

Kevin Toshio Uno

kevinuno@g.harvard.edu

website: kevinuno.com

Harvard University
Department of Human Evolutionary Biology
Peabody Museum, Rm 46
11 Divinity Avenue
Cambridge, MA 02138

617.384.0472 office

Education

- PhD, University of Utah; Geology: *Advances in terrestrial paleoecology from intratooth stable isotope profiles in tooth enamel and tusk dentin*
- MS, University of Utah; Geology: *A geochemical study of the origin of debris bands at Storglaciären, Sweden*
- BA, Carleton College; Geology: *Upper Cretaceous paleomagnetism from Umbria, Italy: "Anchored" poles set proposed True Polar Wander event adrift*

Appointments & Experience

- 2023-present, Associate Professor, Harvard University
- 2020-present, Associate Research Professor, Lamont-Doherty Earth Observatory
- 2016-2020, Assistant Research Professor, LDEO
- 2012-2016, Postdoctoral Research Scientist, LDEO
- 2011-2012, 2008-2009: Graduate Research Assistant, Univ. of Utah
- 2010-2011, Graduate Research Fellow, Univ. of Utah
- Fall 2009, Visiting Instructor, Carleton College
- Spring 2008, Adjunct Instructor, Univ. of Utah
- 2005-2007, NSF GK12 Fellow, Univ. of Utah
- 2004-2005, Staff Geologist, URS Corporation, Oakland, CA.

Research Questions and Approaches

- Where did we come from?* Environmental reconstructions of hominin and mammal diets and ecosystems using light stable isotopes from molecular biomarkers in sediments (C, H), tooth enamel (C, O), and paleosol carbonate (C, O).
- How and why did grassy ecosystems evolve?* Biomarker-based reconstructions of terrestrial grass abundance using PTMEs and of fire using PAHs in ancient ecosystems
- How can we stop the illegal killing of elephants for their ivory?* Radiocarbon dating of modern (post-bomb) tissues in ecology and wildlife forensics

Publications in progress (*undergraduate, **graduate, or ***postdoc advisee)

Green, D.R., **Uno, K.T.**, Miller, E.R., Feibel, C.S., Aaron, E.E., Beck, C., Grossman, A., Kirera, F.M., Kirinya, M.M., Leakey, L., Liutkus-Pierce, C., Manthi, F.K., Ndiema, E.K., Nengo, I., Nyete, C., Rowan, J., Russo, G.R., Sanders, W.J., Smiley, T.M., Princehouse, P., Vitek, N., Cleland, T.P., *in*

review, 29 million years of diverse mammalian proteomes recovered from the East African Rift System. *Nature*.

***Green, D.R., Smith, T.M., Olack, G., Williams, I., Colman, A.S., **Uno, K.T.**, *in review*, How teeth record and attenuate seasonal signals. *Journal of Archaeological Science*.

Hönisch, B., Royer, D., Breecker, D., Polissar, P., Bowen, G., Henehan, M., Cui, Y, Cui, Steinthorsdottir, M., McElwain, J., Kohn, M., Pearson, A., Phelps, S., **Uno K. T.**, Ridgwell, A., and 69 others (*in revision*) Towards a Cenozoic History of Atmospheric CO₂, *Science*.

Negash, E.W., Alemseged, Z., Barr, W.A., Behrensmeyer, A.K., Blumenthal, S.A., Bobe, R., Carvalho, S., Cerling, T.E., Chritz, K.L., McGuire, E., Uno, K.T., Wood, B.A., Wynn, J.G., *in review*, Modern African ecosystems as landscape-scale analogues for reconstructing woody cover and early hominin environments. *Proceeding of the National Academy of Sciences*.

Patterson, D.B., Negash, E.W., **Uno, K.T.**, Malasek, T. and Cerling, T.E., *in revision*, The isotopic context of Paranthropus within the East African Rift System, book chapter in *The Forgotten Lineage(s): Paleobiology of Paranthropus*, Eds, Constantino, P.J., Reed, K.E., and Wood, B.A.

Uno, K.T., Polissar, P.J., Bonnefille, R., and deMenocal, P.B., *in prep*, Grassland expansion, herbivore diet change, and the emergence of megadont hominins, to be submitted to *Nature Ecology and Evolution*.

Publications

42. ***Lupien, R.L., Rose, C., Polissar, P.J., **Uno, K.T.**, deMenocal, P., (2023), The climate and environmental trends, amplitudes, and cycles of Northeast Africa over the Plio-Pleistocene, *Nature Communications Earth & Environment*.
41. Yang, D., Bowen, G.J., **Uno, K.T.**, Podkovyrov, K., Carpenter, N., Fernandez, D.P., Cerling, T.E., (2023) BITS: a Bayesian Isotope Turnover and Sampling model for strontium isotopes in proboscideans and its potential utility in movement ecology. *Methods in Ecology and Evolution*
40. Villaseñor, A., **Uno, K.T.**, Kinyanjui, R.N., Behrensmeyer, A.K., Bobe, R., Advokaat, E.L., Bamford, M., Carvalho, S.C., Hammond, A.S., Palcu, D.V., Sier, M.J., Ward, C.V., Braun, D.R., 2023, Pliocene hominins from East Turkana were associated with mesic environments in a semiarid basin. *J. Hum. Evol.* 180, 103385. doi.org/https://doi.org/10.1016/j.jhevol.2023.103385.
39. MacLatchy, L.M., Cote, S.M., Deino, A.L., Kityo, R.M., Mugume, A.A.T., Rossie, J.B., Sanders, W.J., Cosman, M.N., Driese, S.G., Fox, D.L., Freeman, A.J., Jansma, R.J.W., Jenkins, K.E.H., Kinyanjui, R.N., Lukens, W.E., McNulty, K.P., Novello, A., Peppe, D.J., Strömberg, C.A.E., **Uno, K.T.**, Winkler, A.J., Kingston, J.D., 2023, The evolution of hominoid locomotor versatility: Evidence from Moroto, a 21 Ma site in Uganda. *Science* 380(6641), eabq2835. doi.org/doi:10.1126/science.abq2835.
38. Peppe, D.J., Cote, S.M., Deino, A.L., Fox, D.L., Kingston, J.D., Kinyanjui, R.N., Lukens, W.E., MacLatchy, L.M., Novello, A., Strömberg, C.A.E., Driese, S.G., Garrett, N.D., Hillis, K.R., Jacobs, B.F., Jenkins, K.E.H., Kityo, R.M., Lehmann, T., Manthi, F.K., Mbua, E.N., Michel, L.A., Miller, E.R., Mugume, A.A.T., Muteti, S.N., Nengo, I.O., Oginga, K.O., Phelps, S.R., Polissar, P., Rossie, J.B., Stevens, N.J., **Uno, K.T.**, McNulty, K.P., 2023, Oldest evidence of abundant C₄ grasses and

- habitat heterogeneity in eastern Africa. *Science* 380(6641), 173-177.
doi.org/doi:10.1126/science.abq2834.
37. Karp A. T., **Uno K. T.**, Berke M. A., Russell J. M., Scholz C. A., Marlon J. R., Faith J. T. and Staver A. C., 2023, Nonlinear rainfall effects on savanna fire activity across the African Humid Period. *Quaternary Science Reviews* 304, 107994.
 36. Grohé, C., **Uno, K.T.**, and Boisserie, J.R., 2022, Lutrinae (Carnivora, Mustelidae) from the Plio-Pleistocene of the Lower Omo Valley, southwestern Ethiopia: systematics and new insights into the paleoecology and paleobiogeography of the Turkana otters. *Comptes Rendus Palevol*.
<https://doi.org/10.5852/cr-palevol2022v21a30>
 35. Rowan, J., Princehouse, P., Kinyanjui, R.N. and **Uno, K.T.**, 2022, Isaiah Odhiambo Nengo (1961–2022). *Nature Ecology & Evolution*.
 34. Patterson, D., Du, A., Faith, J.T., Rowan, J., **Uno, K.T.**, Behrensmeyer, A.K., Braun, D.R. and Wood, B.A., 2022, Did vegetation change drive the extinction of *Paranthropus boisei*? *J. Hum. Evol.*, 103154, <https://doi.org/10.1016/j.jhevol.2022.103154>
 33. **Uno, K.T.** and Bibi, F., 2022, Stable isotope paleoecology of the late Miocene Baynunah Formation, Abu Dhabi, United Arab Emirates, in: Bibi, F., Kraatz, B., Beech, M. (Eds.), Sands of Time. https://doi.org/10.1007/978-3-030-83883-6_18
 32. Borić, D., Cristiani, E., Hopkins, R., Schwenninger, J.-L., Gerometta, K., French, C.A.I., Mutri, G., Čalić, J., Dimitrijević, V., Marin-Arroyo, A.B., Jones, J.R., Stevens, R., Masciana, A., **Uno, K.T.**, Korzow-Richter, K., Antonović, D., Wehr, K., Lane, C. and White, D., 2021, Neanderthals on the Lower Danube: Middle Palaeolithic evidence in the Danube Gorges of the Balkans. *Journal of Quaternary Science*.
 31. ***Lupien, R.L., Russell, J.M., Subramanian, A., Kinyanjui, R., Beverly, E.J., **Uno, K.T.**, de Menocal, P., Dommain, R. and Potts, R., 2021, Eastern African environmental variation and its role in the evolution and cultural change of *Homo* over the last 1 million years. *Journal of Human Evolution*, 157, 103028
 30. Polissar, PJ, **Uno, K.T.**, Phelps, S.R., Karp, AT, Freeman, KA, *Pensky, J., 2021, Hydrologic changes drove the Late Miocene expansion of C4 grasslands on the Northern Indian Subcontinent: *Paleoceanography and Paleoenvironment*, 36, e2020PA004108.
 29. Karp, AT, **Uno, K.T.**, Polissar, PJ, Freeman, KA, 2021, Late Miocene C4 grassland fire feedbacks on the Indian Subcontinent: *Paleoceanography and Paleoenvironment*, 36, e2020PA004106.
 28. Hammond, A.S., Mavuso, S.S., Biernat, M., Braun, D.R., Jinnah, Z., Kuo, S., Melaku, S., Wemanya, S.N., Ndiema, E., Patterson, D.B., **Uno, K.T.**, Palcu, D.V., 2021, New context and hominin fossils from the KNM-ER 2598 locality in East Turkana, Kenya: *Nature Communications*, 12, 1939.
 27. de la Torre, I., Benito-Calvo, A., Bibi, F., Njau, J., Pei, S., Rivals, F., Haowen, T., **Uno, K.T.**, Varela, S. and Wu, X., 2020, Perspectives on the biogeographic and cultural adaptations of early humans during the first intercontinental dispersals, in: Díaz-del-Río, P., Lillios, K., Sastre, I.s. (Eds.), The Matter of Prehistory: papers in honor of Antonio Gilman Guillén XXXVI ed. Consejo Superior de Investigaciones Científicas, Madrid, Spain, pp. 73-84.
 26. Potts, R., Moerman, J.W., Behrensmeyer, A.K., Deino, A.L., Beverly, E.J., Brown, E.T., Deocampo, D.M., Kinyanjui, R., Lupien, R.L., Owen, R.B., Rabideaux, N., Russell, J.M., Stockhecke, M., Riedl, S., deMenocal, P., Faith, J.T., Garcin, Y., Noren, A., Scott, J.J., Western, D., Bright, J., Clark, J.B.,

- Cohen, A.S., Heil, C.W., Keller, C.B., King, J., Levin, N.E., Brady, K., Muiruri, V., Renaut, R., Rucina, S.M., **Uno, K.T.**, Dommoin, R., 2020, Increased ecological resource variability during a critical transition in hominin evolution: *Science Advances*, 6, eabc8975.
25. **Uno, K.T.**, Fisher, D.C., Schuster, G.T., Wittemyer, G., Douglas-Hamilton, I., Omondi, P., Litoroh, M., Cerling, T.E., 2020, High-resolution stable isotope profiles of modern elephant (*Loxodonta africana*) tusk dentin and tail hair from Kenya: Implications for identifying seasonal variability in climate, ecology, and diet in ancient proboscideans: *Palaeogeography, Palaeoclimatology, Palaeoecology* 559, 109962.
 24. **Yang, D., **Uno, K.T.**, Souron, A., McGrath, K., Pubert, E., Cerling, T.E., 2020, Intra-tooth stable isotope variations in warthog canines and third molars: implications for paleoenvironmental reconstruction: *Chemical Geology*, 554, 119799.
 23. **Uno, K.T.**, Fisher, D., Wittemyer, G., Douglas-Hamilton, I., Carpenter, N., Omondi, P., and Cerling, T.E., 2020, Forward and inverse methods for extracting climate and diet information from stable isotope profiles in proboscidean molars: *Quaternary International*, 557, 92-109
 22. Polissar, P.J., Rose, C., **Uno, K.T.**, Phelps, S.R., deMenocal, P., 2020, Reply to 'Comment on Polissar et al., Synchronous rise of African C4 ecosystems 10 million years ago in the absence of aridification': *Nature Geoscience*, 13, 465-467.
 21. Polissar, P.J., Rose, C., **Uno, K.T.**, Phelps, S.R., deMenocal, P., 2019, Synchronous rise of African C4 ecosystems 10 million years ago in the absence of aridification: *Nature Geoscience*, 12, 657-660.
 20. Lukens, W.E., Fox, D.L., Snell, K.E., Wiest, L.A., Layzell, A.L., **Uno, K.T.**, Polissar, P.J., Martin, R.A., Fox-Dobbs, K., Pelaez-Campomanes, P., 2019, Pliocene paleoenvironments in the Meade Basin, southwest Kansas: *Journal of Sedimentary Research*, v. 89, no. 5, p. 416-439.
 19. **Uno, K.T.**, Rivals, F., Bibi, F., Pante, M.C., Njau, J. and de la Torre, I. 2018, Large mammal diets and paleoecology across the Oldowan-Acheulean transition at Olduvai Gorge, Tanzania from stable isotope and tooth wear analyses: *Journal of Human Evolution*, v. 120, p. 76-91.
 18. Rivals, F., **Uno, K.T.**, Bibi, F., Pante, M.C., Njau, J. and de la Torre, I., 2018, Dietary traits of the ungulates from the HWK EE site at Olduvai Gorge (Tanzania): Diachronic changes and seasonality: *Journal of Human Evolution*, v. 120, p. 203-214.
 17. Cerling, T.E., Barnette, J.E., Chesson, L.A., Douglas-Hamilton, I., Gobush, K.S, **Uno, K.T.**, Wasser, S.K., Xu, X., 2016, Radiocarbon dating of seized ivory confirms rapid decline in African elephant populations and provides insight into illegal trade: *Proceedings of the National Academy of Sciences*, v. 113 no. 47, p.13300-13305.
 16. **Uno, K.T.**, Polissar, P.J., *Kahle, E., Feibel, C.S., Harmand, S., Roche, H., and deMenocal, P.B., 2016a, A Pleistocene paleovegetation record from plant-wax biomarkers from the Nachukui Formation, West Turkana, Kenya: *Philosophical Transactions of the Royal Society B*, v. 371, no. 1698, p. 1-10.
 15. **Uno, K.T.**, Polissar, P.J., *Jackson, K., and deMenocal, P.B., 2016b, A Neogene biomarker record of vegetation change in eastern Africa: *Proceedings of the National Academy of Sciences*, v. 113, no. 23, p. 6355-6363.
 14. Cerling, T. E., Andanje, S. A., Blumenthal, S. A., Brown, F. H., Chritz, K. L., Harris, J. M., Hart, J. A., Kirera, F. M., Kaleme, P., Leakey, L. N., Leakey, M. G., Levin, N. E., Manthi, F. K., Passey, B. H.,

- and **Uno, K. T.**, 2015, Dietary changes of large herbivores in the Turkana Basin, Kenya from 4 to 1 Ma: *Proceedings of the National Academy of Sciences*, v. 112, no. 37, p. 11467–11472.
13. Kusaka, S., Takanori N., **Uno, K.T.**, Nakatsukasa, M., & Cerling, T.E., 2015, Carbon isotope ratios of human tooth enamel record evidence of terrestrial resource consumption during the Jomon period, Japan: *Journal of Archeological Science*, v. 158, no. 2, p.300-311.
 12. Saarinen, J., Karme, A., Cerling, T.E, **Uno, K.T.**, Säilä, L., Kasiki, S., Ngene, S., Obari, T., Mbua, E., Manthi, K., and Fortelius, M., 2015, A new tooth wear-based dietary analysis method for Proboscidea (Mammalia): *Journal of Vertebrate Paleontology*, v. 35, no. 3, p. e918546.
 11. Fox, D., Martin, R., Roepke, E., Fetrow, A., Fischer-Femal, B., **Uno, K.T.**, Fox-Dobbs, K., Snell, K.E., Haveles, A.,and Polissar, P. 2015, Biotic and Abiotic Forcing During the Transition to Modern Grassland Ecosystems: Evolutionary and Ecological Responses of Small Mammal Communities Over the Last 5 Million Years. *The Paleontological Society Papers*, 21, 197-218.
 10. Patnaik, R., Cerling, T.E, **Uno, K.T.**, Fleagle, J.G., 2014, Diet and habitat of Siwalik primates *Indopithecus*, *Sivaladapis* and *Theropithecus*: *Annales Zoologici Fennici*, v. 51, no. 1-2, p.123-142.
 9. **Uno, K. T.**, Quade, J., Fisher, D., Wittemyer, G., Douglas-Hamilton, I., Andanje, S. A., Omondi, P., Litoroh, M., and Cerling, T. E., 2013, Bomb-curve radiocarbon measurement of recent biologic tissues and applications to wildlife forensics and stable isotope (paleo)ecology: *Proceedings of the National Academy of Sciences*, v. 110, no. 29, p. 11736-11741.
 8. Kimura, Y., Jacobs, L.L., Cerling, T.E., **Uno, K.T.**, Ferguson, K.M., Flynn, L.J., Patnaik, R., 2013, Fossil Mice and Rats Show Isotopic Evidence of Niche Partitioning and Change in Dental Ecomorphology Related to Dietary Shift in Late Miocene of Pakistan: *PLoS ONE* 8(8): e69308.
 7. Cerling, T. E., Manthi, F. K., Mbua, E., Leakey, M. G., Leakey, L. N., Leakey, R. E., Brown, F. H., Grine, F. E., Hart, J. A., Kaleme, P., Roche, H., **Uno, K. T.**, and Wood, B. A., 2013, Stable isotope-based diet reconstructions of Turkana Basin hominins: *Proceedings of the National Academy of Sciences*, v. 110, no. 26, p. 10501-10507.
 6. Bibi, F., Souron, A., Bocherens, H., **Uno, K.**, and Boisserie, J.-R., 2013, Ecological change in the lower Omo Valley around 2.8 Ma: *Biology Letters*, v. 9, no. 1 p.1-4.
 5. Macharia, A., **Uno, K.**, Cerling, T., and Brown, F., 2012, Isotopically distinct modern carbonates in abandoned livestock corrals in northern Kenya: *Journal of Archaeological Science*, v. 39, no. 7, p. 2198-2205.
 4. Moore, P. L., Iverson, N. R., **Uno, K. T.**, Dettinger, M. P., Brugger, K. A., and Jansson, P., 2012, Entrainment and emplacement of englacial debris bands near the margin of Storglaciären, Sweden: *Boreas*, p. 71-83.
 3. Cerling, T. E., Mbua, E., Kirera, F. M., Manthi, F. K., Grine, F. E., Leakey, M. G., Sponheimer, M., **Uno, K. T.**, and Lee-Thorp, J., 2011, Reply to Godfrey et al.: Outside the box: *Proceedings of the National Academy of Sciences*.
 2. Cerling, T. E., Mbua, E., Kirera, F. M., Manthi, F. K., Grine, F. E., Leakey, M. G., Sponheimer, M., and **Uno, K. T.**, 2011, Diet of *Paranthropus boisei* in the early Pleistocene of East Africa: *Proceedings of the National Academy of Sciences*, v. 108, no. 23, p. 9337-9341.

1. **Uno, K. T.**, Cerling, T. E., Harris, J. M., Kunimatsu, Y., Leakey, M. G., Nakatsukasa, M., and Nakaya, H., 2011, Late Miocene to Pliocene carbon isotope record of differential diet change among East African herbivores: *Proceedings of the National Academy of Sciences*, v. 108, no. 16, p. 6509-6514.

Selected Abstracts (*undergraduate, **graduate, or ***postdoc advisee)

Strömberg, C. A. E., D. J. Peppe, S. M. Cote, A. L. Deino, D. L. Fox, J. D. Kingston, R. N. Kinyanjui, W. E. Lukens, L. M. MacLachy, A. Novello, S. G. Driese, N. D. Garrett, K. R. Hillis, B. F. Jacobs, K. E. H. Jenkins, R. Kityo, T. Lehmann, F. K. Manthi, E. N. Mbua, L. A. Michel, E. R. Miller, A. A. T. Mugume, S. N. Muteti, I. O. Nengo, K. O. Oginga, S. R. Phelps, P. J. Polissar, J. B. Rossie, N. J. Stevens, **K. T. Uno**, and K. P. McNulty. 2023. Early Miocene evidence of abundant C₄ grasses and habitat heterogeneity in eastern Africa. Conference paper given at *Botany* (July 22-26), Boise, ID.

*Bapana, S., Miller, E., Liutkus-Pierce, C., Grossman, A., Kirera, F., Beck, C.C., Russo, G., **Uno, K.T.**, ***Green, D.R., 2022, Heterogeneous hydroclimates in the Middle Miocene East African Rift Valley, AGU Annual Meeting, Chicago, IL

Tweedy, R.R., **Uno, K.T., 2022, Grass in the Past: Eastern African Chemotaxonomy from Plant Wax n-Alkanes, AGU Annual Meeting, Chicago, IL

***Ferland, T.M., **Uno, K.T.**, 2022, Controls on PAH production in modern East African soils using satellite data, AGU Annual Meeting, Chicago, IL.

***Lupien, R.L., **Uno, K.T.**, deMenocal, P., 2022, Late Pleistocene drivers of climate and vegetation in the Western Sahel from leaf wax biomarker isotopes, AMQUA Annual Meeting, Madison, Wisconsin.

***Green, D.R., Olack, G., Smith, T.M., Williams, I. S., Lweis, J.E., **Uno, K.T.**, Harmand, S., Colman, A.S., Seasonal carbon and oxygen isotope compositions from Lomekwi in the Turkana Basin, Kenya, 2022 American Association of Biological Anthropology Annual Meeting, Denver, CO.

Uno, K.T., Knudson, K.J., Stojanowski, C.M., Sereno, P., 2021, Hydroclimate, Paleodiets, and Ecosystem Structure at Gobero during the African Humid Period, Society of Africanist Archaeologists Annual Meeting, virtual.

*Brown, M., **Uno, K.T.**, Merceron, G., Boisserie, J-R., 2020, Carbon Isotope Analysis of Cercopithecidae from the Shungura Formation, 3.3 Ma-1.2 Ma: Diet during the transition between dominant species of *Theropithecus* in the Turkana Basin, Society of Vertebrate Paleontology Annual Meeting, virtual presentation.

Uno, K.T., Merceron, G., Brown, M., Guy, F., Hlusko, L., Martin, J., Balter, V., Souron, A., Boisserie, J-R., 2020, Combining fossil enamel stable isotopes and dental microwear texture analysis to assess dietary niche-partitioning among primates (Cercopithecidae and Hominini) from the Lower Omo Valley, Ethiopia, Society of Vertebrate Paleontology Annual Meeting.

deMenocal P.B., Polissar P.J., Tierney, J., **Uno, K.T.**, Phelps, S.R., Rose, C.A., 2018, Paleoenvironmental contexts of hominin evolution: reconciling African wet-dry cycles and secular vegetation trends over the Neogene, GSA Abstracts with Programs, doi:10.1130/abs/2018AM-320353.

*Shi, S., Cerling, T.E., **Uno, K.T.**, 2018, What plant is that? Chemotaxonomy from n-alkane molecular distributions of East African plants with implications for paleoecology, Abstract PP31D-1701 presented at 2018 Fall Meeting, American Geophysical Union (AGU) Fall Meeting, Washington DC, 10-14 Dec.

Yang, D., **Uno, K.T., 2018, Intratooth isotope profiles of fossil suids: environmental variability in the Pleistocene deposits of the Koobi Fora Formation, Annual Meeting of the Paleoanthropology Society, Austin, TX, 10-11 April.

*Buzeta, R.K., **Uno, K.T.**, Polissar P.J., Phelps, S.R., 2017, Step-wise cooling in the high north Atlantic over the past 17 million years, GSA Abstracts with Programs. Vol. 49, No. 6, doi:10.1130/abs/2017AM-305754.

Uno, K.T., Polissar P.J., Snell, K.E., Lukens, W.E., Fox-Dobbs, K., Haveles, A.W., Martin, R.A. and Fox, D.L., 2015, Plant wax biomarkers in late Neogene paleosols as archives of Great Plains vegetation, GSA Abstracts with Programs, v. 47, n. 7, p.716.

*Jackson, K., **Uno, K.T.**, Polissar P.J., deMenocal P.B., 2015, Changing vegetation in Northeast Arica: Plant wax carbon isotope ratios indicate late Miocene appearance of C₄ grasses, Volume 47, GSA Abstracts with Programs.

*Fischer-Femal, B., Polissar, P., **Uno, K.T.**, Fox-Dobbs, K., Fetrow, A., Roepke, L., Snell, K., Fox, D.L., Feinberg, J., Martin, R., 2014, Reconstructing Vegetation Changes from Biomarkers in Modern Soils and Late Neogene Paleosols in a Grassland, Meade Basin, KS, USA, AGU Fall Meeting, San Francisco, CA.

Uno, K. T., Polissar P.J., Bonnefille R., Brown F.H., Feibel C.S., *Kahle E.C., Lepre C.J., Levin N.E., deMenocal P.B., 2013, Plant wax biomarkers in fluvial-lacustrine sediments from the Omo-Turkana and Awash basins in eastern Africa, AGU Fall Meeting, San Fran., CA.

Uno, K. T., Fisher, D.C., and Cerling, T. E., 2013, Towards quantitative reconstructions of diet and environment using stable isotope profiles in tissues: examples from elephants, Volume 45, GSA Abstracts with Programs.

Uno, K. T., 2012, Enamel maturation and intratooth stable isotope profiles in elephant (*Loxodonta africana*) molars: A new tool for evaluating seasonality in terrestrial paleoenvironments from proboscidean teeth, J. of Vert. Paleontology, 32, p. 186-187.

Uno, K.T., Cerling, T.E., Nakaya, H., Nakatsukasa, M., Kunimatsu, Y., 2008, Stable carbon and oxygen isotope ratios of fossil tooth enamel from the Nakali and Namurungule Formations, Kenya: Capturing the C₃-C₄ transition in East African equid diet at ~9.6 Ma, J. of Vert. Paleontology, 28, 3, p 155A.

Godsey, H.S., Chapman, D.S., Hynek, S.A., Jarrell, E, Johnson, W.P., Naftz, D.L., Neuman, C.R., **Uno, K.T.**, 2006a, Saline Lakes: Platforms for Place-Based Scientific Inquiry by K-12 Students, Abstract H52A-07, AGU Fall Meeting, San Francisco, CA.

Uno, K., et al., 2006, $\delta^{18}\text{O}$ and $\delta^2\text{H}$ Stable Isotopic Enrichment of Ice from a Debris Band on Storglaciären, Abstract C31A-1231, AGU Fall Meeting, San Francisco, CA.

Uno, K.T., and Bice, D.M. 2001, Upper Cretaceous Paleomagnetism from Umbria, Italy: "Anchored" Poles set Proposed True Polar Wander Event Adrift, AGU Spring Meeting, Boston, MA. (**received AGU Outstanding Student Paper Award**)

Grants and Fellowships (Total as PI since 2012: \$3.32 million)

- 2022 Leverhulme Trust (UK): Agencies of behavioural change in early modern humans in NW Africa; Lead PI: N. Barton, Oxford University; LDEO PI Uno: \$264K; £500K total
- 2021 NSF-MGG: TOTO: The Rains Down in Africa; PIs Lupien & Uno: \$614K
- 2021 NSF-MRI: New LC and GC IRMS at LDEO; PI D'Andrea; Co-I Uno; \$318K

- 2020 NSF-FRES: Turkana Miocene Project; LDEO PI Uno: \$808K; \$2.7 million total
- 2020 NSF-ARCH: Homo and pyrotechnology; LDEO PI Uno: \$146K; \$399K total
- 2020 NSF-CAREER: Neogene Grasslands and proxy development: \$700K
- 2019 ERC Advanced Grant; PI I. de la Torre; collab. Uno: \$140K; €2.5 million total
- 2019 Columbia University Climate and Life Fellowship: \$187K
- 2018 LDEO Climate Center Grant: \$10K
- 2015 NSF Archeology: Co-PI Uno: \$5K; \$40K total to PI: Joe Ferraro
- 2015 LDEO Climate Center Grant: \$10K
- 2014 Vulcan Foundation: Isotope Verification of Region and Year: \$30K; total \$201K
- 2013 Wenner-Gren Foundation for Anthropological Research: \$20K
- 2013 NSF ELT; \$110K to Co-I's Polissar and Uno; \$640K total
- 2013 LDEO Climate Center Grant: \$10K
- 2012 LDEO Postdoctoral Fellowship: \$122K
- 2010 University of Utah Graduate Research Fellowship: \$15K
- 2011 GSA Student Travel Grant
- 2005-2007 NSF GK-12 Fellowships : \$60K
- Kresge Science Foundation Research Grant: \$5K in 2000; \$1K in 1999

Teaching

- Spring 2018-2023 Terrestrial Paleoecology in Kenya (Princeton & Columbia Universities); not taught in 2021 due to COVID.
- Summer 2021. MHEB 824, Stable Isotope Ecology (Turkana Univ. College; remote)
- Spring 2018. EESC UN2300, Life Systems (Columbia University)
- Fall 2015. Environmental Change and Human Evolution (Columbia University)
- June 2010- 2012. Lab Instructor for Stable Isotopes in Ecology (U of Utah)
- Fall 2009. Introduction to Geology (Carleton College)
- Spring 2009. Teaching Assistant (TA), Turkana Basin Field Course, Kenya (U of Utah)
- Spring 2008. Earthquakes and Volcanoes (U of Utah):
- Fall 2007. TA, Introduction to Geochemistry (U of Utah)
- Fall 2007. TA, Aqueous Geochemistry (U of Utah)
- 2005-2007. NSF GK-12 Fellow: Rose Park & Escalante Elementary Schools (SLC, UT)
- 2002- 2003. Japanese Exchange and Teaching Program, Okayama, Japan
- Fall 2001. TA, Trimester-long Geology Program in Italy, 2001 (Carleton College)
- Spring 2001. TA, Oceans and Atmospheres (Carleton College)
- Spring 2000. TA, Igneous and Metamorphic Petrology (Carleton College)

Advising

- 2022. Co-advised seven summer interns (4 undergraduate students: Mackenzie Pina, Ashley House, Sneha Bapana, and Victoria Johnson, 3 high school students: Dina Alam, Cassandra Calleja, and Lina Lajqi) with postdocs T. Ferland and D. Green.
- 2022-present. Committee member for Linet Sankau, MS student, Turkana University College (TUC).
- 2023-present. Enquye Negash, Climate School Postdoctoral Fellow, LDEO.
- 2022-2023. Committee member for Nicolas Baird, graduate student, DEES/AMNH.
- 2021-present. Primary advisor for Ruth Tweedy, graduate student, LDEO.
- 2022-present. Committee member for Aggrey Minya, MS student, (TUC).
- 2022-2023. Troy M Ferland, Postdoctoral Researcher, LDEO.
- 2021-2023. Committee member for Christian Rowan, graduate student, LDEO.
- 2021-2023. Daniel R Green, Earth Institute Postdoctoral Fellow, LDEO.
- 2019-2022. Rachel L Lupien, Postdoctoral Researcher, LDEO.
- 2019-2020. Morgan Brown, Columbia Univ.: undergraduate thesis on stable isotope ecology of fossil primates from the Lower Omo Valley, Ethiopia.
- 2016-2020. Deming Yang, PhD committee member (SUNY Stony Brook).
- 2018. Sarah Shi, Columbia Univ.: summer undergraduate intern project on *n*-alkane distribution in modern East African plants.
- 2017. Rachel Buzeta, University of Dayton: summer undergraduate intern project on a Neogene high latitude SST record from alkenones (U^{K}_{37}) ODP Site 985.
- 2015. Kevin Jackson, Lafayette College: summer undergraduate intern project on a Neogene African vegetation from carbon isotopes in plant waxes extracted from marine sediments.
- 2014-2015. **1)** Brenden Femal, Univ. of Puget Sound: senior thesis on modern soil and paleosol biomarkers from Meade Basin, Kansas; **2)** Jenny Pensky, Barnard College: senior thesis on Siwalik vegetation and hydroclimate change from biomarkers in the Bengal Fan.
- 2013-2014. Emma Kahle, Columbia Univ.: senior thesis on East African paleoclimate from stable isotope records in leaf waxes.
- 2010-2012. Daniel Davis, Univ. of Utah: senior project on carbon isotope enrichment between elephant diet and enamel using breath CO_2 as a proxy.
- 2008-2010. Blake Hethmon, AMES high school, SLC, UT: science fair projects on elephant ecology from isotopes in tail hair (2008-9) and diet-turn-over times from isotopes in caterpillar frass (2010). Blake won First Place in the Chemistry Division of the Utah State Science Fair in 2010.

Awards and Honors

- 2019 Climate and Life Fellow, Columbia University
- 2012 Outstanding PhD Student Award, U of U Dept. of Geol. and Geophysics
- 2001 American Geophysical Union Outstanding Student Paper Award

- 2001 Magna Cum Laude, Carleton College
- 2001 Distinction for undergraduate thesis
- 2001 Elected Student Member of Sigma Xi

Professional Service

- 2022: Climate School Postdoctoral Fellowship Committee
- 2022: Earth's Carbon Cycle & Decarbonization Implementation Team for Lamont Vision Document
- 2021-present: Lamont Postdoctoral Fellowship Committee
- 2020, 2021: NSF Panelist
- 2020-2021: Lamont Colloquium Committee, Faculty Coordinator
- 2017-2019: Associate Editor, *Journal of Human Evolution*
- Journal Reviewer for *Annales Zoologici Fennici*; *Current Biology*; *Earth and Planetary Science Letters*; *Geochimica et Cosmochimica Acta*; *Geology*; *Journal of the Geological Society of London*; *Journal of Human Evolution*; *Oecologia*; *Organic Geochemistry*; *Nature*; *Palaeogeography, Palaeoclimatology, Palaeoecology*; *Proceedings of the National Academy of Sciences*; *Proceedings of the Royal Society B*; *Quaternary Science Reviews*; *Science*; *Science Advances*; *Scientific Reports*.
- 2016-present: Proposal Reviewer for The Leakey Foundation, NSF.
- 2005-2010: Science Fair judge in Salt Lake City public and private schools.
- 2014: Expert testimony in the New York State Assembly's hearing on proposed ivory moratorium in NY state (January 16, 2014).

Invited Talks

- *The Leakey Foundation's Science Café at the American Museum of Natural History (Public talk), upcoming April, 2024*
- Richard Leakey Memorial Conference, Stony Brook Univ., 6/5/23
- Washington University, EPS Colloquium, 2/09/23
- Yale University, Bioanthropology Seminar, 9/15/22
- Smithsonian Institute, *Human Origins Topics Series*, 4/25/22
- Harvard University, Dept of Human Evolutionary Biology, 1/24/22 (Virtual)
- Virginia Tech, Conservation Paleobiology Seminar, 11/30/21 (Virtual)
- UC Santa Cruz, Paleoclimate Seminar, 5/3/21 (Virtual)
- MIT, COG3 Seminar Series, 3/5/21 (Virtual)
- Weizmann Institute, Israel, Earth Science Seminar, 3/2/21 (Virtual)
- University of Helsinki, Finland, Seminar Series, 2/12/20
- University of Poitiers, France, *Paleovprim* Seminar Series, 11/11/19
- Columbia University, E3B (Biology) Departmental Seminar, 9/17/19
- NY Consortium in Evolutionary Primatology, Spring Symposium Speaker, 5/11/19

- GSA Annual Mtg, Pardee Symposium on Human Evolution, 11/6/18
- Brown University, DEEPS Seminar, 10/11/18
- New York University, Center for the Study of Human Origins Seminar, 3/1/18
- University of Poitiers, France, International Seminar Series, 1/17/18
- Paleo Society Short Course: Biogeochemical Approaches in Paleobiology and Paleoecology, 10/21/17
- University of California, Merced, Quantitative Biology Seminar, 9/15/17
- UC Boulder, Department of Geological Sciences Seminar, 4/26/17

Invited Talks (cont.)

- American Museum of Natural History (AMNH), EPS Seminar, 3/17/17
- Lamont-Doherty Earth Observatory (LDEO), Summer Intern Seminar, 7/21/16
- LDEO, Special Seminar, 5/17/16
- University of California, Davis, Dept. of Earth and Planetary Sciences, 5/3/16
- Princeton University, Dept. of Geosciences, 3/24/16
- Stony Brook University, Dept. of Geosciences, 2/24/16
- GSA Annual Mtg, (T184. African Environments across Space and Time), 11/2/15
- Royal Society Conference: Major Transitions in Human Evolution, London, 10/22/15
- Lafayette College, Dept. of Geology, 10/2/15
- KAUST, Saudi Arabia, Earth Science Seminar, 4/22/15
- CUNY Staten Island, Department Seminar, 4/1/15
- Baynunah Paleontology Conference, Abu Dhabi, 12/10/14
- LDEO, Biology and Paleoenvironment Seminar, 11/3/14
- Wildlife Conservation Society, New York, NY, 5/14/14
- City College New York, Dept. of Earth and Atmos. Sciences, 5/9/14
- Millersville University, PA, Wildlife Forensics Colloquium, 4/9/14
- Stony Brook University, Dept. of Geosciences, 3/25/14
- GSA Annual Mtg, (T240: Biogeochemical data in paleoecology), 10/30/13
- Pace University, 10/9/13
- AMNH, Comparative Biology Seminar, 9/30/13
- LDEO, Biology and Paleoenvironment Seminar, 5/31/13
- Middlebury College, Dept. of Geology, 3/1/13
- Society of Vert. Paleontology Romer Prize Session, 10/17/12
- LDEO Symposium titled "Did Climate Change Shape Human Evolution?", 4/20/12
- Utah Valley University, Dept. of Earth Science Seminar, 4/10/12
- Anthropological Society of Nippon Annual Meeting; Okinawa, Japan. 11/5/11
- SVP Annual Meeting: Symposium on African Fauna; 10/13/10
- Kyoto University, Dept of Physical Anthropology; 3/24/10

- Luther College, Dept of Chemistry; 11/13/09
- Carleton College, Chemistry Department; 10/12/09
- National Museum of Kenya, Department of Paleontology; 5/18/09

Laboratory Experience

- 2019-present. Paleo and Ecohydrology Research at the Mpala Isotope Lab ([PERMILab](#)). I am the director of a new, NSF-funded water isotope lab in central Kenya committed to supporting research and training of African and visiting scientists. The lab is equipped with cryogenic extraction lines for soil, plant, & insect waters and for water analysis ($\delta^2\text{H}$, $\delta^{18}\text{O}$) analysis with Picarro L2130i and L2140i analyzers.
- 2012-present. Organic Geochemistry and Stable Isotope Labs, Lamont Doherty Earth Observatory. Method development for extracting biomarkers from terrestrial sediments and analyzing *n*-alkyl lipids for C and H isotope ratios. PAH and PTME extraction and analyses.
- 2008-2012. Stable Isotope Lab, U of Utah. Lab management duties include running carbonate and organic samples by off-line and on-line methods, and upkeep and maintenance of a cantankerous MAT 252 isotope ratio mass spectrometer and associated peripherals (Finnigan CarboFlo, Costech Elemental Analyzer, GC, and Merchantek (CO₂) laser ablation system).
- 2007-present. Department of Paleontology, National Museum of Ethiopia and National Museums of Kenya. Sampling of fossil teeth for stable isotope sampling. Includes training museum staff on sampling procedures and co-authoring the protocol for isotope sampling for the National Museums of Kenya.
- 2006-2008. Dissolved Gas Lab (D.K. Solomon), U of Utah. Traditional off-line vacuum extraction techniques for noble gases; analysis of noble gases (He, Ne, Ar, Kr, & Xe) using quadrupole and magnetic sector (MAP 215) mass spectrometry; Design, construction, and implementation of a portable (field) gas extraction line for glacial ice samples.
- 2000. Institute for Rock Magnetism, U of Minnesota. Thermal and AF stepwise demagnetization; NRM analysis using a superconducting rock magnetometer; characterization of rock magnetism using hysteresis, IRM acquisition, Low Temperature Remanence, and S-Ratio measurements.

Field Work

2023

1. Co-led field work for the Turkana Miocene Project that involved ~30 team members in the Turkana Basin (7 days for me, 20 days total for the team).
2. Led a team of nine conducting plant and soil sampling in Aberdare Nat'l Park, Kenya as part of my NSF CAREER project (6 days)

Field Work (cont.)

2023

1. Led a team of botanists and paleoecologists on a plant and soil sampling campaign through Aberdares National Park in Kenya (8 days).
2. Co-led field work for the Turkana Miocene Project that involved ~30 team members and three different research camps in the Turkana Basin (10 days).

2022

3. Co-led field work for the Turkana Miocene Project that involved ~30 team members and three different research camps in the Turkana Basin (22 days).
4. Field and lab work at Mpala Research Centre and the PERMILab (8 days).
5. Field work at Olduvai Gorge, Tanzania for ERC project led by Igancio de la Torre (8 days).

2021

1. Water isotope sampling campaign in Laikipia, Kenya and training of three Kenyan students or scientists in isotope analysis and the PERMILab (7 days).
2. Fossil tooth enamel sampling at the National Museum of Kenya; trained four African graduate students on how to sample fossil teeth. (15 days).

2019

1. Expedition to Niger to study the African Humid Period site at Gobero and to collect modern plants (15 days).
2. Sampled hominin and carnivore teeth for isotope analysis at the National Museum of Ethiopia (9 days).

2018

Led a team of botanists and paleoecologists on a plant and soil sampling campaign through six national parks in Kenya (16 days).

2017.

Sediment sampling for molecular biomarkers at 2.5 to 3.5 Ma archeological sites in the Turkana Basin, Kenya (14 days).

2015

Sediment sampling in the Great Plains (Meade Basin, Kansas) for molecular biomarkers (16 days).

2014.

1. Paleosol sampling in the Great Plains (Meade Basin, Kansas) for molecular biomarkers (with P. Polissar, Dave Fox and others; 15 days).
2. Paleosol and lacustrine sediment sampling in the Lower Omo Valley, southern Ethiopia for molecular (18 days).
3. Paleontology and geology of the late Miocene Baynunah Formation, Abu Dhabi (with F. Bibi; 12 days).

Pre 2014:

Summer 2009. Geology and paleoanthropology east of Lake Turkana (with F.H. Brown and T.E. Cerling; four weeks).

Summer 2007. Geology west of Lake Turkana, Kenya (with F.H. Brown, N. Levin, and T.E. Cerling); Geology and paleontology of the Miocene Nakali Formation in the Suguta Valley, Kenya (with M. Nakatsukasa and Y. Kunimatsu, Kyoto Univ.). 6 weeks.

Summer, 2006. Storglaciären, Sweden: Geochemical investigation of ice and debris-bands at the glacier terminus (with N. Iverson and P. Moore, Iowa State Univ.). 12 days.

Winter, 2001. SEA Semester. Six weeks aboard the 138' tall ship SSV Corwith Cramer. Calculated geostrophic flow using CTD data collected in and around the Windward Passage.

Summer 2000. Undergraduate thesis research on paleomagnetism and rock magnetism of Late Cretaceous limestones in the Umbria-Marche sedimentary sequence (with D. Bice (Penn State) and A. Montanari (Osservatorio Geologico di Coldigioco)).

August-October 1999. Carleton College Geology Program in Italy; Study of structural and tectonic evolution of the Apennines as revealed through the Umbria-Marche sedimentary sequence.

July 1999. Field Assistant for Carleton Student and Faculty Research; Sampled Cambrian limestones in Canadian Rockies for stable carbon isotope stratigraphy with C. Cowan (Carleton College) and M. Saltzman (Ohio State Univ.).

Press Coverage (most recent first)

Giant Pliocene otter the size of a lion

- [Otters the Size of Lions Once Roamed the Earth](#), Telegraph (UK), 9/8/22
- [Ancient Otter Fossils Show It Was the Size of a Lion](#), Daily Mail (UK), 9/8/22
- [In Ethiopia, Scientists Discover a Fossil Otter the Size of a Lion](#), AllAfrica, 9/13/22
- [Lion-Size Otters Prowled Ethiopia 3 Million Years Ago](#), Livescience, 9/13/22
- [This Species of Otter Was as Big as a Lion](#), Futuro360 (Chile), 9/8/22
- [Scientists Discover an Otter That Lived in Ethiopia and Was as Big as a Lion](#), Semana (Colombia), 9/8/22
- [A New Species of Extinct Otter Was as Big as a Lion](#), Europapress (Spain), 9/8/22
- [Ancient Otter Fossils Show It Was the Size of a Lion When it Lived More Than 2.5 Million Years Ago](#), Bharat Express News (India), 9/8/22

Paleofire and early humans

- [A familiar geochemical technique shines a new spotlight on early hominin use of fire](#), 12/15/20, Eos

Radiocarbon dating of ivory seized in Manhattan

- [Scientists deploy DNA analysis and 14C dating in latest salvo against ivory trafficking](#), 2/5/18
- [Seized ivory probed for clues that could help save elephants](#), Washington Post, 1/16/18
- [Scientists Want to Save Elephants Through Inspecting Seized Ivory](#), Bloomberg, 1/15/18

- [Fighting ivory trafficking with forensic science](#), Physics.Org, 8/14/17

Radiocarbon dating of ivory shows tusks move quickly through illegal trade network

- [Recently Killed Elephants Are Fueling the Ivory Trade](#), Science, 11/7/16
- [Slaughter of Elephants for Their Ivory Intensifies](#), Agence France-Press, 11/7/16
- [Most Illegal Ivory Is Coming From Recently Killed Elephants](#), The Verge, 11/7/16
- China Central TV: News interview, 11/17/16.
- [Most Illegal Ivory Sold Comes From Illegally Killed Elephants](#), Wired, 11/08/16
- NTN24 TV (Colombia): Interview regarding China's domestic ivory trade ban, 01/13/17.

Press Coverage (cont.)

Bomb-curve Radiocarbon Dating to Ivory and Horn as a Forensic Tool (2013-2015)

- [TechKnow \(Aljazeera America\) Interview](#), June 2015.
- [Columbia Magazine](#): A Sound of Trumpets, 8/1/14.
- [The Telegraph](#): Time is running out to save the rhino, 2/12/14.
- [The Economist](#): The elephant in the room, 7/6/13.
- BBC World News: live radio interview, 7/2/13.
- NPR's [Morning Edition](#): Radiocarbon Clues Help Track Down Poached Elephant Ivory, 7/2/13.
- [The Guardian](#): Measuring carbon age in ivory could help combat poaching, study shows, 7/2/13.
- [National Geographic](#) Daily News: Cold War Radioactivity Can Date Illegal Elephant Ivory, 7/1/13.

Study reveals surprising diet of "Nutcracker man"

- [Huffington Post](#): Ancient 'Nutcracker Man,' *Paranthropus boisei*, Didn't Actually Eat Nuts, 5/2/11.
- Smithsonian Magazine, June, 2011.
- [Science Daily](#): No Nuts for 'Nutcracker Man', 5/3/11.

Study shows African mammals adopted grassy diets at different rates over millions of years

- [The Salt Lake Tribune](#): U. scientists track ancient mammal diets from isotopes in teeth, 4/4/11.
- Science on [NBC News.com](#): Grazing animals shaped human evolution, 4/4/11.

Professional Development

- 2013 Preparing for an Academic Career in the Geosciences, Boulder, CO.
- 2006 Mineralogical Society of America short course: Paleoaltimetry, Snowbird, UT.

- 2005 Stable Isotopes in Ecology, Salt Lake City, UT.

Professional Affiliations

- American Geophysical Union
- Geological Society of America
- Society of Vertebrate Paleontology
- Society of Africanist Archeologists
- European Society for Human Evolution

Languages

- Mediocre Japanese
- Basic Italian