JOOD A. AL ASWAD

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RESEARCH INTERESTS

I am a quantitative paleobiologist who combines the fossil record, Earth system modeling, and physiology to understand how ocean life responds to environmental catastrophe, and what those patterns mean for biodiversity today. My current focus is in reconstructing pre-human marine baselines for healthy reefs from Late Pleistocene and Holocene fossils and pairing that with physiological and oceanographic data to understand what we have already lost and what remains at risk.

CURRENT POSITION

Postdoctoral Fellow: Virginia Polytechnic Institute and State University 2025 – present

Laboratory of Dr. Pedro Monarrez · Department of Geosciences

Research on climate-driven invasion biology on the US West Coast; statistical reconstruction of pre-human marine community baselines using Late Pleistocene–Holocene fossils; mentoring undergraduate and graduate students; co-developing public science engagement programming.

EDUCATION

Ph.D., Geological Sciences: Quantitative Paleobiology 2025

Stanford University · Advisor: Dr. Jonathan Payne

Dissertation: Climatic and Taxonomic Controls on Ecosystem Connectedness and Simplification in Deep Time

M.S., Geological Sciences: Stratigraphy & Petrophysics 2019

Cornell University · Advisor: Dr. Teresa Jordan

Thesis: A Stratigraphic and Petrophysical Study of In-situ Geothermal Reservoir Quality of the Cambro-Ordovician Strata in the Subsurface at Cornell University, Ithaca, New York

B.S., Earth Science: Concentration in Geology 2016

George Mason University · Advisor: Dr. Linda Hinnov

Harmonic analysis of Earth tides using geodetic borehole strainmeter data

COMPUTATIONAL & TECHNICAL TRAINING

cGENIE Earth System Modeling Workshop 2026

UC Riverside · Instructor: Dr. Andy Ridgwell

Trained in the cGENIE Earth system model of intermediate complexity for simulations of climate dynamics and biogeochemical cycles in deep time.

Best Practices in Teaching and Mentoring Workshop 2026

Virginia Tech Center for Teaching and Learning

Course Design Institute 2025

Stanford University Center for Teaching and Learning

Designed a full course and syllabus in historical biogeography, integrating scaffolded assignments and projects to support diverse learning outcomes.

Preparing Future Professors Program 2023

Mentor: Dr. K. Allison Meezan, Foothill College · Paired with a professor for one quarter; shadowed and co-taught classes; completed coursework on pedagogy and academic career preparation.

TEACH Symposium 2022
Stanford University · Workshops on evidence-based pedagogy and building inclusive classroom environments.

Marine Invertebrate Zoology 2021
University of Washington, Friday Harbor Laboratories · Grade: 99/100

Intensive residential summer course covering embryology, reproduction, taxonomic classification, biology, and ecology of marine invertebrates.

Field Camp 2015
South Dakota School of Mines and Technology · Grade: A

Six-week field course in South Dakota and Wyoming covering geological mapping, stratigraphic columns, cross-sections, and technical report writing.

PUBLICATIONS

- **Al Aswad, J.,** Bazzi, M., Penn, J., Monarrez, P.M., Deutsch, C., and Payne, J. Coupling of climate change and extinction drive taxonomic homogenization in deep time. *Proceedings of the Royal Society B*, In Review.
- **Al Aswad, J.,** Hautmann, M., Singh, P., Ferrill, N.L., Al-Ramadan, K., Lehrmann, D.J., Morsilli, M.D., Koeshidayatullah, A.I., and Payne, J.L. Bivalves from the Lower Triassic of central Saudi Arabia: Systematics and calibration of Permo-Triassic boundary position within the Khartam Member of the Khuff Formation. In Preparation.
- **Al Aswad, J.,** Penn, J., Bazzi, M., Monarrez, P.M., Deutsch, C., and Payne, J. Physiology and climate change explain unusually high similarity across marine communities after end-Permian mass extinction. *Science Advances*, March 2025. DOI: 10.1126/sciadv.adr4199
- Bazzi, M., Lloyd, W.L., Ebersole, J., Sternes, P., **Al Aswad, J.,** and Payne, J. Extinction threatens to cause morphological and ecological homogenization in sharks. *Science Advances*, October 2025. DOI: 10.1126/sciadv.aea0278
- Payne, J.L., **Al Aswad, J.,** Deutsch, C., Monarrez, P.M., Penn, J.L., and Singh, P. Selectivity of mass extinctions: Patterns, processes, and future directions. *Cambridge Prisms: Extinction*, April 2023. DOI: 10.1017/ext.2023.10
- Tester, J., Beyers, S., Gustafson, J.O., Jordan, T.E., Smith, J.D., **Al Aswad, J.A.,** et al. District geothermal heating using EGS technology to meet carbon neutrality goals: A case study of Earth Source Heat for the Cornell University campus. *Proceedings World Geothermal Congress*, May 2020.
- Gustafson, J.O., Smith, J.D., Beyers, S.M., **Al Aswad, J.A.,** Jordan, T.E., and Tester, J.W. Earth Source Heat: Feasibility of deep direct use of geothermal energy on the Cornell campus. *GRC Transactions*, Vol. 42, 2018.

GRANTS & FELLOWSHIPS

Thomas D. and Janice H. Barrow Graduate Fellowship (~$56,000) 2024–2025
Funds for DEI Grants Program, Paleontological Society (~$10,000) 2023
Secured funding and founded the PaleoSociety DEI Grants Program to support underrepresented researchers in paleontology.
Grant for DEEP Paleontology Awards, Paleontological Society (~$12,000) 2022
Secured funding and created the Diversity, Equity, and Excellence in Paleontology (DEEP) Awards from the ground up to recognize outstanding scholars from underrepresented groups.
Graduate Fellowship, King Abdullah Scholarship Program: Stanford (~$205,000) 2019–2022
Graduate Fellowship, King Abdullah Scholarship Program: Cornell (~$150,000) 2017–2019
Donovan Family Scholarship, Cornell University ($2,000) 2018
Undergraduate Student Research Grant, URSP George Mason University (~$1,500) 2015
Full Ride Scholarship, King Abdullah Scholarship Program 2011–2016

HONORS & AWARDS

Winifred Goldring Award: Outstanding Paleontology PhD Student 2025
Association for Women Geoscientists & Paleontological Society

Centennial Teaching Assistant Award, Stanford University 2025
Harriet Benson Fellowship Award for Excellent Research, Stanford University 2022
Best Scientific Video: Storytelling, Stanford BioX 2020
Certificate of Highest GPA in Program, George Mason University 2016
Outstanding Senior in Earth Science Award, George Mason University 2016

INVITED TALKS

- Synergy of climate change and biodiversity loss drive global taxonomic homogenization in deep time. Departmental Seminar Series, George Mason University, 2026.
- Examining the compositional similarity of marine invertebrate ecosystems after the Big Five mass extinction events. Fossil Coffee Series, UC Berkeley, 2024.
- Taxonomic homogenization of marine ecosystems after the end-Permian mass extinction. Oxford University Biogeography Workshop, Oxford, UK, 2024.
- Physiology of marine invertebrates explains broadened biogeography after end-Permian extinction. University of Lausanne, Switzerland, 2023.

SELECTED CONFERENCE PRESENTATIONS

** denotes student mentee*

- Trujillo, V.*, Helms, L.*, Al Aswad, J.A., Monarrez, P., and Payne, J.L. Biogeographic stability of benthic marine mollusks across the end-Cretaceous mass extinction. GSA Annual Meeting, Denver, 2022.
- Tung, K.*, Anderson, M.*, Saber, S.*, Monarrez, P.M., Al Aswad, J.A., and Payne, J.L. Comparing the latitudinal ranges of genera of Mollusca and Arthropoda before and after the end-Permian mass extinction. AGU Fall Meeting, Washington D.C., 2022.
- Al Aswad, J.A. Porosity, permeability, and paleotopographic analysis: A geological interpretation of geothermal reservoir quality at Cornell University. GSA Annual Meeting, Indianapolis, 2018.
- Al Aswad, J.A. The harmonic analysis of geophysical phenomena recorded by borehole strainmeters. OSCAR Students as Scholars Symposium, George Mason University.

TEACHING EXPERIENCE

Teaching Assistant: EPS 169/269 The Sixth Mass Extinction, Stanford University 2023, 2024
Devoted one full quarter exclusively to course development with Dr. Jonathan Payne: built the syllabus from scratch, designed all activities, problem sets, and lecture materials for a new course on mass extinctions. Served as head TA for two subsequent teaching quarters, personally delivering multiple standalone lectures each term. Involved in all three iterations of the course from inception through delivery.

Teaching Assistant: EPS 136/236 Macroevolution, Stanford University Spring 2024
Supported lecture and discussion sections for upper-division macroevolution course covering speciation, phylogenetics, and deep-time diversity patterns.

Teaching Assistant: GEOLSCI 4 Coevolution of Life and Earth, Stanford University Autumn 2022
Guest Lecturer: Physical Geography (Climate Change), Foothill College Winter 2023
Taught Week 7 on climate change; designed hands-on activities including geologic time visualization and climograph exercises.

Module Instructor: Introduction to Paleobiology, Friday Harbor Laboratories / Univ. of Washington Summer 2021

Introduced paleobiology to undergraduate and graduate students; incorporated active-learning technology (TopHat).

STUDENT MENTORING

- Undergraduate & high school research mentor and mentor assistant, Stanford SURGE, Bio-X, and Stanford Earth Young Investigators programs (Summer 2022): Victor Trujillo, Lucy Helms, Edward Huang, Kelly Tung, McKenna Sanders, Sakeena Saber.
- Peer advisor, Bay Area Graduate Pathways in STEM, 2019–2020.
- Mentoring undergraduate and graduate students at Virginia Tech, 2025–present.

OUTREACH & COMMUNITY SERVICE

Pokémon-Inspired Evolution Museum Event: Virginia Tech Museum of Geosciences 2026–present
Co-created interactive public event teaching children about evolution and biodiversity.

Creator & Committee Leader: DEEP Paleontology Awards, Paleontological Society 2022–2023
Founded the Diversity, Equity, and Excellence in Paleontology (DEEP) awards to recognize underrepresented scholars.

Access, Belonging & Community Liaison, Stanford Earth 2024
Program Coordinator, Science Teaching Through Art, Stanford 2021–2022
Committee Member, Paleontological Society 2021–2025
Student Representative, Paleontological Society Council 2021–2023
Coordinator, Stanford Geological Sciences Graduate Seminar Series 2019–2022
Committee Member, North California Paleontological Conference 2020
President, AAPG Student Chapter, Cornell University 2017–2019

ACADEMIC SERVICE

Peer Reviewer: Gondwana Research 2026
Peer Reviewer: Science Advances 2025
Peer Reviewer: Palaeogeography, Palaeoclimatology, Palaeoecology 2024
Session Co-Chair, Linking Biodiversity Loss to Environmental Stressors (GSA) 2025
Session Co-Chair, Quantifying Organism-Environment Interactions (GSA) 2024
Session Co-Chair, Past and Future Organism-Environment Interactions (GSA) 2023

TECHNICAL SKILLS & COMPETENCIES

Statistical modeling & data science: R/RStudio, MATLAB

Earth system modeling: cGENIE (climate dynamics, biogeochemical cycles)

Geospatial: ArcGIS, map-making

Fossil identification: marine invertebrate paleobiology (bivalves, marine invertebrates broadly)

Field skills: paleontological and stratigraphic field work, geological mapping

Design: Adobe Creative Suite, digital art

Languages: English (fluent), Arabic (conversational)