

Juliet Ryan-Davis

Assistant Professor

Morrissey College of Arts & Sciences – Department of Earth & Environmental Sciences

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EDUCATION

Ph.D. Geology, California Institute of Technology, Pasadena, CA	2025
M.S. Geology, California Institute of Technology, Pasadena, CA	2020
B.A. Geology (with honors), Middlebury College, VT	2013

EXPERIENCE

Employment

Crosby Postdoctoral Fellow , Massachusetts Institute of Technology	2025 – 2026
Graduate Research Assistant , California Institute of Technology	2018 – 2025
Geologist , U.S.G.S. Volcano Science Center, Menlo Park, CA	2015 – 2018
Education Coordinator , AmeriCorps / Sierra Streams Institute, CA	2014 – 2015
Post-Baccalaureate Researcher , Pomona College Geology, Claremont, CA	2013 – 2014
National Park Service AmeriCorps Intern , Devils Postpile N.M., CA	June – October 2013
Summer Undergraduate Research Assistant , Middlebury College, VT	Summer 2012

Advising and Mentoring

Heather Aikman, (Boston College M.S.) – Advisor	2026–present
Marisol Gonzales-Flores, (Boston College M.S.) – Co-Advisor <i>with S. Kruckenberg</i>	2026–present
Zoe Molitor, (Boston College Postdoc)	2026–present
Ashlin Niemiec, (Boston College M.S.) – M.S. Committee Member	2025–2026
Asha Kannan, (Middlebury Undergraduate) – MUSE Summer Mentor	2025
Jihao Li, (UC Irvine Undergraduate) – MUSE Summer Mentor	2025
Ryan Gray, (MIT Undergraduate) – Field work	2024
Emma Bertran, (HS Sophomore, Polytechnic School Pasadena) – XRF/SEM/EPMA	2023–2025
Lily Coffin, (Caltech Undergraduate) – XRF	2021–2023
Anna Kitagawa, (Caltech Undergraduate SURF) – mineral separation, fs-LA-MC-ICPMS	2022
Rahul Chawlani, (Caltech Undergraduate SURF) – XRF	2021
Jennifer Bass, (Pomona College recent graduate) – Fieldwork	2021
Grace Hruska, (Pomona College recent graduate) – Fieldwork	2020–2021

Teaching Experience

Exploring the Earth (Instructor)	Fall 2026
Earth Systems Seminar (Co-Instructor <i>with T. Wang</i>)	Fall 2026
MIT LEAPS Co-Facilitator (<i>A. Frebel & A.D. Rigos</i>)	Spring 2026
Big Pine High School Geology Curriculum development, teaching and field trip	2023
GO-Outdoors Field Trip Leader, PUSD Middle Schools and High Schools	2021–2023
Geoethics Reading Seminar, Caltech	2022
Graduate Teaching Assistant, Caltech	
Ge 121c Advanced Field Geology (<i>C. Bucholz</i>)	2023
Ge 115a Petrology and Petrography: Igneous Petrology (<i>E. Stolper</i>)	2022

Ge 190 GPS GO-Outdoors Field-Based Outreach (<i>J.-P. Avouac & C. Bucholz</i>)	2020–21
Ge 136 abc, Regional Field Geology of the Southwestern U.S. (<i>J. Kirschvink</i>)	2019–20
Outdoor Science Education, Sierra Streams Institute	
Summer Learning Academy, 4 th –6 th Grade Science Teacher, Nevada City, CA	2015
6 th Grade Geology Unit, Yuba River Charter School, Nevada City, CA	2015
Science Discovery Preschool Teacher, Nevada City, CA	2014-2015
Assistant Teaching, K-12 Science, Nevada City, CA	2014-2015
Undergraduate Teaching Assistant, Middlebury College	
Mineralogy (<i>R. Coish</i>)	2012
The Dynamic Earth (Introductory Geology) (<i>D. West, P. Manley</i>)	2011

Grants

MSA Grant for Student Research in Mineralogy and Petrology (\$5000)	2021
VGS Research Grant, Vermont Geological Society (\$700)	2012
GSA Northeast Section Undergraduate Research Grant (\$1000)	2012
Senior Research Project Supplement, Middlebury College (\$1000)	2012
John M. White '52 Memorial Research Fund, Middlebury College (\$4600)	2012

Awards

10 th Hutton Symposium Best Poster Award	2023
Caltech GPS Division Richard H. Jahns Award – outstanding achievement as a T.A.	2023
Cordilleran GSA Section Meeting Graduate Student Poster Award	2021
Caltech GPS Division Diversity, Equity and Inclusion Award – leading in DEI efforts	2021
Caltech GPS Division Ian Campbell Award – outstanding performance in field geology	2020
U.S. Geological Survey group STAR award for IAVCEI Field Trip Leadership	2017
U.S. Geological Survey STAR award for exceptional performance	2016
Vermont Geological Society Annual Meeting – Excellence in Geological Sciences	2013
Erikki “Stubb” Mackey Award – Spirit, Sportsmanship, Dedication and Excellence	2013
NCAA DIII 2x All-American Athlete and All-Academic Athlete, Track & Field	2013
NCAA DIII National Champion, All-American and All-Academic Athlete, T&F	2011, 2012

INVITED LECTURES

U.S. Geological Survey Volcano Science Center — Seminar	May 21, 2026
Massachusetts Institute of Technology — Earth Science Seminar	April 7, 2026
Tulane University — McWilliams Seminar	Feb 20, 2026
GSA Annual Meeting — Session T127	Oct 22, 2025
GSA Annual Meeting — Session T130 — <i>given by M.J. Lewis</i>	Oct 19, 2025
Stanford University — Department Seminar	Oct 14, 2025
Boston College — Department Seminar	Feb 13, 2025
California State University, Fullerton — Department Seminar	Mar 13, 2024
AGU Fall Meeting — Session V013	Dec 12, 2023
University of California, Santa Barbara — Department Colloquium	Dec 7, 2023
University of Washington — Petrolunch Seminar	Nov 17, 2023
Middlebury College — Earth and Climate Sciences Department Seminar	Sept 29, 2023
University of Southern California — Lithospheric Dynamics Seminar	Apr 20, 2022
University of Nevada, Reno — DGSE Department Seminar	Oct 4, 2021
California Institute of Technology — Geoclub Seminar	Jan 4, 2021

FIELD EXPERIENCE*Fieldwork*

Mono Craters, California – <i>sampling of granitic clasts</i>	2026
Moxie Plutonic Complex, Maine – <i>igneous/sulfide petrology, sampling</i>	2024
Emigrant Gap intrusive complex, CA – <i>igneous petrology, mapping, sampling</i>	2019, 2021, 2022
Sierra Nevada batholith, California – <i>igneous petrology and sampling</i>	2018, 2019, 2020, 2021
Mono Basin, CA – <i>structural geology, sampling</i>	2017, 2018, 2020
Glacier Peak, WA – <i>geologic mapping, sampling</i>	2018
Laguna del Maule volcanic field, Chile – <i>mapping, tephra sampling</i>	2016, 2018
Long Valley, CA and nearby – <i>geologic mapping, sampling,</i>	2016, 2017, 2018
Mount Shasta, CA – <i>gas sampling, Ar/Ar geochronology sampling</i>	2016, 2017, 2018
Burney Mountain and Lassen Volcanic Field, CA – <i>geologic mapping, sampling</i>	2017
Harrat Rahat volcanic field, Saudi Arabia – <i>paleomagnetic, Ar/Ar, cosmogenic He sampling</i>	2017
San Joaquin River, Sierra Nevada, CA – <i>mapping, Ar/Ar geochronology sampling</i>	2016
Newberry Volcano, OR – <i>mapping, geochemistry and Ar/Ar geochronology sampling</i>	2016
Yuba River and tributaries, California – <i>water quality & ecology monitoring & surveys</i>	2014-2015
Mojave and Sierra Nevada skarns, wallrocks, plutons & dikes – <i>mapping and sampling</i>	2014
Devils Postpile National Monument – <i>water quality & climate change monitoring</i>	2013
Moretown Fm., Vermont – <i>Detrital zircon sampling</i>	2012

Coursework field trips

Independence Dikes, CA – <i>field geology</i>	2024
Spirit Mountain Batholith, NV – <i>igneous petrology</i>	2023
Ridge Basin, CA – <i>fluvial sedimentology</i>	2020
Lower Colorado River – <i>sedimentology field trip</i>	2019
Eastern California Shear Zone – <i>photogrammetry, active tectonics field trips</i>	2018, 2019

Conference/organized field trips

NEIGC Trip D – Northeast Connecticut “Central Maine Terrane” by Z. Molitor & J. Ague	2025
Calabria crustal section, Italy – <i>10th Hutton Symposium field trip</i>	2023
Ivrea Zone, Italy – <i>10th Hutton Symposium field trip</i>	2023
Adamello batholith, Italy – <i>10th Hutton Symposium field trip</i>	2023
Ploumanac’h composite intrusion, France – <i>Granites Summer School II field trip</i>	2019
Laguna del Maule volcanic field, Chile – <i>AGU Chapman conference field trip</i>	2018
CA Cascades and Long Valley Caldera – <i>IAVCEI Field Trip organizer and assistant</i>	2017

LEADERSHIP, SERVICE AND PROFESSIONAL AFFILIATIONS

MIT Leadership & Professional Strategies & Skills Training – <i>selected as a co-facilitator</i>	2026
MIT Research Mentoring Certificate (training)	2026
Student Member-at-Large on GSA’s Annual Program Committee	2021–2023
Student Representative on Caltech DEI Committee, by peer nomination	2021–2022
AGU Working Group on Ethical Sampling	2021–2022
Co-Creator of GO-Outdoors program (https://go-outdoors.caltech.edu/)	2020
Elected Co-Chair of Middlebury Geology Department Student Advisory Council	2013
Middlebury College Varsity Cross Country captain and Varsity Track & Field	2009–2013

Reviewer for journals including: Journal of Petrology, Treatise on Geochemistry, American Mineralogist, Volcanica, Gondwana Research, G-Cubed, Geochimica et Cosmochimica Acta, Chemical Geology

Professional Society Affiliations

Geological Society of America, Geochemical Society, American Geophysical Union, Mineralogical Society of America, SACNAS, IAVCEI, Association for Women Geoscientists

PUBLICATIONS – In preparation

Ryan-Davis, J., Bucholz, C.E., Bucholz, C.E., Lackey, J.S., Lewis, M.J., Kylander-Clark, A., Kitajima, K., and Valley, J.W. (*in prep*), Upper-crustal mafic intrusions fingerprint early, geologically-controlled contamination in a continental arc.

Ryan-Davis, J., Bucholz, C.E., Lackey, J.S., Lewis, M.J., Kylander-Clark, A., and Wilner, O. (*in prep*), Sierra Nevada upper-crustal mafic intrusions record arc migration into thickened continental crust.

PEER-REVIEWED PUBLICATIONS

- 9) **Ryan-Davis, J.**, Bucholz, C.E., and Sisson, T.W. (2026), Shallow differentiation of primitive arc magmas at the Jurassic Emigrant Gap mafic complex, Sierra Nevada, CA. Journal of Petrology. <https://doi.org/10.1093/petrology/egag013>
- 8) Lewis, M.J., **Ryan-Davis, J.** and Bucholz, C.E. (2023), Mafic intrusions record mantle inputs and crustal thickness in the Eastern Sierra Nevada batholith. GSA Bulletin. <https://doi.org/10.1130/B36646.1>
- 7) **Ryan-Davis, J.** and Scalice, D. (2022), Co-creating ethical practices and approaches for fieldwork. AGU Advances, 3, e2022AV000762. <https://doi.org/10.1029/2022AV000762>
- 6) Hildreth, W., Fierstein, J. and **Ryan-Davis, J.** (2021), No ring fracture in Mono Basin, California. Geological Society of America Bulletin. <https://doi.org/10.1130/B35747.1>
- 5) **Ryan-Davis, J.**, Lackey, J.S., Gevedon, M.L., Barnes, J.D., Lee, C-T.A., Kitajima, K., and Valley, J.W., (2019) Andradite skarn garnet records of exceptionally low $\delta^{18}\text{O}$ values along an Early Cretaceous intrusive contact, Sierra Nevada, CA. Contributions to Mineralogy and Petrology 174:68. <https://doi.org/10.1007/s00410-019-1602-6>
- 4) Hildreth, W., **Ryan-Davis, J.**, and Harlow, B., (2017), Graphite in the Bishop Tuff and its effect on postcaldera oxygen fugacity. Geosphere, v. 14(1), p. 343-359. <https://doi.org/10.1130/GES01548.1>
- 3) Muffler, L.J.P, Donnelly-Nolan, J.M., Grove, T.L., Clynne, M.A., Christiansen, R.L., Calvert, A.T., and **Ryan-Davis, J.** (2017) Overview for geologic field-trip guides to volcanoes of the Cascades Arc in Northern California. U.S. Geological Survey Scientific Investigations Report 2017-5022-K, 6p., <https://doi.org/10.3133/sir20175022K>.
- 2) McDonald, F.A, **Ryan-Davis, J.**, Coish, R.A, Crowley, J. and Karabinos, P. (2015) A Newly Identified Gondwanan Terrane in the Northern Appalachians: Implications for the Taconic Orogeny and Closure of the Iapetus Ocean: REPLY. Geology, v. 43(4): e360. <https://doi.org/10.1130/G36575Y.1>
- 1) McDonald, F.A, **Ryan-Davis, J.**, Coish, R.A, Crowley, J. and Karabinos, P. (2014) A Newly Identified Gondwanan Terrane in the Northern Appalachians: Implications for the Taconic Orogeny and Closure of the Iapetus Ocean. Geology, v. 42(6), p. 539-542. <http://dx.doi.org/10.1130/G35659.1>

CONFERENCE ABSTRACTS

- 22) **Ryan-Davis, J.**, Bucholz, C.E., Lackey, J.S., Lewis, M., Kylander-Clark, A., Kitajima, K. and Valley, J.W. (2025) Local crust imparts its geochemical signature on arc magmas: A regional case study of shallow mafic intrusions across the Sierra Nevada batholith. Geological Society of America Abstracts with Programs, v. 57 no. 6. [10.1130/abs/2025AM-6717](https://doi.org/10.1130/abs/2025AM-6717).
- 21) **Ryan-Davis, J.**, Bucholz, C.E., Lackey, J.S., Lewis, M., Kylander-Clark, A., Wilner, O. (2025) Crustal controls on systematic variability of mafic intrusions across the Sierra Nevada batholith. Geological Society of America Abstracts with Programs, v. 57 no. 6, [10.1130/abs/2025AM-5467](https://doi.org/10.1130/abs/2025AM-5467).
- 20) **Ryan-Davis, J.**, Bucholz, C.E., Sisson, T. (2023) An intrusive record of shallow differentiation of low-H₂O primitive arc magmas: Emigrant Gap, California. Abstract #V23A-04. 2023 Fall Meeting, AGU, San Francisco, Calif., 11–15 Dec.
- 19) **Ryan-Davis, J.**, Bucholz, C.E., Lackey, J.S., Lewis, M., Kitajima, K. and Valley, J.W. (2023) Mafic contributions across the Sierra Nevada batholith, California, USA. 10th Hutton Symposium, Baveno, Italy, 10–15 Sept.
- 18) **Ryan-Davis, J.**, Bucholz, C.E., Sisson, T. (2023) Fractional crystallization and open system processes of H₂O-poor primitive basalt at the Jurassic Emigrant Gap intrusive complex, Sierra Nevada batholith, California. Mineralogical Magazine, Goldschmidt2023 Abstracts, 19032.
- 17) **Ryan-Davis, J.**, Bucholz, C.E., Sisson, T., Tissot, F.L.H., Druzhinina, Z. and Present, T. (2021) Field, petrologic and geochemical evidence for upper-crustal ultramafic cumulate fractionation to generate intermediate plutons at Emigrant Gap, Sierra Nevada, California. Geological Society of America Abstracts with Program, v. 53 no. 6. doi: 10.1130/abs/2021AM-370122.
- 16) Bucholz, C.E., Lewis, M.J. and **Ryan-Davis, J.** (2021) Contributions of mafic magmatism to the upper crustal Sierra Nevada Batholith, California. Geological Society of America Abstracts with Program, v. 53 no. 6. doi: 10.1130/abs/2021AM-366528.
- 15) **Ryan-Davis, J.**, Condit, C., Hildreth, W. and Fierstein, J. (2021) Mixed mode deformation in the transpressional Grant-Parker Shear Zone, Eastern Sierra Nevada, CA. Geological Society of America Abstracts with programs, v. 53 no. 4. doi: 10.1130/abs/2021CD-363305.
- 14) Lewis, M.J., Bucholz, C.E. and **Ryan-Davis, J.** (2020) Geochronology and petrochronology of upper crustal mafic plutons support a mantle connection to arc magmatic productivity: Eastern Sierra Nevada batholith, CA. Geological Society of America Abstracts with Program, v. 52 no. 6. doi: 10.1130/abs/2020AM-357576.
- 13) Sisson, T.W., Vazquez, J., **Ryan-Davis, J.** and Vallance, J. (2019) Long incubation time and repeated chamber evacuation for explosive dacites from Glacier Peak volcano, Washington. Abstract V23D-0246. 2019 Fall Meeting, AGU, San Francisco, California, 9–13 Dec.
- 12) **Ryan-Davis, J.** and Fierstein, J. (2018) Mafic enclaves and granitic cargo in a plinian high-Si rhyolite: insights into the pre-eruptive magma reservoir at Laguna del Maule. Abstract 328143. 2018 Chapman Conference, AGU, Quinamavida, Chile, 7–12 Jan.
- 11) **Ryan-Davis, J.** and Fierstein, J. (2017) Evidence for mafic magma injection associated with the high-silica rhyolite, postglacial plinian eruption at the Laguna del Maule volcanic field, Chile. IAVCEI 2017 Scientific Assembly Abstracts, p. 938.
- 10) Fulton, A.A., Lackey, J.S., McCarty, K.R., **Ryan-Davis, J.**, Wucher, M.J., Barry, E.E., Harris, J.R., Bindeman, I.N. and Cottle, J.R. (2016) New age and geochemical perspective on late Jurassic dike swarms of the SW Mojave. Geological Society of America Abstracts with Programs. Vol. 48, No. 4 doi: 10.1130/abs/2016CD-274602
- 9) Gevedon, M.L., **Ryan-Davis, J.**, Barnes, J.D., Lackey J.S., Prior M.G., Kitajima K. and Valley J.W. (2016) Regional implications of low- $\delta^{18}\text{O}$ skarns of the Jurassic Mojave segment of the

- Sierra Nevada arc. Geological Society of America Abstracts with Programs. Vol. 48, No. 4 doi: 10.1130/abs/2016CD-274510.
- 8) Lackey, J.S., McCarty, K.R., Fulton, A.A., **Ryan-Davis, J.R.**, Sendek, C., Miller, J.S., Davies, G.R., Bindeman, I.N. and Cottle, J. (2016) Systematic middle to late Jurassic changes in magma source in the Mojave segment of California's continental arc. Geological Society of America Abstracts with Programs. Vol. 48, No. 4 doi: 10.1130/abs/2016CD-274408
 - 7) **Ryan-Davis, J.**, Lackey, J.S., D'Errico, M.E., Kitajima, K., Gevedon, M.L., Barnes, J.D, Lee, C-T.A., Valley, J.W. (2016) Skarn-garnet archives of metasomatic and hydrothermal conditions in the Mineral King roof pendant, south-central Sierra Nevada. Geological Society of America Abstracts with Programs. Vol. 48, No. 4 doi: 10.1130/abs/2016CD-274256.
 - 6) Coish, R., Kim, J., **Ryan-Davis, J.**, Pierce, N., and Dietsch, C. (2015) Supra-subduction magmatism in the Moretown Terrane, a fragment of Gondwana in the western Appalachians: Geological Society of America Abstracts with Programs, v. 47, no., 3, p. 94.
 - 5) Gevedon, M.L., Seman, S., **Ryan-Davis, J.**, Barnes, J., Lackey, J.S., Stockli, D., Kitajima, K. and Valley, J.W. (2015) Variation of skarn metasomatic fluid sources within the Sierra Nevada arc. Geological Society of America Abstracts with Programs. Vol. 47, No. 4, p.47.
 - 4) **Ryan-Davis, J.R.**, Head, D.A., Fulton, A.A., Lackey, J.S., Barnes, J.D., and Lee, C-T.A. (2014) Skarn garnet records of fluid control of decarbonation and ore type in the California arc. Mineralogical Magazine, Goldschmidt2014 Abstracts, 2147.
 - 3) Gevedon, M.L., **Ryan-Davis, J.**, Lackey, J.S., Barnes, J., Kitajima, K. and Valley, J.W. (2014) Oxygen Isotope Zoning in Skarn Garnets: Evidence for Spatial and Temporal Fluid Source Variability in the Sierra Nevada and Mojave. Abstract V33B-4851. 2014 Fall Meeting, AGU, San Francisco, California, 15-19 Dec.
 - 2) **Ryan-Davis, J.** (2013) Origins of the Moretown Formation, Vermont: a detrital zircon study. Abstracts, The Green Mountain Geologist, Vol. 40, No. 2, p. 8.
 - 1) **Ryan-Davis, J.**, Coish, R.A., Amidon, W.H. (2013) Origins of the Moretown Formation, Vermont: a detrital zircon study. Geological Society of America Abstracts with Programs. Vol. 45, No. 1, p. 95.

NON-REFEREED ARTICLES AND THESES

- 4) **Ryan-Davis, J.** (2025) Crystalline records of mafic arc magmas across the Sierra Nevada batholith, California. Ph.D. Thesis, California Institute of Technology, Pasadena, CA. 355 p.
- 3) **Ryan-Davis, J.**, Kilmury, A., Nazzaro, A. and Sharpe, J. (2021) Poster tips from GSA 2021 section meeting student poster winners. GSA Today, v. 31 no. 9, p. 22–23.
- 2) Till, C.B., Pritchard, M., Miller, C.A., Brugman, K.K. and **Ryan-Davis, J.** (2018) Super-volcanic investigations. News & Views, Nature Geoscience, v. 11, p. 227–229.
- 1) **Ryan-Davis, J.** (2013) Origins of the Moretown Formation, Vermont: A detrital zircon study. B.A. Thesis, Middlebury College, Middlebury, VT. 74 p.

Updated 7/2026