

ALLISON T. KARP

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Education

2020 **Doctor of Philosophy, Ph.D. in Geosciences**
The Pennsylvania State University

Dissertation Title: “The role of fire ecology in vegetation change during the Neogene: New applications of molecular and isotopic proxies for vegetation burning in the paleorecord”
Primary Advisor: Dr. Katherine H. Freeman

2015 **Bachelor of the Arts, A.B. in Biology: Ecology and Evolution; Environmental Earth Science**
Washington University in St. Louis
Graduated *Cum Laude* with Highest Distinction in Earth and Planetary Sciences

Fellowships, Honors, and Awards

2019 PSU Geoscience Graduate Colloquium Presentation Award, 2nd Place Talk by a post-comps PhD student
2018 European Association of Organic Geochemists (EAOG) Research Award
2016 Charles A. & June R.P. Ross Research Award
2016 Isocamp National Science Foundation (Isocamp-NSF) Participant Award
2016 PSU Geoscience Graduate Colloquium Presentation Award, 1st Place Talk by a pre-comps PhD student
2015-present National Science Foundation Graduate Research Fellowship Program (NSF-GRFP)

Publications

Karp A.T., Behrensmeyer A.K., Freeman K.H., (2018) Grassland fire ecology has roots in the late Miocene. *PNAS* 115 (48).

Manuscripts in review, submission, and advanced stage of preparation

Podrug E, McClure S.B., Kačar S., Perhoč Z., Reed K., Tykot H.R., Marguš D., Mazzucco N., Guilbeau D., Jović J, Ilijanić N., Miko S., Ivkić I., Tadesse V.H., **Karp A.T.** (in review) The results of the archaeological excavation of the central-political settlement and the geological exploration of the paleo-lake in the Bribirsko-ostrovski polje (northern Dalmatia). *Croatian Archaeological Society*

Karp A.T., Hopper P., Holman A., Grice K., Freeman K.H. (in review) Fire Distinguishers: Refined interpretations of paleofire from polycyclic aromatic hydrocarbons. *GCA*

Lyons, S.L., **Karp A.T.**, Bralower T., Grice K., Schaeffer B., Gulick S., Morgan J., Freeman K. H. (in review) Mixed Sources for Global Burn Markers at the Cretaceous-Paleogene Boundary *PNAS*

Karp A.T., Uno K.T., Polissar P.J., Freeman K.H. (in prep) Late Miocene C₄ grassland fire feedbacks on the Indian Subcontinent. *EPSL*

Karp A.T., Andrae J.W., McInerney, F.A., Polissar P.J., Freeman K.H. (in prep) Carbon loss and suppressed fire feedbacks during late Pliocene C₄ grassland expansion in Australia. *Nature Geoscience*

Karp A.T., Suess M., Bradley A.S., (in prep) A reconstruction of Cahokia land-use with leaf waxes. *Organic Geochemistry*

Karp A.T., Hopper P., Holman A., Patzkowsky M.E., Grice K., Freeman K.H. (in prep) *n*-Alkanes altered through plant combustion retain plant functional type characteristics. *Organic Geochemistry*

Undergraduate Thesis

Karp A.T., (2015) Using leaf wax biomarkers to constrain land-use change associated with Mississippian settlements. *Washington University in St. Louis Senior Honors Papers*

Grants and Scholarships

2019	Richard Standish Good Graduate Scholarship
2019	Global Programs Graduate Student Travel Grant
2018	Alley Family Graduate Scholarship in Climate Science
2017	Urbino Summer School in Paleoclimatology National Science Foundation (USSP-NSF) Scholarship
2017	Donald B. and Mary E. Tait Scholarship in Microbial Biogeochemistry
2016	Geological Society of America (GSA) Graduate Student Research Grant
2016	Charles E. Knopf, Sr., Memorial Scholarship
2015-19	Paul D. Krynine Scholarship Award

Analytical and Field Experience

2015-present	Graduate Researcher , Freeman Isotope Biogeochemistry Lab at PSU
2018	Visiting Adjunct Researcher , WA-OIGC at Curtin University of Technology, Australia
2016	Graduate Researcher , PSU-Croatian Geological Survey Holocene Lake Coring Archeological Collaboration
2013-15	Undergraduate Researcher , Bradley Organic Biochemistry Lab at Wash U in St. Louis
2012	Undergraduate Research Assistant , Fike Stable Isotope Biogeochemistry Lab at Wash U in St. Louis

Invited Talks

Mar 30 th 2020*	Biology and Paleo Environment (BPE) seminar series, Lamont-Doherty Earth Observatory *Postponed due to Covid-19
Sep 22 nd 2019	Geological Society of America 2019 Annual Meeting, Session T121, Phoenix, Arizona
Mar 16 th 2019	Early Career Scientists Symposium, Department of Ecology & Evolutionary Biology, University of Michigan
Feb 13 th 2019	Climate Dynamics Seminar Series, Earth System Science Center, Pennsylvania State University
Sep 21 st 2018	Sprigg Center Seminar, Department of Earth Sciences, University of Adelaide, Australia

Conference Abstracts

- Freeman K.H., Baczynski A.A., **Karp A.T.**, Lyons S.L., Ferland T.M., (2019) Tracking Kerogen Weathering and Recycled Fossil Carbon Accompanying Cenozoic Climate and Landscape Perturbations. 2019 AGU Annual Meeting San Francisco, CA. (Talk)
- Polissar P.J., Uno, K.T., Phelps S.R., **Karp A.T.**, Jake Andrae, Freeman K.H., McInerney, F.A., deMenocal P.B. (2019) Environmental Drivers of the Late Neogene Expansion of C₄ Ecosystems. 2019 AGU Annual Meeting San Francisco, CA. (Poster)
- Del Vecchio J., Stanton C.L., Ferland T.M., Rossetto-Harris G., Carr J.C., Silverhart P., **Karp A.T.**, Barnes B.D., Stiles E., Eberle B.A., Sclafani J., Hajek E.A. (2019) Student-led organizations as a mechanism for improving department culture. 2019 AGU Annual Meeting San Francisco, CA. (Poster)
- Karp A.T.**, Andrae J.W., McInerney, F.A., Polissar P.J., Freeman K.H. (2019) Molecular insights on fire ecology and carbon cycling during the Neogene C₄ expansion in Australia. 2019 GSA Annual Meeting Phoenix Arizona (Invited Talk)
- Karp A.T.**, Holman, A.I., Hopper, P., Grice, K., Freeman K.H. (2019) Refined paleo-fire interpretations from the distribution patterns and $\delta^{13}\text{C}$ of fire-derived molecules. 2019 Goldschmidt Conference, Barcelona, Spain (Talk)
- Karp A.T.**, Uno K.T., Polissar P.J., Freeman K.H. (2018) Fire Distinguishers: Molecular and isotopic tools for identifying grassland burning in deep time. 2018 AGU Annual Meeting Washington, D.C. (Talk)
- Karp A.T.**, Behrensmeyer A.K., Freeman K.H., (2017) Molecular evidence suggests an active fire-feedback triggered Late Miocene C₄ grassland expansion on the Indian Subcontinent. 2017 GSA Annual Meeting Seattle, WA (Talk)
- Karp A.T.**, Freeman K.H. (2017) Molecular evidence for fire and forest clearing associated with C₄ grassland expansion in the Late Miocene. 2017 GSA Joint Section Meeting NENC (Talk)
- Karp A.T.**, Suess M., Bradley A.S., (2014). Using leaf wax biomarkers to constrain land-use change associated with Mississippian settlements. 2014 Midwest Geobiology Symposium (Poster)

Teaching and Mentoring Experience

- 2020 **Teaching Assistant**, Pennsylvania State University course Geosc 204: Geobiology
Professor: Dr. Peter Wilf
- 2019 **Teaching Assistant**, Pennsylvania State University course Geosc 204: Geobiology
Professor: Dr. Sarah Ivory
- 2019 **Graduate Mentor**, PSU, Dept. of Geoscience, Undergraduate thesis mentor
Undergraduate mentee: Catherine Gangon, Pennsylvania State University
- 2017 **Graduate Mentor**, PSU, Dept. of Meteorology, NSF-REU program in climate science
Undergraduate mentee: Rebecca Miller, Brandeis University
- 2016 **Teaching Assistant**, Pennsylvania State University course Geosc 040: The Sea Around Us
Professor: Dr. Chris Marone
- 2015 **Teaching Assistant**, Pennsylvania State University course Geosc 040: The Sea Around Us
Professor: Dr. Liz Hajek

Science Outreach

- 2015-present **Mentor-mentee coordinator (2018); Secretary (2016);** Association of Women in Geosciences (PSU)
- 2016-present **Science Communication Working Group**, WE ARE for Science Advocacy Organization
- 2015-present **Science Mentor**, Pennsylvania State University Science University
- 2009-11 **Guest Engagement Volunteer**, John G. Shedd Aquarium in Chicago, IL

Short Courses and Workshops

- 2018 Biomarker Informatics and Neotoma Workshop at LDEO Columbia University (Participant)
- 2017 The Urbino Summer School in Paleoclimatology at University of Urbino, Italy (Student)
- 2016 Stable Isotope Biogeochemistry and Ecology "Isocamp" at University of Utah (Student)

Field Courses

- 2017 Graduate Field Course: Marine Biogeochemistry PSU & San Salvador Grace Research Center
- 2016 Graduate Field Course: Carbonate Field Stratigraphy PSU & Guadalupe Mt. National Park
- 2015 Undergraduate Field Course: The Geology of Italy Wash U in St. Louis EPSci Dept.
- 2014 Overseas Ecology Field Study, University of Queensland Brisbane, Australia
- 2013 Kaua'i Paleocology/Archeology Field School U Hawai'i at Manoa & Nat'l Botanic Garden
- 2011-14 Undergraduate Intensive Study, Wash U in St. Louis Pathfinder Program in Environmental Sustainability

Press and Media Coverage

- "Fire and grassland evolution" <https://science.sciencemag.org/content/362/6419/1125.1>
- "Fires fueled spread of grasslands on ancient Earth" <https://news.psu.edu/story/549373/2018/11/28/research/fires-fueled-spread-grasslands-ancient-earth>

Professional Activities and Service

Reviewer/Editorial

- *Climates of the Past* (Reviewer)
- *Geology* (Reviewer)
- *Fire* special issue: "Paleo-Perspectives on Fire in the Earth System" (Guest Editor)

Conference Sessions

- AGU 2019 PP039 – Historical and paleo-perspectives on Fire in the Earth System (Primary Convener)

Professional Society Memberships

- Geological Society of America
- American Geophysical Union (Paleoceanography and Paleoclimatology section)
- Geochemical Society
- Association for Women Geoscientists

Departmental Service

2019-20 Graduate Student Faculty Search Liaison for PSU Dept. of Geosciences
2018-19 Graduate Student Representative at PSU Dept. of Geosciences faculty meetings
2015-17 Welcome Picnic Committee Chair for PSU Dept. of Geosciences

Proficiencies and Certifications

Analytical and Computing

- Mass spectrometry (Agilent GC-MSD; Thermo GC-MSD; Thermo GC-FID-MSD; Thermo HPLC-MSD)
- Isotope ratio mass spectrometry (ir-GCMS Thermo MAT 252, Thermo Delta V; EA-irms, Thermo XP)
- R Statistical Software

SCUBA training and certifications

- PADI Open Water Diver
- NAUI Advanced Diver, Deep Diver, EANx Diver, Rescue Diver
- AAUS Scientific Diver (all but written exam)

Medical training

- American Red Cross First Aid certification/CPR/AED
- NAUI First Aid for Dive Professionals