A. TYLER KARP
CURRICULUM VITAE

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Professional Appointments

2024 **University of Chicago**, Department of Geophysical Sciences, Chicago IL
Assistant Professor

Yale University, Department of Ecology and Evolutionary Biology, New Haven, CT
2022-24 *NSF Postdoctoral Fellow,* Global Biome Ecology Lab
2020-22 *Postdoctoral Associate*, Global Biome Ecology Lab
Supervisor: Dr. Carla Staver

Brown University, Department of Earth, Environmental, and Planetary Sciences, Providence, RI
2022-24 *NSF Postdoctoral Fellow,* Terrestrial Paleoenvironments Group
Supervisor: Dr. Jim Russell

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

Research Grants, Awards, and Scholarships

Grants

2023-25 NSF DEB: Integrating modern and paleo perspectives to disentangle grazer and climate controls on fire activity (Named Postdoc; Contributed to Grant Writing)
2022-24 NSF EAR-PF: Multi-scale calibrations of fecal biomarkers: new tools to evaluate how herbivores shaped past ecosystem dynamics (PI)
2019 Global Programs Graduate Student Travel Grant
2018 European Association of Organic Geochemists (EAOG) Research Award
2016 Charles A. & June R.P. Ross Research Award
2016 Geological Society of America (GSA) Graduate Student Research Grant
2015-20 National Science Foundation Graduate Research Fellowship Program (NSF-GRFP)

Scholarships and Awards

2019 Richard Standish Good Graduate Scholarship
2018 Alley Family Graduate Scholarship in Climate Science
2017 Urbino Summer School in Paleoclimatology (USSP-NSF) Scholarship
2017 Donald B. and Mary E. Tait Scholarship in Microbial Biogeochemistry
2016 Charles E. Knopf, Sr., Memorial Scholarship
2016 Isocamp National Science Foundation (Isocamp-NSF) Participant Award
2016 PSU Geoscience Graduate Colloquium Award, 1st Place Talk by a pre-comps PhD student
2015-19 Paul D. Krynine Scholarship Award

Publications (Invited; #Student advisee*)** *Google Scholar link*

1. **Karp A.T.**, Koerner S., Hempson, G., Abraham J, Anderson T.M., Augustine D., Bond W., Burkepile, D.E., Goheen J., Guyton, J., Kartzinel, T. R., Kimuyu, D., Mohanbabu, N., Palmer T., Porenskey, L.M., Pringle R., Ritche M., Sankaran M., Smith M., Thompson D., Veblen, K. Young T., Staver, A.C. (2024) Grazing herbivores reduce herbaceous biomass and fire activity across African savannas. *Ecology Letters*, 27, e14450

2. Del Toro I., Case M., **Karp A.T.,** Slingby, J., Staver A.C., C4 grass carbon isotope discrimination responses to increasing atmospheric carbon dioxide. (*2024*) *New Phytologist,* 243, 560-566

3. Sayedi, S.S., Abbott, B.W., Vannière, B…..**Karp A.T.,**… *et al.* Assessing changes in global fire regimes. (2024). *Fire Ecology* 20, 18

4. Zeichner, S., Aponte, J.C., Bhattacharjee, S., …., **Karp, A.T.,** …et al. (2023) Isotopic evidence of interstellar-sourced polycyclic aromatic hydrocarbons from the Ryugu asteroid *Science*, 382, 6677

5. ***Karp A.T**., Uno K.T., Berke M. A., Russell J. M., Scholz C. A., Marlon, J. R., Faith J. T., Staver A. C., Fire activity shifts during the African Humid Period vary along the savanna rainfall gradient. (2023) *Quaternary Science Reviews* 304, 107994

6. Vachula., R.S., **Karp, A.T.**, Denis, E.H., Balasico, N. L., Canuel, E.A., Huang, Y., (2022) Spatially calibrating polycyclic aromatic hydrocarbons (PAHs) as proxies of area burned by fire *Palaeogeography, Palaeoclimatology, Palaeoecology.* 596, 110995

7. **Karp A.T.,** Faith J. T., Marlon, J. R., Staver A.C., (2021) Global response of fire activity to late Quaternary grazer extinctions. *Science.* 374, 1145-1148. **Media Coverage:** Le Monde, NHM London, New Scientist

8. Staver A.C., Abraham J.O., Hempson G.P, **Karp A.T.,** Faith J. T. (2021) The past, present, and future of herbivore impacts on savanna vegetation. *Journal of Ecology*. 1-19

9. **Karp A.T.,** Uno K.T., Polissar P.J., Freeman K.H. (2021) Late Miocene C_4 grassland fire feedbacks on the Indian Subcontinent. *Paleoceanography and Paleoclimatology* 36 (4) e2020PA004106

10. Polissar P.J., Uno K.T., Phelps, S.R, **Karp A.T.,** Freeman K.H., Pensky, J.L. (2021) Hydrologic changes drove the Late Miocene expansion of C_4 grasslands on Northern Indian Subcontinent *Paleoceanography and Paleoclimatology* 36 (4) e2020PA004108

11. **Karp A.T.,** Andrae J.W., McInerney, F.A., Polissar P.J., Freeman K.H. (2021) Carbon loss and suppressed fire feedbacks during late Pliocene C_4 grassland expansion in Australia. *Geophysical Research Letters* 48. e2020GL90964

12. Lyons, S.L., **Karp A.T.**, Bralower T., Grice K., Schaeffer B., Gulick S., Morgan J., Freeman K. H. (2020) Mixed Sources for Global Burn Markers at the Cretaceous-Paleogene Boundary *PNAS* 117, 25327-25334. **Media Coverage**: Popular Science, Scientific American

13. **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.

14. **Karp A. T.**, Behrensmeyer A. K. and Freeman K. H. (2018) Grassland fire ecology has roots in the late Miocene. *PNAS* 115, 12130–12135. **Media Coverage:** Science Magazine

Manuscripts in review and revision

1. 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*

Invited Seminar Talks

1. K. Douglas Nelson Seminar, Department of Earth and Environmental Sciences, *Syracuse University*, NY
   March 2nd 2023
2. Department of Geophysical Sciences, *University of Chicago*, IL
   January 13st 2023
3. Climate and Environment, Department of Environmental, Earth, & Planetary Science, Brown University, RI
   November 14th 2022
4. Department of Ecology and Evolution, *University of Chicago*, IL
   October 31st 2022
5. EPS Nemmers Seminar Series, Department of Earth and Planetary Sciences, *Northwestern University*, IL
   May 20th 2022
6. Plenary Speaker, PAGES Open Science Meeting, Virtual Conference
   May 18th 2022
7. Davies Laboratory Seminar, Department of Organismic and Evolutionary Biology, *Harvard University,* MA
   April 6th 2022
8. Department of Earth and Planetary Science, *Yale University,* CT
   March 5th 2022
9. Isotope Biogeochemistry, *Michigan State University,* MI
   Oct 21st 2021
10. YIBS Seminar Series, Yale Institute of Biospheric Studies, *Yale University,* CT
    Oct 8th 2021
11. Paleofire Seminar Series, *International Paleofire Network (IPN*), Virtual Seminar
    Jun 24th 2021
12. Pal(a)eo PERCs, Early Career Virtual Seminar
    Oct 6th 2020
13. Biology and Paleo Environment (BPE) Seminar, *Lamont-Doherty Earth Observatory of Columbia University*, NY
    Mar 30th 2020 – Invited but cancelled due to COVID-19
14. Early Career Scientists Symposium, Department of Ecology & Evolutionary Biology, *University of Michigan*, MI
    Mar 16th 2019
15. Climate Dynamics Seminar Series, Earth System Science Center, *Pennsylvania State University*, PA
    Feb 13th 2019
16. Sprigg Center Seminar, Department of Earth Sciences, *University of Adelaide*, SA, Australia
    Sep 21st 2018

Conference Abstracts (Invited; #Student advisee*)**

1. #Hernandez, P., Russell J.M., Strydom T., Wadehra R., O'Mara, N.A., Staver A.C., **Karp., A.T.** (2023) Analyzing PAH Concentrations in Experimental Burn Plot Soils to Improve Reconstructions of Savanna Fires 2023 AGU Annual Meeting San Francisco, CA (Poster)

2. **Karp A.T.,** Russell J.M., Abraham, J.O., Strydom T., Staver A.C. (2023) Fecal Biomarkers in Soils Reflect Wild Herbivore Abundance across Herbivore Exclusions 2023 AGU Annual Meeting San Francisco, CA (Oral)

3. **Karp A.T.**, Koerner S., Hempson, G., Abraham J, Anderson T.M., Burkepile, D.E., Goheen J., Guyton, J., Kimuyu, D., Mohanbabu, N., Palmer T., Porenskey, L.M., Pringle R., Ritche M., Thompson D., Young T., Staver, A.C. (2022) Grazing herbivores reduce fire activity via fuel reductions across broad-scale savanna gradients. 2022 AGU Annual Meeting Chicago, IL (Poster)

4. **Karp A.T.,** Uno., K.T., Berke, M.A., Russell. J.M., Scholz, Marlon, J. R., Faith J. T., C.A., Staver A.C., (2022) Savanna Fire Activity Responds Rainfall effect on fire activity and disturbance-mediated vegetation states are non-linear across the African Humid Period. GSA Connects 2022 Denver, CO (Talk)

5. ***Karp A.T.,** Uno., K.T., Berke, M.A., Russell. J.M., Scholz, Faith J. T., C.A., Staver A.C., (2021) Savanna Fire Activity Responds Heterogeneously to Rainfall Shifts During the African Humid Period. 2021 AGU Annual Meeting New Orleans, LA (Invited Talk)

6. **Karp A.T.,** Faith J. T., Marlon, J. R., Staver A.C., (2021) Fire-Grazer Interactions During the Late Quaternary Extinctions. 2021 AGU Annual Meeting New Orleans, LA (Poster)

7. 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)

8. 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 C_4 Ecosystems. 2019 AGU Annual Meeting San Francisco, CA. (Poster)

9. 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)

10. ***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 C_4 expansion in Australia. 2019 GSA Annual Meeting Phoenix Arizona (Invited Talk)

11. **Karp A.T.,** Holman, A.I., Hopper, P., Grice, K., Freeman K.H. (2019) Refined paleo-fire interpretations from the distribution patterns and $\delta^{13}C$ of fire-derived molecules. 2019 Goldschmidt Conference, Barcelona, Spain (Talk)

12. **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)

13. **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)

14. **Karp A.T.,** Freeman K.H. (2017) Molecular evidence for fire and forest clearing associated with C_4 grassland expansion in the Late Miocene. 2017 GSA Joint Section Meeting NENC (Talk)

15. **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

Brown University, Providence RI

2023 *Co-supervisor*, Dept. of Environmental, Earth and Planetary Science
Leadership Alliance REU student: Presley Hernandez, Brown University

2023 *Co-supervisor*, Dept. of Environmental, Earth and Planetary Science
Undergraduate laboratory assistant: Mikayla Pressley, Brown University

Yale University, New Haven. CT

2023 *Postdoctoral supervisor*, Undergraduate thesis mentor, Dept. of Earth and Planetary Science
Undergraduate mentee: Evie Sackett, Yale University

2021 *Instructor*, Modern Instructor Workshop

Yale Postdoctoral Association and the Poorvu Center for Teaching and Learning

2021 *Guest Lecturer*, EEB 305/705: Plant Ecology
Professor: Dr. Carla Staver

2020-23 *Postdoctoral Mentor*, Women in Science at Yale (WISAY)
Graduate mentee: Nia Harmon, Yale University

The Pennsylvania State University, The Geosciences Department, State College, PA
2019-20 *Teaching Assistant*, Geosc 204: Geobiology
Professors: Dr. Sarah Ivory & Dr. Peter Wilf

2019-20 *Graduate Supervisor*, Undergraduate thesis mentor, Dept. of Geosciences
Undergraduate mentee: Catherine Gangon, Pennsylvania State University

2017 *Graduate Supervisor*, Dept. of Meteorology, NSF-REU program in climate science
Undergraduate mentee: Rebecca Miller, Brandeis Univeristy

2015-16 *Teaching Assistant*, Geosc 040: The Sea Around Us
Professors: Dr. Liz Hajek & Dr. Chris Marone

Additional International Research

Kruger National Park, Skukuza, South Africa
2022 *Postdoctoral Researcher*
Supervisor: Dr. Carla Staver; SANParks Project Coordinator: Tercia Strydom

Curtin University of Technology, Department of Chemistry, Perth WA, Australia
2018 *Visiting Adjunct Researcher,* The Western Australian Organic & Isotope Geochemistry Centre
Supervisor: Dr. Kliti Grice

Hrvatski geološki institut | Croatian Geological Survey, Zagrab, Croatia
The Pennsylvania State University, The Geosciences Department, State College, PA
2016 *Graduate Researcher*, PSU-HGI Holocene Lake Coring Archeological Collaboration
Supervisors: Dr. Sarah McClure, Dr. Slobodan Miko, Dr. Katherine Freeman

Professional Activities and Service

Science Outreach

2020-23 **Mentor;** Women in Science at Yale (WISAY)
2015-20 **Mentorship coordinator (2018); Secretary (2016);** Association of Women in Geosciences (PSU)
2016-19 **Science Communication Working Group**, WE ARE for Science Advocacy Organization (PSU)
2015-17 **Science Mentor**, Pennsylvania State University Science University
2009-11 **Guest Engagement Volunteer**, John G. Shedd Aquarium in Chicago, IL

Reviewer/Editorial

- Reviewer for: *Climates of the Past*, *Geology, Geophysical Research Letters, Earth and Planetary Science Letters, Minerals, Paleoceanography and Paleoclimatology, Geological Bulletin, Geochemica Cosmochemica Acta, New Phytologist, Reviews of Geophysics, Chemical Geology, Frontiers in Earth Science, Organic Geochemistry, Nature Ecology & Evolution, Quaternary Science Reviews, Quaternary Science Advances*
- Grant Reviewer for: NSF-DEB, NSF-EAR (P4CLIMATE)

Conference Sessions

- AGU 2023 PP15C- Historical and paleo-perspectives on Fire in the Earth System (Convener)
- GSA 2022 T121– Terrestrial Ecosystem Disturbance through Geologic Time (Co-Convener)

- AGU 2022 PP15C- Historical and paleo-perspectives on Fire in the Earth System (Convener)
- AGU 2021 A106– The past and future of fire: paleo perspectives, historical understanding, and future projections (Convener, Primary Liaison)
- AGU 2020 PP014 – 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 (GSA), American Geophysical Union (AGU), Association for Women Geoscientists (AWG)

Departmental Service

2024	Colloquia Committee for UC Dept. of Geophysical Sciences
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

Training, Proficiencies, and Certifications

Short Courses and Workshops

2023	COLDEX Early Career Leadership Workshop at Oregon State University
2022	Interactions of Climate and Life Workshop at Yale University
2018	Biomarker Informatics and Neotoma Workshop at LDEO Columbia University
2017	The Urbino Summer School in Paleoclimatology at University of Urbino, Italy
2016	Stable Isotope Biogeochemistry and Ecology "Isocamp" at Univeristy of Utah
2013	Kaua'i Paleoecology/Archeology Field School U Hawai'i at Manoa & Nat'l Botanic Garden
2014	Overseas Ecology Field Study, University of Queensland Brisbane, Australia

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