lingappa, U. F., Naviaux, J., Thorpe, M., Fischer, W. W., Knoll, A. H., and †Grotzinger, John P. (2021). Non-lithifying microbial ecosystem dissolves peritidal lime sand. *Nature Communications* 12 (1), 1-8. <https://doi.org/10.1038/s41467-021-23006-1>

Li, X., **Trower, E. J.**, Lehrmann, D. J., Minzoni, M., Kelley, B. M., Schaal, E. K., Yu, M., and †Payne, J. L. (2021). Implications of giant ooids for the carbonate chemistry of Early Triassic seawater. *Geology* 49(2), 156-161. <https://doi.org/10.1130/G47655.1>

## 2020

Smith, B. P., Ingalls, M., **Trower, E. J.**, Lingappa, U. F., Present, T. M., Magyar, J. M., and †Fischer, W. W. (2020). Physical and chemical controls on carbonate intraclasts: an analog for ancient flat pebble deposits from the Great Salt Lake, Utah. *JGR-Earth Surface* 125 (11), e2020JF005733. <https://doi.org/10.1029/2020JF005733>

Jamison-Todd, S., Stein, N., Overeem, I., Khalid, A., and †**Trower, E. J.** (2020). Hurricane Deposits on Carbonate Platforms: a case study of Hurricane Irma deposits on Little Ambergris Cay, Turks and Caicos Islands. *JGR-Earth Surface* 125 (8), e2020JF005597. <https://doi.org/10.1029/2020JF005597>

**Trower, E. J.**, Bridgers, S., Lamb, M. P., and Fischer, W. W. (2020) Ooid cortical stratigraphy reveals common histories of individual co-occurring sedimentary grains. *JGR-Earth Surface* 125 (7), e2019JF005452. <https://doi.org/10.1029/2019JF005452>

Ingalls, M., Frantz, C. M., Snell, K., and †**Trower, E. J.** (2020). Carbonate facies-specific stable isotope data record climate, hydrology, and microbial communities in Great Salt Lake, UT. *Geobiology* 18(5), 566-593. <https://doi.org/10.1111/gbi.12386>

**Trower, E. J.** (2020). The enigma of Neoproterozoic giant ooids—Fingerprints of extreme climate? *Geophysical Research Letters* 47 (4), e2019GL086146. <https://doi.org/10.1029/2019GL086146>

## 2019

**Trower, E. J.** and Fischer, W. W. (2019). Precambrian Si isotope mass balance, weathering, and the significance of the authigenic clay silica sink. *Sedimentary Geology* 384, 1-11. <https://doi.org/10.1016/j.sedgeo.2019.02.008>

**Trower, E. J.**, Lamb, M. P., and Fischer, W. W. (2019). The origin of carbonate mud. *Geophysical Research Letters* 46 (5), 2696-2703. <https://doi.org/10.1029/2018GL081620>

## 2018

**Trower, E. J.**, Cantine, M., Gomes, M., Lingappa, U. F., O'Reilly, S., Present, T. M., Stein, N., Strauss, J. V., Lamb, M. P., Grotzinger, J. P., Knoll, A. H., and †Fischer, W. W. (2018). Active ooid growth driven by sediment transport in a high energy shoal, Little Ambergris Cay, Turks and Caicos Islands. *Journal of Sedimentary Research* 88 (9), 1132-1151. <https://doi.org/10.2110/jsr.2018.59>

**Trower, E. J.**, Ganti, V., Fischer, W. W., and †Lamb, M. P. (2018). Erosional surfaces in the Upper Cretaceous Castlegate Sandstone (Utah, USA): Sequence boundaries or autogenic scour from backwater hydrodynamics? *Geology* 46 (8), 707-710. <https://doi.org/10.1130/G40273.1>

## 2010-2017

**Trower, E. J.**, Lamb, M. P., and Fischer, W. W. (2017). Experimental evidence that ooid size reflects a dynamic equilibrium between rapid precipitation and abrasion rates. *Earth and Planetary Science Letters* 468, 112-118. <https://doi.org/10.1016/j.epsl.2017.04.004>

**Trower, E. J.**, and Lowe, D. R. (2016). Sedimentology of the ~3.3 Ga upper Mendon Formation, Barberton Greenstone Belt, South Africa. *Precambrian Research* 281, 473-494. <https://doi.org/10.1016/j.precamres.2016.06.003>

**Stefurak, E. J. T.**, Lowe, D. R., Zentner, D., and Fischer, W. W. (2015). Sedimentology and geochemistry of Archean silica granules. *GSA Bulletin* 127 (7-8), 1090-1107. <https://doi.org/10.1130/B31181.1>

Decker, N. B., †Byerly, G. R., Thompson Stiegler, M., Lowe, D. R., and **Stefurak, E.** (2015). High resolution tephra and U/Pb chronology of the 3.33-3.26 Ga Mendon Formation, Barberton Greenstone Belt, South Africa. *Precambrian Research* 261, 54-74. <https://doi.org/10.1016/j.precamres.2015.02.003>

**Stefurak, E. J. T.**, Fischer, W. W., and Lowe, D. R. (2015). Texture-specific Si isotope variations in Barberton Greenstone Belt cherts record low temperature fractionations in early Archean seawater. *Geochimica et Cosmochimica Acta* 150, 26-52. <https://doi.org/10.1016/j.gca.2014.11.014>

**Stefurak, E. J. T.**, Lowe, D. R., Zentner, D., and Fischer, W. W. (2014). Primary silica granules – A new mode of early Archean sedimentation. *Geology* 42 (4), 283-286. <https://doi.org/10.1130/G35187.1>

**Trower, E.** and Grotzinger, J. (2010). Sedimentology, diagenesis, and stratigraphic occurrence of giant ooids in the Ediacaran Rainstorm Member, Johnnie Formation, Death Valley region, California. *Precambrian Research* 180, 113-124. <https://doi.org/10.1016/j.precamres.2010.03.007>

## MANUSCRIPTS IN REVIEW, IN REVISION, AND IN PREPARATION

### In revision

Cantine, M., Orzechowski, E., Stein, N., Lincoln, T. A., Hibner, B. M., Present, T. M., Thorpe, M., Strauss, J. V., Bahniuk Rumpelsberger, A. M., Knoll, A. H., Grotzinger, J. P., Gomes, M. L., †**Trower, E. J.** (*in revision*) Rapid growth of a carbonate island over the last millennium. *Sedimentology*.

Leapaldt, H. C., Frantz, C. M., Olsen-Valdez, J., Snell, K. E., **Trower, E. J.**, and †Ingalls, M. I. (*in revision*) Primary to post-depositional microbial controls on the stable and clumped isotope record of shoreline sediments at Fayetteville Green Lake. *Geobiology*.

**Trower, E. J.**, Hibner, B. M., Lincoln, T. A., Dodd, J. A., Hagen, C. J., Cantine, M. D., and Gomes, M. L. (*in revision*) Revisiting elevation  $\delta^{13}\text{C}$  values of sediment on modern carbonate platforms. *Geophysical Research Letters*.

Yager, J. A., †West, A. J., **Trower, E. J.**, Fischer, W. W., Ritterbush, K. A., Rosas, S., Bottjer, D. J., Celestian, A., Berelson, W. M., and Corsetti, F. A. (*in revision*). Low dissolved silica in mid-Mesozoic oceans. *American Journal of Science*.

### In prep (mature manuscript)

Stevens, N., Brenner, D., **Trower, E. J.**, Bush, R., Raven, M., and †Gomes, M. L. (*in prep*) Using stable isotope compositions of Rock Iguana (*Cyclura carinata*) scat to assess anthropogenic impact on diet. For submission to *Isotopes in Environmental and Health Sciences*.

## PATENTS

**Trower, E. J.**, Lingappa, U. F., Grotzinger, J. P., and Fischer, W. W. "Microabrasive Compositions Containing Ooids." U.S. Patent 10,407,601, issued September 10, 2019.

## AWARDS AND GRANTS (listed by year awarded; total awarded @CU: \$2,339,457)

- 2022 NSF CAREER Award (**Sole PI**; \$819,983 CU budget; Aug. 2023 – Aug. 2028); "CAREER: To see a world in a grain of sand: Novel applications of sand grains as records of ancient surface environments"
- 2022 NSF MG&G RAPID Grant (**Lead PI**, co-PI M. Gomes (JHU), co-PI M. Cantine (U Washington); \$44,246 CU budget; Jan. 2023 – Dec. 2023); "RAPID: Assessing the role of hurricanes and microbes in enhancing coastal sediment accumulation"
- 2022 CU Thrive Grant (**Sole PI**; \$3,440 CU budget; Aug. 2022 – May 2023)
- 2022 NSF SedPaleo Research Grant (**Lead PI**, co-PI Carl Simpson (CU); \$471,604 CU budget; Aug. 2022 – Aug. 2025); "The origin and expansion of silica biomineralization and its influence on the global silica cycle"
- 2022 Sloan Foundation Fellow (**Sole PI**; \$75,000 CU budget; Sep. 2022 – Sep. 2024)
- 2021 NSF MG&G Collaborative Research Grant (**Lead PI**, co-PI I. Overeem (CU), co-PI M. Gomes (JHU); \$421,379 CU budget; Jan. 2021 – Dec. 2023); "Collaborative Research: Biologically-driven island-building during sea-level rise and its implications for promoting resilient coastlines"
- 2020 ACS PRF Doctoral New Investigator Grant (**Sole PI**; \$110,000 CU budget; Jun. 2021 – Aug. 2023) "Understanding the distribution of microborings and associated diagenetic transformations in the carbonate rock record via the ecophysiology of endolithic Cyanobacteria"
- 2020 Agouron Institute Geobiology Grant (**Lead PI**, co-PI M. Gomes (JHU); \$15,000 CU budget; Jul. 2020 – Jun. 2022); "A case study tracking the biological and sedimentological signatures of microbial mat recovery, Little Ambergris Cay, Turks and Caicos Islands"

- 2019 Agouron Institute Small Grant-in-Aid (**Lead PI**, co-PI M. Gomes (JHU); \$9,000 CU budget; Jan. 2019 – Dec. 2020); “SGIA Proposal: Continued observation of microbial mat recovery and adaptability, Little Ambergris Cay, Turks and Caicos Islands”
- 2018 NASA TWSC Grant (**Lead PI**, co-PI M. Gomes (JHU); \$49,973 CU budget; Jan. 2019 – Dec. 2019); “Support for Working Group to Evaluate Geobiological Controls on Microbial Mat Morphology and Fabric using Observations of Recovery from a Major Hurricane Disturbance, Little Ambergris Cay, Turks and Caicos Islands, British Overseas Territories”
- 2018 NSF SedPaleo Collaborative Research Grant (**co-PI**, PI K. Snell (CU), co-PI C. Frantz (Weber State U), co-PI W. Clyde (UNH); \$317,750 CU budget; Aug. 2018 – Aug. 2021, NCE to Aug. 2022); “Collaborative Research: Assessing the Sensitivity of High-altitude Environments to Global Increased Temperature as Recorded by Lacustrine Microbialite Carbonates”
- 2015 Agouron Institute Geobiology Postdoctoral Fellowship, California Institute of Technology
- 2009 NSF Graduate Research Fellowship, Stanford University

## INVITED SEMINARS

- 2023 Chevron Carbonate Café, University of Southern California (postponed due to death in family), Colorado College, Johns Hopkins University
- 2022 Virtual Seminar for Precambrian Geology (UC Riverside), University of New Mexico
- 2020 University of Wyoming, Northwestern University (postponed due to pandemic)
- 2019 Denver Museum of Nature and Science
- 2018 USGS Denver, Massachusetts Institute of Technology, University of New Mexico
- 2017 University of Arkansas, Pennsylvania State University, University of Colorado Boulder, University of California Los Angeles, California Institute of Technology, University of California Riverside
- 2016 University of Southern California
- 2015 University of Washington, University of Southern California
- 2014 California Institute of Technology

## MENTORING

### Postdocs

- Cedric Hagen (2021-present)
- Miquela Ingalls (2017-2018; co-advised by K. Snell; now Asst. Prof. @ Penn State)

### Graduate students

- Juliana Olsen-Valdez (PhD student 2019-present; co-advised by K. Snell)
- Tyler Lincoln (PhD student 2021-present)
- Bri Hibner (PhD student 2021-present)
- Jim Gutoski (PhD student 2022-present)
- Nicole Mizrahi (PhD student 2022-present)
- Taleen Mahseredjian (PhD student 2019-2020)
- Ginny Wala (PhD student 2019)

### IQBio graduate advising

- Catherine Fontana (Fall 2022 rotation)
- Catherine Fontana, Vanessa Maybruck, Rachel Billings (Spring 2023 group rotation; co-advised with Cresten Mansfeldt)

## Undergraduate students

- Kate Drobnich (GEOL honors thesis in progress)
- Ryan Flat (GEOL honors thesis in progress)
- Amir Romly (Uplift researcher 2022-2023, co-mentored by graduate student Jim Gutoski; GEOL honors thesis in progress)
- Nicolas Bell (research assistant 2022-2023, Carleton College senior thesis)
- Jim Gutoski (research assistant 2021-2022, CU Boulder GEOL major)
- Drew Brown (GEOL honors thesis, defended November 2020)
- Tyler Lincoln (GEOL honors thesis, defended April 2020)
- Sarah Jamison-Todd (GEOL honors thesis, defended March 2019)
- Chris Benben (GEOL honors thesis, defended April 2019)
- Sophia Bridgers (research assistant 2018, CU Boulder ATOC major)
- Pim Maydhisudhiwongs (independent study research project 2018, CU Boulder GEOL major)
- Andrew Chan (Caltech undergraduate summer research fellow @ CU Boulder, summer 2018; principally advised by M. Ingalls)
- Lydia Kivrak (Caltech undergraduate summer research fellow, summer 2017)
- Anusha Sinha (Caltech summer research intern, summer 2015)

## TEACHING

### Teaching at CU

History of a Habitable Planet (GEOL 1020; Spring 2019, Spring 2021, Fall 2022; 3 credits)

Sedimentology and Stratigraphy (GEOL 3430; co-taught with Budd in Spring 2023; 4 credits)

URGE (Unlearning Racism in the GEosciences) Seminar (GEOL 4700/5700; co-taught with Simpson in Spring 2022; 2 credits)

Sedimentology and Geobiology of Carbonates (GEOL 4660/5660; Spring 2018, Fall 2020, Spring 2022, Fall 2023; 3 credits)

Field Methods in Sedimentology (GEOL 4723; Maymester 2019, co-taught with Overeem in Maymester 2021; 2 credits)

Field Geobiology (GEOL4755/4755; co-taught with Wing in Fall 2021 and Fall 2022, co-taught with Simpson in Fall 2023 – trip cancelled due to Hurricane Hilary; 2 credits)

Precambrian Geology (GEOL5700-033; Spring 2020; 3 credits)

Carbonate Seminar (GEOL 5704; Fall 2019, Fall 2020, Spring 2022, Spring 2023; 1 credit)

Sedimentary Petrology (GEOL6310, co-taught with Budd; Spring 2020; 3 credits)

### Teaching before CU

2017 Head TA, International Geobiology Course (directors: Sessions, Fischer, Johnson)

2017 Guest Lecturer, Introduction to Geobiology – Caltech (instructors: Fischer and Kirschvink)

2013 TA, Sandstone Petrography – Stanford University (instructor: Lowe)

2012 TA, What Makes a Planet Habitable? – Stanford University (instructors: Lissauer, Marley, Zahnle)

2011, 2013 Lab TA, Introduction to Sedimentation – Stanford University (instructors: Graham and Lowe)

2007, 2008 TA, Introduction to Earth and Planetary Sciences – Caltech (instructor: Eiler)

## PROFESSIONAL DEVELOPMENT

2023 2023 RIO Faculty Fellows cohort (CU)

2022	FieldSafe Workshop (CU)
2021-2022	GeoAllies Program Participant (Texas Tech U / Rice U)
2020	ASSETT Summer Course Design Workshop (CU)
2019	Active Learning Academy Learning by Design cohort (CU)
2019	Transforming Education, Supporting Teaching and Learning Excellence (TRESTLE) assessment cohort (CU)
2019	Leadership for Advancement and Promotion (LEAP) Workshop (CU)
2018	Science Education Resource Center (SERC) Early Career Geoscience Workshop
2018	RIO PI Academy cohort (CU)

## **OUTREACH AND SERVICE TO THE COMMUNITY**

2018 – present	Pen Pal for the Letters to A Prescientist Program
2021 – 2022	GEMS (Geosciences Education & Mentorship Support) Mentor
2021	URGE participant, CU Boulder Geological Sciences Pod
2016	Collaboratively created and co-taught earth science lessons to 4 <sup>th</sup> grade students at Synergy Academy, shared this lesson plan with other local teachers as part of the Caltech Community Science Event program
2015 – 2016	Volunteer geology guide, ARTA River Trips
2011	Volunteer science mentor with The Girls' Middle School. Worked with a small group of middle school students on a field research project with an ecological/environmental focus.

## **SERVICE TO THE PROFESSION**

2017 – present	Ad hoc proposal reviews for NASA, NSF, and ACS PRF
2014 – present	Reviews for <i>Science</i> , <i>Nature Geoscience</i> , <i>Geology</i> , <i>Geobiology</i> , <i>JGR-Earth Surface</i> , <i>AGU Advances</i> , <i>Sedimentology</i> , <i>Terra Nova</i> , <i>Geochimica et Cosmochimica Acta</i> , <i>Earth and Planetary Science Letters</i> , <i>Precambrian Research</i> , <i>Astrobiology</i> , <i>Journal of Sedimentary Research</i> , <i>Sedimentary Geology</i> , <i>Applied Geochemistry</i> , <i>Open Geoscience</i> , <i>Minerals</i> , and the <i>South Africa Journal of Geology</i>
2023	SEPM Nominating Committee
2023	Guest instructor, International Geobiology Course (Penn State U)
2023	Panelist for NSF proposal review
2021, 2022, 2023 (2x)	Panelist for NASA proposal review
2021	Session convener, Goldschmidt: Dynamics of the global silica cycle across Earth history
2020	Session convener, SEPM International Sedimentary Geosciences Congress (postponed to 2024 due to pandemic)
2018 – 2020	SEPM Pettijohn Award Committee
2017 – 2021	Session convener, AGU Fall Meeting: Carbonate Sediments Through Time: Processes of Deposition and Diagenesis

## SERVICE TO THE UNIVERSITY

2023 – present	Chair, GEOL BAJEDI Committee
2023 – present	Chair, Lucas J. Kimes Postdoctoral Fellowship Search Committee
2022 – 2023	Member, GEOL DEI Committee
2021 – present	Faculty mentor to Shaily Rahman
2022	Panelist, Thriving at CU Series (Office of Faculty Affairs)
2021 – 2022	Member, GEOL Executive Committee
2020 – 2022	Chair, GEOL Colloquium Committee
2020	Member, GEOL Benson Chair Committee
2019 – 2021	Member, Graduate Admissions Committee
2018 – 2019	GEOL Representative on CSDMS Faculty Search Committee
2018 – 2019	Member, GEOL Graduate Curriculum Committee
2018 – 2019	Member, GEOL Analytical Facility and Space Committee
2018	GEOL Representative at UROP Symposium

## CONFERENCE ABSTRACTS (\* = presenting author, *student mentee*, *postdoc mentee*)

### 2023

- *Hibner, B.\**, *Bell, N.*, and **Trower, L.** “Observations of rapid cyanobacterial filament movement promoting trapping and binding of sand-sized sediment by microbial mats.” Poster presentation. AGU Annual Meeting. December 2023, San Francisco, CA, USA.
- *Gutoski, J.\**, Ingalls, M., Enos, E., and **Trower, L.** “New estimates of phosphate concentrations in Tonian seawater from giant ooids in the Beck Spring Dolomite.” Poster presentation. AGU Annual Meeting. December 2023, San Francisco, CA, USA.
- **Trower, L.\***, Cantine, M., and *Hibner, B.* “A jarring rate: Assessing the role of post-hurricane biofilm colonization in driving rapid intertidal zone lithification.” Poster presentation. AGU Annual Meeting. December 2023, San Francisco, CA, USA.
- *Lincoln, T.\**, Lingappa, U. F., *Hibner, B. M.*, Cameron, J. C., Brining, C., and **Trower, L.** “Assessing the drivers of microboring by endolithic cyanobacteria in modern carbonate sediment.” Poster presentation. AGU Annual Meeting. December 2023, San Francisco, CA, USA.
- Ingalls, M.\*, Frantz, C., *Olsen-Valdez, J.*, **Trower, L.**, and Snell, K. E. “How do terrestrial carbonates record major climate perturbations in the modern era?: A case study of Great Salt Lake mud through historic lake level drawdown.” Poster presentation. AGU Annual Meeting. December 2023, San Francisco, CA, USA.
- *Hibner, B.\**, Eckland, A., Cantine, M., *Hagen, C.*, Overeem, I., and **Trower, L.** “Using radiocarbon dated sediment cores to understand the formation process of a Holocene carbonate island in the Turks and Caicos Islands.” Poster presentation. AGU Annual Meeting. December 2023, San Francisco, CA, USA.
- *Olsen-Valdez, J.\**, Snell, K. E., **Trower, L.**, Clyde, W., and Widlansky, S. “Fingerprints of Microbially-Mediated Carbonate Precipitation in the Paleogene-aged Sheep Pass Formation, Nevada.” Oral presentation. AGU Annual Meeting. December 2023, San Francisco, CA, USA.



- Mizrahi, N.\*, Tang, Q., Shapiro, R. S., Karim, T., Zawaski, M., Xiao, S., Fischer, W. W., Simpson, C., and **Trower, L.** “Silicon Isotope Analyses of Early Paleozoic Sponge Spicules Indicate a Cambrian Emergence of Silica Biomineralization.” Poster presentation. AGU Annual Meeting. December 2023, San Francisco, CA, USA.

## 2022

- **Trower, E.\***, Smith, B. P., Koeshidayatullah, A., and Payne, J. L. “Marine ooid sizes record Phanerozoic seawater carbonate chemistry” Poster presentation. Geobiology GRC. November 2022, Ventura, CA, USA.
- Gutoski, J.\*, Simpson, C., Mackey, T., Wala, V. T., and **Trower, E.** “Guttulatic microfabrics within the Beck Spring Dolomite.” Poster presentation. GSA Annual Meeting. October 2022, Denver, CO, USA.
- Lincoln, T.\*, Lingappa, U., Hibner, B., Capece, L., Cameron, J., Johnson, E., and **Trower, E.** “Uncovering the advantage of microboring for endolithic cyanobacteria.” Poster presentation. GSA Annual Meeting. October 2022, Denver, CO, USA.
- Olsen-Valdez, J.\*, **Trower, E.**, Snell, K., Widlansky, S., and Clyde, W. “Paleoenvironmental change in a Paleogene-aged high-altitude lake basin; Sedimentology and facies characterization of the Sheep Pass Formation, Nevada.” Oral presentation. GSA Annual Meeting. October 2022, Denver, CO, USA.
- Hibner, B.\*, Bell, N., Gomes, M., and **Trower, E.** “Insights into the rates and mechanisms of microbial mat sediment trapping and binding via field and lab experiments.” Poster presentation. GSA Annual Meeting. October 2022, Denver, CO, USA.
- Bell, N.\*, Hibner, B., and **Trower, E.** “Investigating the effects of environment on short-term microbial mat sediment binding.” Poster presentation. GSA Annual Meeting. October 2022, Denver, CO, USA.
- **Trower, E.\***, Smith, B. P., Koeshidayatullah, A., and Payne, J. L. “Do marine ooid sizes record Phanerozoic seawater carbonate chemistry?” Oral presentation. GSA Annual Meeting. October 2022, Denver, CO, USA.

## 2021

- Koeshidayatullah, A., **Trower, L.\***, Li, X., Payne, J., Mukerji, T., Lehrmann, D. J., Morsilli, M., and Al-Ramadan, K. “Secular trends in ooid size: Can they inform us about ancient climate and ocean chemistry?” Poster presentation. AGU Annual Meeting. December 2021, New Orleans, LA, USA.
- **Trower, L.\*** ““A World in a Grain of Sand”: Exploring How the Size, Shape, and Fabric of Modern Ooids Reflect Their Environment (Invited).” Poster presentation. AGU Annual Meeting. December 2021, New Orleans, LA, USA.
- Ingalls, M.\* , Frantz, C. M., Snell, K. E., and **Trower, L.** “Leveraging facies-specific early diagenesis of lacustrine carbonate to improve basin-scale records of hydroclimate and microbial ecology.” Oral presentation. AGU Annual Meeting. December 2021, New Orleans, LA, USA.
- Leapoldt, H.\* , Olsen-Valdez, J., Frantz, C., Snell, K. E., **Trower, L.**, and Ingalls, M. “Seasonality of Lacustrine Carbonate Early Diagenesis via in situ Microbial Metabolisms in Green Lake, Fayetteville, NY.” Poster presentation. AGU Annual Meeting. December 2021, New Orleans, LA, USA.
- Olsen-Valdez, J.\*, Snell, K. E., **Trower, L.**, Clyde, W., and Widlansky, S. “Sedimentology and Geochemistry of High-altitude Lake Carbonates from the Sheep Pass Formation, Nevada: Refining the Paleoenvironmental and Paleoclimate Record from Lake Archives Deposited During Global Greenhouse Intervals.” Oral presentation. AGU Annual Meeting. December 2021, New Orleans, LA, USA.
- **Trower, E.\***, and Rahman, S. “Is the modern silica cycle in isotopic mass balance?” Poster presentation. Goldschmidt. July 2021, virtual.

## 2020

- Lincoln, T.\*, **Trower, L.**, and Webb, S. “Paragenetic history of multiple mineral phases in ooids from Great Salt Lake, UT.” Oral presentation. AGU Annual Meeting. December 2020, virtual.

- Olsen-Valdez, J., Snell, K. E., **Trower, L.**, Widlanksy, S., and Clyde, W. “Paleoclimatic and Environmental Reconstruction of Lacustrine Carbonates from the late Cretaceous to middle Eocene Sheep Pass Formation, Nevada.” Poster presentation. AGU Annual Meeting. December 2020, virtual.
- Williams, E.\*, Frantz, C., Wilcock, L., Ingalls, M., **Trower, L.**, and Snell, K. E. “One Year of Continuous Biogeochemical Monitoring of Carbonate Factory Sites in Great Salt Lake, Utah, USA.” Poster presentation. AGU Annual Meeting. December 2020, virtual.
- **Trower, E. J.\***, Strauss, J. V., Sperling, E. A., and Fischer, W. W. “Si isotopic analyses of Ordovician-Silurian sponge spicules and radiolarians indicate silica-depleted Paleozoic oceans.” Oral presentation. GSA Annual Meeting. October 2020, virtual.
- Gomes, M.\*, Howard, C., **Trower, E. J.**, Sibert, E. C., Present, T. M., and Lingappa, U. “Carbon isotope signatures in microbial mat carbonates—How do different carbonate components record information about local versus global carbon cycling? (Invited)” Oral presentation. GSA Annual Meeting. October 2020, virtual.
- Widlansky, S. J.\*, Clyde, W. C., Snell, K. E., **Trower, E. J.**, and Olsen-Valdez, J. “Magnetostratigraphy and geochronology of lacustrine carbonates from the Sheep Pass Formation, Nevada.” Oral presentation. GSA Annual Meeting. October 2020, virtual.
- **Trower, L.\*** “The enigma of Neoproterozoic giant ooids—Fingerprints of extreme climate?” Poster presentation. Geobiology GRC. January 2020, Galveston, TX, USA.

## 2019

- Li, X.\*, **Trower, E.**, Lehrmann, D., Minzoni, M., Kelley, B., Schaal, E., Yu, M., and Payne, J. L. “Implications of Giant Ooids for the Carbonate Chemistry of Early Triassic Oceans.” Poster presentation. AGU Annual Meeting. December 2019, San Francisco, CA, USA.
- Lingappa, U. F.\*, Fischer, W. W., and **Trower, L.** “Ecophysiology of Ooid Microborings Excavated by Endolithic Cyanobacteria.” Poster presentation. AGU Annual Meeting. December 2019, San Francisco, CA, USA.
- Phillips, A. A.\*, Speth, D. R., Miller, L. G., Wu, F., Wang, X. T., Potocek, D., Medeiros, P. M., Osburn, M. R., Johnson, H., **Trower, L.**, Berelson, W., West, A. J., Fischer, W. W., Orphan, V. J., Betts, H., Sessions, A. L., and Geobiology Course 2017 & 2018. “Microbial Succession in Hypersaline, Alkaline Mono Lake, CA.” Poster presentation. AGU Annual Meeting. December 2019, San Francisco, CA, USA.
- **Trower, L.\***, Mahseredjian, T., Overeem, I., Gomes, M., Howard, C., Lingappa, U. F., Present, T., and Sibert, E. C. “Grain-Trapping by Microbial Mats—A Key Mechanism of Sediment Accumulation in Mangroves? (Invited)” Oral presentation. AGU Annual Meeting. December 2019, San Francisco, CA, USA.
- **Trower, L.\***, Bridgers, S. L., Lamb, M. P., and Fischer, W. W. “Cortical Stratigraphy of Ooids from Great Salt Lake, UT.” Poster presentation. AGU Annual Meeting. December 2019, San Francisco, CA, USA.
- Li, X.\*, **Trower, E.**, Lehrmann, D., Minzoni, M., Kelley, B., Schaal, E., Yu, M., and Payne, J. L. “Formation of Early Triassic giant ooids: A window revealing coeval tropical ocean chemistry.” Poster presentation. IAS Annual Meeting. September 2019, Rome, Italy.

## 2018

- Yager, J. A.\*, West, A. J., **Trower, L.**, Corsetti, F. A., Bottjer, D. J., Berelson, W., and Fischer, W. W. “A change in silicic acid concentrations across the Triassic-Jurassic boundary? A look from  $\delta^{30}\text{Si}$  of sponge spicules via SIMS.” Poster presentation. AGU Annual Meeting. December 2018, Washington, DC, USA.
- Jamison-Todd, S. K.\*, Stein, N., and **Trower, L.** “Sedimentology of Hurricane Irma Deposits on a Modern Carbonate Platform.” Poster presentation. AGU Annual Meeting. December 2018, Washington, DC, USA.
- Chan, A. M.\*, Ingalls, M., Snell, K., and **Trower, L.** “Variations in Stable Isotope Composition of Great Salt Lake Carbonate: Is there a Microbial Impact on the Sedimentary Record?” Poster presentation. AGU Annual Meeting. December 2018, Washington, DC, USA.

- **Trower, E. J.\***, *Bridgers, S.*, Lamb, M. P., and Fischer, W. W. “Ooid Cortical Stratigraphy: The Topology of Concentric Laminations in Carbonate Sand Grains Record Grain-Scale Environmental Histories (Invited Presentation)”. Oral presentation. GSA Annual Meeting. November 2018, Indianapolis, IN, USA.
- **Trower, E. J.\***, Cantine, M., Bergmann, K., Lamb, M. P., and Fischer, W. W. “Revisiting Precambrian Carbonate Mud Production: Evidence that Abrasion Played a Key Role (Invited Presentation)”. Oral presentation. GSA Annual Meeting. November 2018, Indianapolis, IN, USA.
- Brengman, L. A., Johnson, K.\*, and **Trower, E. J.** “Grain Size Distributions and Mineralogy of Coated Grains, Detrital Sand and Silt Within the ~1.9 Ga Mesabi Iron Range, Minnesota.” Poster presentation. GSA Annual Meeting. November 2018, Indianapolis, IN, USA.
- *Ingalls, M.\**, **Trower, E.**, Frantz, C., and Snell, K. “Spatial stable isotope variability in modern lacustrine carbonate: How do local processes translate to the sedimentary record?” Oral presentation. Goldschmidt Conference. August 2018, Boston, MA, USA.
- **Trower, E.\***, Cantine, M., Gomes, M., Lingappa, U. F., O'Reilly, S., Present, T. M., Stein, N., Strauss, J. V., Lamb, M. P., Grotzinger, J. P., Knoll, A. H., Fischer, W. W. “Physical, Chemical, and Microbial Controls on Growth and Degradation of Ooids on Ambergris Shoal, Little Ambergris Cay, Turks and Caicos Islands, British Overseas Territories.” Oral presentation. AAPG Annual Meeting. May 2018, Salt Lake City, UT, USA.
- Grotzinger, J.\*, Gomes, M., Lingappa, U., Stein, N., **Trower, E.**, Alleon, J., Bahniuk, A. M., Cantine, M., Grotzinger, H., Metcalfe, K., Morris, D. K., O'Reilly, S., Orzechowski, E., Quinn, D., Sanders, C., Sibert, E., Strauss, J., *Tarika, M.*, Thorpe, M., Fischer, W., Knoll, A. “Diverse and Spatially Extensive Microbial Mat and Ooid Sand Depositional System, Little Ambergris Cay, Turks and Caicos Islands.” Oral presentation. AAPG Annual Meeting. May 2018, Salt Lake City, UT, USA.
- Present, T. M.\*, **Trower, E.**, Gomes, M., Lingappa, U., Stein, N., Thorpe, M., *Tarika, M.*, Alleon, J., Bahniuk, A. M., Morris, D. K., Orzechowski, E., Sanders, C., Sibert, E., Fischer, W., Knoll, A., Grotzinger, J. “Sedimentology and Geochemistry of Ooid Sands Buried Beneath Microbial Mats, Little Ambergris Cay, Turks and Caicos Islands.” Oral presentation. AAPG Annual Meeting. May 2018, Salt Lake City, UT, USA.
- Stein, N.\*, Quinn, D., Grotzinger, J., Fischer, W., Ehlmann, B., Gomes, M., Hayden, A., Lingappa, U., Knoll, A., **Trower, E.** “Distribution of and Environmental Impacts on Microbial Mat Ecosystems of Little Ambergris Cay, Turks and Caicos.” Poster presentation. AAPG Annual Meeting. May 2018, Salt Lake City, UT, USA.
- Lingappa, U.\*, Gomes, M., Metcalfe, K., Riedman, L., O'Reilly, S., Stein, N., **Trower, E.**, Present, T. M., Fischer, W., Knoll, A., Grotzinger, J. “Ecology and Biogeochemistry of Microbial Mats on Little Ambergris Cay.” Poster presentation. AAPG Annual Meeting. May 2018, Salt Lake City, UT, USA.
- *Ingalls, M.\**, **Trower, E.**, Frantz, C., and Snell, K. “Microbial overprinting of primary stable isotopic signatures in modern lacustrine carbonate.” Poster presentation. Rocky Mountain Geobiology Symposium. April 2018, Golden, CO, USA.

#### 2010-2017

- **Trower, L.\***, *Kivrak, L.*, Lamb, M. P., Fischer, W. W. “Experimental Evidence that Abrasion of Carbonate Sand is a Significant Source of Carbonate Mud.” Oral presentation. AGU Fall Meeting. December 2017, New Orleans, LA, USA.
- Present, T. M.\*, **Trower, L.**, Stein, N., Alleon, J., Bahniuk, A., Gomes, M. L., Lingappa, U., Metcalfe, K., Orzechowski, E. A., Riedman, L. A., Sanders, C. B., Morris, D. K., O'Reilly, S., Sibert, E. S., Thorpe, M., *Tarika, M.*, Fischer, W. W., Knoll, A. H., Grotzinger, J. P. “Context, Biogeochemistry, and Morphology of Diverse and Spatially Extensive Microbial Mats, Little Ambergris Cay, Turks and Caicos Islands, B.W.I.” Poster presentation. AGU Fall Meeting. December 2017, New Orleans, LA, USA.

- Meixnerova, J.\* , Betts, M., Westacott, S., Ingalls, M., Miller, L. G., Sessions, A. L., **Trower, L.**, Agouron Geobiology Course. "Mono Lake sediments preserve a record of recent environmental change." Poster presentation. AGU Fall Meeting. December 2017, New Orleans, LA, USA.
- Westacott, S.\* , Ingalls, M., Meixnerova, J., Betts, M., Lloyd, M. K., Miller, L. G., Sessions, A. L., **Trower, L.**, Agouron Geobiology Course. " $\delta^{18}\text{O}$  and Carbonate Clumped Isotopes as Proxies of Lake Level Change: Mono Lake Modern Sediments Inform Pleistocene Interpretations." Poster presentation. AGU Fall Meeting. December 2017, New Orleans, LA, USA.
- **Trower, E. J.\***, Fischer, W. W. "The Role of Silica as a Chemical Sediment Prior to the Advent of Metazoan Biomineralization (Invited Presentation)." Oral presentation. GSA Fall Meeting. October 2017, Seattle, WA, USA.
- Betts, M. N.\* , Meixnerova, J., Ingalls, M., Westacott, S., Miller, L. G., Sessions, A. L., **Trower, E. J.**, Agouron Geobiology Course 2017. "Mono Lake Sediments: A Record of Recent Environmental Change." Poster presentation. GSA Fall Meeting. October 2017, Seattle, WA, USA.
- Ingalls, M.\* , Westacott, S., Betts, M. N., Meixnerova, J., Lloyd, M., Miller, L. G., Sessions, A. L., **Trower, E. J.**, Agouron Geobiology Course 2017. "Sources of Carbonate Precipitation in Mono Lake Sediments:  $\delta^{18}\text{O}$  and Carbonate Clumped Isotopes as Lake Level Proxies." Poster presentation. GSA Fall Meeting. October 2017, Seattle, WA, USA.
- **Trower, E.\***, Lamb, M. P., Cantine, M., O'Reilly, S., Stein, N., Gomes, M., Strauss, J. V., Grotzinger, J. P., Knoll, A. H., and Fischer, W. W. "Sediment transport controls ooid growth." Poster presentation. Southern California Geobiology Symposium. April 2016, Los Angeles, CA, USA.
- **Trower, E.\***, Lamb, M. P., Grotzinger, J. P., Cantine, M., O'Reilly, S., and Fischer, W. W. "Sediment Transport Controls Ooid Growth." Poster presentation. AAPG Annual Meeting. April 2017, Houston, TX, USA.
- **Trower, E. J.\***, Cantine, M., O'Reilly, S.S., Strauss, J. V., Gomes, M. L., Grotzinger, H. M., Grotzinger, J. P., Knoll, A. H., Lamb, M. P., Lingappa, U., Metcalfe, K., Orzechowski, E. A., Quinn, D. P., Reidman, L. A., Stein, N., Fischer, W. W. "Evidence of Active Ooid Growth from Little Ambergris Cay, Turks and Caicos Islands, B. W. I." Oral presentation. AGU. December 2016, San Francisco, CA, USA.
- Gomes, M. L.\* , Lingappa, U., Metcalfe, K., O'Reilly, S. S., Riedman, L. A., Cantine, M., Ireland, B., Phillips, R., Stein, N., Orzechowski, E. A., Strauss, J. V., Grotzinger, H. M., Quinn, D. P., **Trower, L.**, Fischer, W. W., Grotzinger, J. P., Knoll, A. H., Fike, D. A. "Linking the modern to the ancient with a comprehensive geobiological understanding of biosignature preservation in microbial mats." Poster presentation. AGU. December 2016, San Francisco, CA, USA.
- Grotzinger, J. P.\* , Knoll, A. H., Fischer, W. W., Cantine, M., Gomes, M. L., Grotzinger, H. M., Lingappa, U., Metcalfe, K., O'Reilly, S. S., Orzechowski, E. A., Quinn, D. P., Reidman, L. A., Stein, N., Strauss, J. V., **Trower, L.** "Context, Biogeochemistry, and Morphology of Diverse and Spatially Extensive Microbial Mats, Little Ambergris Cay, Turks and Caicos Islands, BWI." Oral presentation. AGU. December 2016, San Francisco, CA, USA.
- Stein, N.\* , Quinn, D. P., Grotzinger, J. P., Knoll, A. H., Fischer, W. W., Cantine, M., Gomes, M. L., Grotzinger, H. M., Lingappa, U., Metcalfe, K., O'Reilly, S. S., Orzechowski, E. A., Reidman, L. A., Strauss, J. V., **Trower, L.** "UAV, DGPS, and Laser Transit Mapping of Microbial Mat Ecosystems on Little Ambergris Cay, BWI." Poster presentation. AGU. December 2016, San Francisco, CA, USA.
- Orzechowski, E. A.\* , Strauss, J. V., Knoll, A. H., Fischer, W. W., Cantine, M., Gomes, M. L., Grotzinger, H. M., Lingappa, U., Metcalfe, K., O'Reilly, S. S., Quinn, D. P., Reidman, L. A., Stein, N., **Trower, L.**, Grotzinger, J. P. "Age and Construction of Little Ambergris Cay Bedrock Rim, Southeastern Caicos Platform, British West Indies." Poster presentation. AGU. December 2016, San Francisco, CA, USA.

- Ganti, V.\* , Chadwick, A. J., Lamb, M. P., Fischer, W. W., **Trower, L.** "Autogenic erosional surfaces on backwater-mediated deltas from floods and avulsions." Oral presentation. AGU. December 2016, San Francisco, CA, USA.
- **Trower, E. J.\***, Lamb, M. P., and Fischer, W. W. "Why Do Ooids Grow So Slowly?" Oral presentation. GSA Fall Meeting. September 2016, Denver, CO, USA.
- **Trower, E. J.\***, Lamb, M. P., and Fischer, W. W. "Controls on ooid size: An experimental approach." Oral presentation. Southern California Geobiology Symposium. May 2016, Pasadena, CA, USA.
- **Trower, E. J.\***, Lamb, M. P., and Fischer, W. W. "What Controls Ooid Grain Size?" Oral presentation. AGU. December 2015, San Francisco, CA, USA.
- **Stefurak, E. J. T.\***, Lowe, D. R., Zentner, D., and Fischer, W. W. "Primary silica granules – Insights into silica precipitation mechanisms in early Archean seawater." Oral presentation. GSA Fall Meeting. October 2014, Vancouver, BC, Canada.
- **Stefurak, E. J. T.\***, Lowe, D. R., Zentner, D., and Fischer, W. W. "The formation and deposition of primary silica granules – A new model of early Archean silica deposition." Oral presentation. AGU. December 2013, San Francisco, CA, USA.
- Bird, J.\* , **Stefurak, E.**, Anderson, R., Menekse, M., Berelson, W., Sessions, A., Osburn, M., Spear, J., Stamps, B., Stevenson, B., Shapiro, R., Torres, M., and Corsetti, F. "Evaluating the biological influences on ooid formation in the Great Salt Lake, Utah." Poster presentation. AGU. December 2013, San Francisco, CA, USA.
- Anderson, R. P.\* , Bird, J. T., Menekse, M., **Stefurak, E. J. T.**, Berelson, W., Petryshyn, V. A., Shapiro, R. S., Sessions, A. L., Tripathi, A., and Corsetti, F. A. "Ooid formation in the Great Salt Lake, Utah: insights from clumped isotope paleothermometry." Poster presentation. AGU. December 2013, San Francisco, CA, USA.
- **Stefurak, E. J. T.\***, Fischer, W. W., and Lowe, D. R. " $\delta^{30}\text{Si}$  in early Archean cherts and implications for the silica cycle." Oral presentation. Goldschmidt. August 2013, Florence, Italy.
- **Stefurak, E. J. T.\***, Fischer, W. W., and Lowe, D. R. "Evidence of low temperature fractionation of silicon in Archean cherts: SIMS Si and O isotope measurements of 3.42-3.26 Ga banded carbonaceous cherts from the Onverwacht Group, Barberton Greenstone Belt, South Africa." Oral presentation. AGU. December 2012, San Francisco, CA, USA.
- Decker, N. B.\* , **Stefurak, E. J. T.**, Thompson, M. E., Lowe, D. R., and Byerly, G. R. "High resolution tephra and U/Pb chronology of the 3.33-3.26 Ga Mendon Formation, Barberton Greenstone Belt, South Africa." Poster presentation. AGU. December 2012, San Francisco, CA, USA.
- **Trower, E.\***, and Grotzinger, J. "Investigating the origin of the Rainstorm giant ooids in the Ediacaran Johnnie Formation, Death Valley region, California." Poster presentation. Southern California Geobiology Symposium. April 2010, Pasadena, CA, USA.