

ALLISON T. KARP

CURRICULUM VITAE

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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*
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
Thesis Title: *Using leaf wax biomarkers to constrain land-use change associated with Mississippian settlements*
Advisor: Dr. Alexander Bradley

Professional Appointments

- 2020-Present **Yale University**, The Department of Ecology and Evolutionary Biology, New Haven, CT
Postdoctoral Associate, Staver Global Biome Ecology Lab
Supervisor: Dr. Carla Staver

Other Research Experience

- 2018 **Curtin University of Technology**, Department of Chemistry, Perth WA, Australia
Visiting Adjunct Researcher, The Western Australian Organic & Isotope Geochemistry Centre
Supervisor: Dr. Kliti Grice
- 2015-20 **The Pennsylvania State University**, The Geosciences Department, State College, PA
NSF Graduate Fellow and Graduate Researcher, Freeman Isotope Biogeochemistry Lab
Supervisor: Dr. Katherine Freeman
- 2016 *Graduate Researcher*, PSU-Croatian Geological Survey Holocene Lake Coring Archeological Collaboration
Supervisor: Dr. Sarah McClure and Dr. Katherine Freeman
- 2013-15 **Washington University in St. Louis**, The Earth and Planetary Sciences Department, St. Louis, MO
Undergraduate Researcher, Bradley Organic Biochemistry Lab
Supervisor: Dr. Alexander Bradley
- 2012 *Undergraduate Research Assistant*, Fike Stable Isotope Biogeochemistry
Supervisor: Dr. David Fike

Research Grants and Fellowships - \$110,575 in total

- 2019 Global Programs Graduate Student Travel Grant, \$1,500
- 2018 European Association of Organic Geochemists (EAOG) Research Award, \$3,500
- 2016 Charles A. & June R.P. Ross Research Award, \$1,075
- 2016 Geological Society of America (GSA) Graduate Student Research Grant, \$2,500
- 2015-20 National Science Foundation Graduate Research Fellowship Program (NSF-GRFP), \$102,000

Publications

1. **Karp A. T.**, Behrensmeier A. K. and Freeman K. H. (2018) Grassland fire ecology has roots in the late Miocene. *PNAS* 115, 12130–12135. Available at: <https://doi.org/10.1073/pnas.1809758115>
2. **Karp A. T.**, Holman A. I., Hopper P., Grice K. and Freeman K. H. (2020) Fire Distinguishers: Refined interpretations of paleofire from polycyclic aromatic hydrocarbons. *Geochim. Cosmochim. Acta* 289, 93–113. Available at: <https://doi.org/10.1016/j.gca.2020.08.024>.
3. Lyons, S.L., **Karp A.T.**, Bralower T., Grice K., Schaeffer B., Gulick S., Morgan J., Freeman K. H. (accepted) Mixed Sources for Global Burn Markers at the Cretaceous-Paleogene Boundary *PNAS*

Manuscripts in submission and review

1. **Karp A.T.**, Andrae J.W., McInerney, F.A., Polissar P.J., Freeman K.H. (in submission) Carbon loss and suppressed fire feedbacks during late Pliocene C₄ grassland expansion in Australia. *Nature Geoscience*
2. **Karp A.T.**, Uno K.T., Polissar P.J., Freeman K.H. (in review) Late Miocene C₄ grassland fire feedbacks on the Indian Subcontinent. *Paleoceanography and Paleoclimatology*
3. Polissar P.J., Uno K.T., Phelps, S.R, **Karp A.T.**, Freeman K.H., Pensky, J.L. (in review) Hydrologic changes drove the Late Miocene expansion of C₄ grasslands on Northern Indian Subcontinent *Paleoceanography and Paleoclimatology*
4. 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*

Manuscripts in advanced stage of preparation

1. **Karp A.T.**, Suess M., Bradley A.S., (in prep) A reconstruction of Cahokia land-use with leaf waxes. *Organic Geochemistry*
2. **Karp A.T.**, Hopper P., Holman A., Patzkowsky M.E., Grice K., Freeman K.H. (in prep) *n*-Alkyl plant waxes altered through plant combustion retain distinct plant functional type characteristics. *Organic Geochemistry*

Scholarships and Awards

2019	Richard Standish Good Graduate Scholarship
2019	PSU Geoscience Graduate Colloquium Presentation Award, 2 nd Place Talk by a post-comps PhD student
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	Isocamp National Science Foundation (Isocamp-NSF) Participant Award
2016	PSU Geoscience Graduate Colloquium Presentation Award, 1 st Place Talk by a pre-comps PhD student
2016	Charles E. Knopf, Sr., Memorial Scholarship
2015-19	Paul D. Krynine Scholarship Award

Invited Talks

1. Pal(a)eo PERCs Early Career Virtual Seminar
Oct 6th 2020
2. Biology and Paleo Environment (BPE) seminar series, *Lamont-Doherty Earth Observatory of Columbia University, NY*
Mar 30th 2020 - Postponed due to COVID-19
3. Session T121, Invited Speaker, *Geological Society of America 2019 Annual Meeting, Phoenix, AZ*
Sep 22nd 2019
4. Early Career Scientists Symposium, Department of Ecology & Evolutionary Biology, *University of Michigan, MI*
Mar 16th 2019
5. Climate Dynamics Seminar Series, Earth System Science Center, *Pennsylvania State University, PA*
Feb 13th 2019
6. Sprigg Center Seminar, Department of Earth Sciences, *University of Adelaide, SA, Australia*
Sep 21st 2018

Conference Abstracts

1. 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)
2. 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)
3. 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)
4. **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)
5. **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)
6. **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)
7. **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)
8. **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)
9. **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

2019-20	The Pennsylvania State University , The Geosciences Department, State College, PA <i>Teaching Assistant</i> , Geosc 204: Geobiology Professors: Dr. Sarah Ivory & Dr. Peter Wilf
2019-20	<i>Graduate Mentor</i> , Undergraduate thesis mentor Undergraduate mentee: Catherine Gangon, Pennsylvania State University
2017	<i>Graduate Mentor</i> , Dept. of Meteorology, NSF-REU program in climate science Undergraduate mentee: Rebecca Miller, Brandeis University
2015-16	<i>Teaching Assistant</i> , Geosc 040: The Sea Around Us Professors: Dr. Liz Hajek & Dr. Chris Marone

Science Outreach

2015-20	Mentor-mentee coordinator (2018); Secretary (2016); Association of Women in Geosciences (PSU)
2016-19	Science Communication Working Group , WE ARE for Science Advocacy Organization
2015-17	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 Gerace 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

- Reviewer for: *Climates of the Past*, *Geology*, *Geophysical Research Letters*, *Earth and Planetary Science Letters*
- Guest editor for *Fire* special issue: "Paleo-Perspectives on Fire in the Earth System"

Conference Sessions

- AGU 2020 PP014-I – Historical and paleo-perspectives on Fire in the Earth System (Convener; Primary Liaison)
- 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
2018-20	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