Jena E. Johnson

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EDUCATION

2015 PhD in Geobiology, California Institute of Technology

2009 B.S. in Geo-Biology with honors, Brown University

PROFESSIONAL POSITIONS

2018- Assistant Professor, Department of Earth and Environmental Sciences, University of Michigan

2015-2017 Agouron Postdoctoral Fellow, Department of Geological Sciences, University of Colorado, Boulder

HONORS AND AWARDS

2021 Michigan Earth Geoclub 'Best Professor' Award
2020 Michigan Earth Geoclub 'Best Professor' Award
2015 Milton and Francis Clauser Doctoral Prize at Caltech
2015 Center for Environmental Microbial Interactions (CEMI) Travel Grant, Caltech
2014 Lewis and Clark Award for Exploration and Field Research
2014 Caltech GPS Richard H. Jahns Teaching Award
2012 Lewis and Clark Award for Exploration and Field Research in Astrobiology
2011-14 National Science Foundation Graduate Research Fellowship Program
2009 Geological Sciences Senior Award at Brown University
2009 E.A. Mooar Prize for Academics, Research and Service to Brown Geology Department
2008 W. Gaston Scholarship (Research at Brown Award)
2008 Sarah LaMendola Award for Undergraduate Research at Brown University
2008 International Undergraduate Teaching and Research Award at Brown University
2006 National Sciences Foundation Research Experience for Undergraduates at USC

PROFESSIONAL SERVICE

2021 External Reviewer for NSF Low-temperature Geochemistry and Geobiology Program
2020 Panelist for NASA Exobiology Program
2018 Panelist for NASA Exobiology Program
2016-present: Journal Reviewer *Nature, Proceedings of the National Academy of Sciences (PNAS), Nature Geosciences, Nature Scientific Reports, Science Advances, Geology,*

Geochimica et Cosmochimica Acta (GCA), Geological Society of America (GSA) Bulletin, Free Radical Biology and Medicine, ACS Earth & Space Chemistry, ACS Environmental Science & Technology, and *Sedimentology.*

2015-present: Reviewer for Stanford Synchrotron Proposals
2017 Co-convener for Goldschmidt Session 15F *(Tracing Biogeochemical Cycles from Enzyme to Ecosystem using Novel Isotopic, Mineralogical and Organic Tools in Geobiology and Geochemistry)*
2016 Panelist for NASA Exobiology Program
2016 External Reviewer for NASA Astrobiology NESSF16 Fellowship program

UNIVERSITY/DEPARTMENTAL SERVICE

2021 NextProf Science panelist
2019-21 Diversity, Equity and Inclusion Committee member (including organizing Fall Preview)
2019 NextProf Science panelist
2018-19 Fall Preview Committee member, Diversity Committee member
2018 NextProf panelist and mentor for Adrianna Trusiak
2018 Judge for Michigan Geophysical Union
2018 Graduate Admissions Committee member

INVITED SEMINARS/LECTURES

2020 *(postponed)* Seminar, Department of Earth and Planetary Sciences, Purdue University
2019 Seminar, Department of Geophysical Sciences, University of Chicago
2018 Seminar, Department of Geological Sciences, Stanford University
2018 Seminar, Department of Geological and Environmental Sciences, Western Michigan University
2018 Seminar and Visiting Scientist, Earth-Life Science Institute (ELSI), Tokyo, Japan
2018 Guest Lecture (invited, virtual) at UNC Chapel Hill for graduate-level class 'Origin and Early Evolution of Life'
2017 Rotation Instructor for International Geobiology Summer Course, Caltech
2017 Seminar, Department of Geosciences, University of Massachusetts, Amherst
2017 Seminar, Department of Earth & Planetary Sciences, University of California, Santa Cruz
2016 Seminar, Department of Earth & Environmental Sciences, University of Michigan, Ann Arbor
2015 Seminar, Department of Civil and Environmental Engineering (student-run seminar series), Colorado School of Mines

RESEARCH GRANTS

Funded
NASA-EXO "Ancient iron silicates: deciphering mineral clues of early life",
PI JE Johnson, Co-I AS Templeton, $493K ($383K to Michigan), 07/01/2018-6/30/2021

Pending

NASA-FINESST (submitted 2/4/21) "Determining potential biosignatures in iron silicate clays formed under astrobiologically-relevant conditions"
FI ("Future Investigator") Alice Zhou, PI JE Johnson, $89K, 09/01/2021-08/31/2023

DOE (submitted 3/4/21) "Evaluating model predictions of clay mineral formation at the terrestrial aquatic interface using field-based experiments" [Exploratory Proposal]
PI M Torres (Rice U), Co-I JE Johnson, $300K ($27K to Michigan)

COURSES

2021 Summer. Ecosystem Science in the Rockies, EARTH 450-2
5 credits, teaching ~25% of course with Drew Gronewold, 24 students.
2021 Winter. Environmental Geochemistry, EARTH 325
4 credits, lecture/activities and lab section, 33 students.
2020 Fall. Geomicrobiology, EARTH 413
4 credits, lecture/activities and discussion section, 27 students.
2020 Winter. Environmental Geochemistry, EARTH 325
4 credits, lecture/activities and lab section, 52 students.
Winter. Graduate Seminar on Biogeochemistry, EARTH 541
2 credits, reading group, 4 students.
2019 Fall. Geomicrobiology, EARTH 413
4 credits, lecture/activities and discussion section, 20 students.
2019 Winter. Environmental Geochemistry, EARTH 325
4 credits, lecture/activities and lab section, 35 students.
2018 Summer. Intro to Earth and Environmental Sciences in the Rockies, EARTH 202
5 credits, taught ~20% of course with Greg Dick and Chris Poulsen, 13 students.
2018 Winter. Geomicrobiology, EARTH 413
4 credits, lecture/activities and discussion section, 18 students.
2017 Winter. Introduction to Geochemistry, GEOL 3320 (CU-Boulder)
Primary instructor for ~1/3 of class, lecture/activities, 45 students.

STUDENTS, POSTDOCS, AND STAFF ADVISED AND SUPERVISED

PhD students, Advisor
2019 – present: Alice Zhou

MS students, Advisor
2020 – present: Isaac Hinz
2019 – present: Christine Nims

Undergraduate students
2021 – present: Daniel Zammit (EES)
2020 – present: Trinity Pryor (EES)
2020 – 2020: Sharonda Chiangong (undeclared) and Kaitlin Koshurba (EES)
2018 – 2019: Samantha Theuer (EES), Senior Honors Thesis, advisor
2017 – 2018 Isaac Hinz senior thesis (at CU-Boulder), co-advised with Alexis Templeton (CU)

Dissertation Member (PhD in EES unless otherwise noted)
2021 – 2024 *(expected)*: Emma Rieb, dissertation committee member
2021 – 2024 *(expected)*: Rachel Cable (EEB), prelim & dissertation committee member
2020 – 2023 *(expected)*: Jackie Kleinsasser, dissertation committee member
2018 – 2021: Rebecca Dzombak, dissertation committee member
2018 – 2019: Sharon Grim, dissertation committee member

Research Staff
2020 – present: Drake Yarian (EES alum, lab manager); Kaitlin Koshurba (EES alum)
2018 – 2020: Isaac Hinz (lab manager)

Prelim Committee Member, Earth and Environmental Sciences
2020 Kevin Velez, prelim committee member
2020 Jackie Wrage (now Kleinsasser), prelim committee member
2020 Colleen Yancey, prelim committee member
2019 Maria Rodriguez Mustafa, prelim committee member
2019 Prithvi Thakur, prelim committee member
2019 Elizabeth Crowther, prelim committee member

PUBLICATIONS
Underline denotes early career scientists mentored by Johnson at U-Michigan; Please note that my subdiscipline designates senior authors as the last author.

18. Slotznick SP. **Johnson JE**, Rasmussen B. Raub TD, Webb SM, Kirschvink JL, Fischer WW (first submitted 2/13/21), Re-examination of 2.5 Ga "Whiff" of Oxygen Interval Points to Anoxic Ocean Before GOE, in review at *Science Advances*.

17. Metcalfe KS, **Johnson JE,** Webb SM, Fischer WW (under revision at *Palaios*) Diagenetic stabilization of manganese- and iron-rich sedimentary rocks.

16. Hinz I, Nims C, Theuer S, Templeton AS, **Johnson JE** (2021) Ferric Iron Triggers Greenalite Formation in Simulated Archean Seawater, *Geology*. doi: 10.1130/G48495.1

15. Paris G, Fischer WW, **Johnson JE,** Webb SM, Present TM, Sessions AL, Adkins JF (2020) Deposition of sulfate aerosols with positive $\Delta^{33}S$ in the Neoarchean*, Geochimica et Cosmochimica Acta* **285**, 1-20. doi: 10.1016/j.gca.2020.06.028.

14. **Johnson JE,** Webb SM, Condit CB, Beukes NJ, Fischer WW (2019) Effects of Metamorphism and Metasomatism on Manganese Mineralogy: Examples from the Transvaal Supergroup, *South African Journal of Geology* **122** (4), 489-504.

13. **Johnson JE,** Molnar PH (2019) Widespread and Persistent Deposition of Iron Formations for Two Billion Years, *Geophysical Research Letters* **46**, 3327-3339. doi: 10.1029/2019GL081970.

12. **Johnson JE** (2019) From Minerals to Metabolisms: Evidence for Life Before Oxygen from the Geologic Record, *Free Radical Biology and Medicine* **Special Issue: Early Life on Earth and Oxidative Stress,** *invited review*. doi: 10.1016/j.freeradbiomed.2019.01.047

11. **Johnson JE,** Muhling JR, Cosmidis J, Rasmussen B, Templeton AS (2018) Low-Fe(III) Greenalite Was a Primary Mineral From Neoarchean Oceans, *Geophysical Research Letters* **45**, 3182-3192. doi: 10.1002/2017GL076311.

10. Fischer WW, Hemp J, **Johnson JE** (2016) Evolution of Oxygenic Photosynthesis, *Annual Reviews of Earth and Planetary Sciences* **44**, doi: 10.1146/annurev-earth-060313-054810.

9. **Johnson JE**, Savalia P, Davis R, Kocar BD, Webb SM, Nealson KH, Fischer WW (2016) Real-time Manganese Phase Dynamics during Biological and Abiotic Manganese Oxide Reduction, *Environmental Science and Technology* **50** (8), 4248-4258.

8. Hemp J, Lucker S, Schott J, Pace LA, **Johnson JE**, Schink B, Daims H, Fischer WW (2016) Genomics of a phototrophic nitrite oxidizer: insights into the evolution of photosynthesis and nitrification, *The ISME Journal* **1-10**, doi:10.1038/ismej.2016.56.

7. **Johnson JE**, Webb SM, Ma C, Fischer WW (2016) Manganese mineralogy and diagenesis in the sedimentary rock record, *Geochimica et Cosmochimica Acta*, **173**, 210-231.

6. Martindale RC, Strauss JV, Sperling EA, **Johnson JE**, Van Kranendonk MJ, Flannery D, French K, Lepot K, Mazumder R, Rice MS, Schrag DP, Summons R, Walter M, Abelson J, Knoll AH (2015) Sedimentology, chemostratigraphy, and stromatolites of the lower Paleoproterozoic carbonates, Turee Creek Group, Western Australia, *Precambrian Research* **266,** 194-211.

5. Fischer WW, Hemp J, **Johnson JE** (2015) Manganese and the evolution of oxygenic photosynthesis, *Origin of Life and Evolution of Biospheres*, doi: 10.1007/s11084-015-9442-5.

4. **Johnson JE,** Gerpheide A, Lamb MP, Fischer WW (2014) O_2 constraints from Paleoproterozoic detrital pyrite and uraninite, *Geological Society of America Bulletin,* **126** 5-6, 813-830.

3. Fischer WW, Fike DA, **Johnson JE**, Raub TD, Guan Y, Kirschvink JL, Eiler JM (2014) SQUID-SIMS, a useful approach to uncover primary signals in the Archean sulfur cycle, *Proceedings of the National Academy of Sciences* **111,** 5468-5473.

2. **Johnson JE,** Webb SM, Thomas K, Ono S, Kirschvink JL, Fischer WW (2013) Correcting mistaken views of sedimentary geology, Mn-oxidation rates, and molecular clocks, *Proceedings of the National Academy of Sciences* **110**, E4119-E41120.

1. **Johnson JE**, Webb SM, Thomas K, Ono S, Kirschvink JL, Fischer WW (2013) Manganese-oxidizing photosynthesis before the rise of cyanobacteria, *Proceedings of the National Academy of Sciences* **108,** 11238-11243.

CONFERENCE ABSTRACTS FROM PREVIOUS 5 YEARS

Johnson JE, Hinz I, Templeton AS, Nims C, Zhou A; "Determining signals of early iron-cycling life through process-based experiments", **Goldschmidt Conference, July 2021**

Hinz I, Nims C, Theuer S, Templeton AS, **Johnson JE**; "Ferric Iron Catalyzes The Formation of Iron-rich Silicates Under Archean Ocean-Like Conditions", **GSA North-Central Section, May 2020:** ***poster***

Johnson JE, Hinz IL, Templeton AS, Theuer S; "Ferric Iron Catalyzes Greenalite Formation under Archean Ocean-like Conditions", **Gordon Research Conference, Jan 2020:** ***poster***

Smith SY, **Johnson JE,** Levin NE, Dick G, Munson J, Arbic BK, Stein R; "Diversity, Equity, & Inclusion Initiatives in Earth Sciences at the University of Michigan", **American Geophysical Union (AGU), Dec 2019:** ***talk by Smith***

Johnson JE, Hinz IL, Templeton AS, Theuer S, Ellison E; "Experimental insights into the formation of iron-rich clays on early Earth and Mars", **Goldschmidt Conference, Aug 2019:** ***Invited Speaker***

Johnson JE, Hinz IL, Ellison E, Templeton AS; "Experimental Insights into the Formation of Iron Silicates in Banded Iron Formations", **GSA Fall Conference, Nov 2018:** ***Invited Speaker***

Johnson JE, Muhling J, Cosmidis J, Rasmussen B, Templeton AS; "Characterizing and Experimentally Replicating Primary BIF Minerals from 2.5 Ga", **Goldschmidt Conference, Aug 2017:** ***Invited Speaker***

Johnson JE, Rasmussen B, Muhling J, Benzerara K, Jézéquel D, Cosmidis J, Templeton AS; "Exploring Iron Silicate Precursors of Ancient Iron Formations through Rock Record, Laboratory and Field Analogue Investigations", **American Geophysical Union (AGU), Dec 2016:** ***Invited Speaker***

Johnson JE, Templeton AS; "Rock record, experimental, and field-analogue investigations of banded iron formation iron silicates" *Postdoc Lightning Talk* **Telluride Iron Biogeochemistry Workshop, Aug 2016**

Johnson JE, Savalia P, Davis R, Kocar BD, Webb SM, Nealson KH, Fischer WW; "Understanding Manganese Reduction Using Time-Resolved Synchrotron-Based Experiments", *'Novel Tools and Techniques',* **Gordon Research Conference in Geobiology, Feb 2016:** ***Invited Speaker***
