

CIRRUCULUM VITÆ

RACHEL L. LUPIEN

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Education

BROWN UNIVERSITY Providence, RI
May 2019 Ph.D., Earth, Environmental, and Planetary Sciences
Advisor: James M. Russell
Dissertation: *The Plio-Pleistocene Climate History of East Africa and the Role of Environmental Change on Human Evolution: Studies of Leaf Wax Isotopes from Paleolake Sediment*

BROWN UNIVERSITY Providence, RI
May 2016 M.Sc., Earth, Environmental, and Planetary Sciences
Advisor: James M. Russell
Thesis: *Leaf wax biomarker record of rainfall from West Turkana, Kenya*

AMHERST COLLEGE Amherst, MA
May 2012 B.A., (cum Laude) Geology
Advisor: Tekla A. Harms
Thesis: *New Constraints on Cooling Ages for Proterozoic Accreted Arc and Metamorphic Core Zone Rocks of the Big Sky Orogen in Southwestern Montana*

Research Experience

Postdoctoral Research Scientist, Lamont-Doherty Earth Observatory Palisades, NY
July 2019 – Present, Peter de Menocal and Kevin Uno, Organic Geochemistry Lab

- Leaf wax biomarker hydrogen and carbon isotope analyses of marine sediment cores using GC-IRMS
- Column chemistry and alkane compound distributions using FID and MSD
- Paleoclimate studies of North Africa and Sahel
- Research and fellowship proposal writing

Graduate Student Researcher, Brown University Providence, RI
August 2014 - May 2019, James Russell, Organic Geochemistry Lab

- Leaf wax biomarker hydrogen and carbon isotope analyses of lacustrine sediment using GC-IRMS
- Column chemistry and alkanolic acid compound distributions using FID
- East African paleohydrology and vegetation studies with advanced time series analysis techniques
- Team member of the large, international Hominin Sites and Paleolakes Drilling Project
- Fieldwork to collect lacustrine cores from South Sulawesi, Indonesia

Research Assistant, Lamont-Doherty Earth Observatory Palisades, NY
August 2012 - July 2014, Steven Goldstein, Radiogenic Isotope Lab

- Ultraclean lab column chemistry and measurements of Neodymium isotopes on ICP-MS
- Paleoceanographic studies of Southern Ocean marine cores on oceanic circulation strength

Publications

1. **Lupien, R.L.**, Russell, J.M., Kingston, J., Yost, C., Schuh, A., Logan, J., & Cohen, A.S. (2020). Vegetation structure in the Baringo Basin, East Africa across the Plio-Pleistocene and its relationship to Northern Hemisphere glaciation. In Special Issue: A high resolution, multi-proxy record of Pliocene hominin environments in the Kenya Rift Valley: Analysis of the Baringo-Tugen Hills-Barsemoi (BTB) Drill Core. *Palaeogeography, Palaeoclimatology, Palaeoecology*. doi: 10.1016/j.palaeo.2019.109426
2. **Lupien, R.L.**, Russell, J.M., Feibel, C., Beck, C., Castañeda, I., Deino, A., Cohen, A.S. (2018). A leaf wax biomarker record of early Pleistocene hydroclimate from West Turkana, Kenya. *Quaternary Science Reviews*, 186, 225-235. doi: 10.1016/j.quascirev.2018.03.012
3. **Lupien, R.L.**, Russell, J.M., Feibel, C., Beck, C., Castañeda, I., Deino, A., Cohen, A.S. (2018). Reply to Comments by Nutz & Schuster (2018) on: "A leaf wax biomarker record of early Pleistocene hydroclimate from West Turkana, Kenya". *Quaternary Science Reviews*, 201C, 508-510. doi: 10.1016/j.quascirev.2018.10.015
4. Liang, J., Russell, J.M., Xie, H., **Lupien, R.L.**, Si, G., Wang, J., Hou, J., Zhang, G. (2018). Vegetation effects on temperature calibrations of branched glycerol dialkyl glycerol tetraether (brGDGTs) in soils. *Organic Geochemistry*, 127, 1-11. doi: 10.1016/j.orggeochem.2018.10.010

In Review

1. **Lupien, R.L.**, Russell, J.M., Grove, M., Beck, C.C., Feibel, C.S., Cohen, A.S., Abrupt climate change and its impacts on hominin evolution during the early Pleistocene in the Turkana Basin, Kenya. *Quaternary Science Reviews* [*in review*].
2. Yost, C.L., **Lupien, R.L.**, Beck, C., Feibel, C., Archer, S., Cohern, A.S. Grassland composition and fire paced by insolation during the Early Pleistocene in the Turkana Basin, Kenya. *Frontiers in Earth Science* [*in review*].

In Preparation

1. **Lupien, R.L.**, Russell, J.M., Castañeda, I., Pearson, E., Lamb, H., Schabitz, F., Campisano, C., Sier, M., Deino, A., Cohen, A., Orbital-scale controls on Plio-Pleistocene East African hydroclimate. [*ready to submit to Proceedings of the National Academy of Sciences*]

Fellowships and Awards

2017-2018	Institute at Brown for Environment and Society Graduate Fellowship, Brown University
2016	Urbino Summer School of Paleoclimatology Travel Grant and Stipend, NSF
2014-2015	Charles Wilson Brown Fellowship, Brown University
2011	Richard M. Foose Award, Amherst College

Invited Presentations

1. Environmental Geology & Geochemistry Seminar Lecture Series, Department of Geosciences, *Princeton University*, April 2020
2. Invited Speaker Seminar, Department of Geological Sciences, *Binghamton University State University of New York*, April 2020
3. Biology and Paleo Environment Seminar, *Lamont-Doherty Earth Observatory of Columbia University*, April 2020

4. Sack Lunch Seminar Series, Department of Earth, Atmospheric and Planetary Sciences, *Massachusetts Institute of Technology*, March 2019
5. Biology and Paleo Environment Seminar, *Lamont-Doherty Earth Observatory of Columbia University*, October 2016

Research Grants – \$314,297 in total

- 2018 **NSF-EAR:** A 750,000-yr Leaf Wax Biomarker Record to Assess Environmental Change Across the Plio-Pleistocene Boundary in Tropical East Africa. **Co-Author**, \$302,472
- 2018 and 2017 Institute at Brown for Environment and Society Graduate Research Grant, \$4,950, \$5,000
- 2016 Geological Society of America Graduate Student Research Grant, \$1,875

Teaching

Teaching Assistant, Columbia in Kenya, Columbia and Princeton Universities

2020 Spring *Terrestrial Paleoecology*: TA of a 3-week field course for Columbia and Princeton undergraduates as part of their Tropical Biology and Sustainability semester abroad in Kenya at the Turkana Basin Institute and Mpala Research Centre

Certificate Recipient, ColumbiaX: INCLTEACH1x

Exp. June 2020 *Supporting All Students in the College Classroom*

Instructor, 2018 STEM II Program, Brown University

2018 Summer *Human Evolution and the Environment*: Co-teacher of 2-week intensive pre-college science course on climate change and human evolution

Teaching Assistant, Earth, Environment, and Planetary Sciences, Brown University

2016 Fall *Stratigraphy and Sedimentology*

2016 Spring *Earth: Evolution of a Habitable Planet*

Certificate Recipient, The Sheridan Center for Teaching, Brown University

2014-2015 *The Sheridan Teaching Seminar - Reflective Teaching (Certificate 1)*

Volunteer Science Teacher, Vartan Gregorian Elementary School, Providence, RI

2014-2017 *2nd Grade Science*

Professional Development

2018 Advanced Climate Dynamics Course (ACDC), Finse, Norway

2017 International Continental Drilling Project (ICDP) Course, Windischeschenbach, Germany

2016 Urbino Summer School in Paleoclimatology (USSP), Urbino, Italy

Service

Professional

Reviewer of journal manuscripts for *Palaeogeography*, *Palaeoclimatology*, *Palaeoecology*; *Organic Geochemistry*; *Journal of Great Lakes Research*; *Climate Dynamics*

Session Convener, 2018 AGU Fall Meeting

Departmental

Co-Chair, Biology and Paleo Environment Seminar Series, 2019-present, LDEO

Leader, Graduate Women in Science and Engineering, 2015-2018, Brown University

Member, Diversity Working Group, 2015-2019, Brown University
Mentor, 1st Year Graduate Mentoring Program, 2017-2019, Brown University
President, Geology Graduate Student Group (GeoClub), 2015-2016, Brown University

Outreach

Scientist, Skype-A-Scientist, 2017-present
Member and Social Media, 500 Women Scientists Providence Pod, 2017-2019
Member, Ocean State Scientists political action group, 2017
Workshop leader, The Lincoln School International Women's Day, 2016
Speaker, NerdNite Providence, 2015

Academic Mentoring

Graduate Students

Mock Preliminary Exam Committees at Brown University: **Nora Richter, Ariel Deutsch, Ashley Palumbo, Rachel Sheppard, Abigale Bodner, Jenna Pearson, Richard Vachula, Sloane Garelick**

Undergraduates

Avinash Subramanian Thesis: Statistical Analysis of East African Paleoclimate Variations During the Late Pleistocene, and Implications for Human Evolution

Alexander Alverson

Tristan Reinecke Undergraduate Teaching and Research Award

High Schoolers

Dheivanai Moorthy

Professional Affiliations

Center for Climate and Life, Columbia University
Association for Women Geoscientists
Earth Science Women's Network
Geological Society of America
American Geophysical Union
The Geochemical Society

Conference Abstracts

* denotes mentee

1. Yehudai, M., Goldstein, S.L., Pena, L.D., Jaume-Seguí, M., Kim, J., Hartman, A.E., **Lupien, R.L.**, 2020. The Atlantic Meridional Overturning Circulation from Nd Isotopes. Abstract to be presented at EGU General Assembly 2020, Vienna, Austria.
2. **Lupien, R.L.**, Russell, J.M., Subramanian, A., Uno, K., deMenocal, P., Potts, R., 2019. The Role of Terrestrial Vegetation Variations in Hominin Evolution and behavioral Change in East Africa Throughout the Last One Million Years. Abstract presented at the 2019 AGU Fall Meeting, San Francisco, CA.
3. Mitsunaga, B., Stubbs, B., **Lupien, R.L.**, Deino, A., Kingston, J., Stockhecke, M., Brown, E., Russell, J.M., 2019. A Leaf Wax Biomarker Record of Plio-Pleistocene Environment Change from the Baringo Basin (Tugen Hills), Kenya. Abstract presented at the 2019 AGU Fall Meeting, San Francisco, CA.

4. Goldstein, S.L., Pena, L.P., Yehudai, M., Jaume-Seguí, M., Kim, J., Knudson, K., Basak, C., Hartman, A., **Lupien, R.L.**, 2019. AMOC Variability over the Last ~2 Ma from a North-South Atlantic Transect Using Nd Isotopes. Abstract presented at the 2019 AGU Fall Meeting, San Francisco, CA.
5. Goldstein, S.L., Pena, L.P., Yehudai, M., Kim, J., Jaume-Seguí, M., Knudson, K., Basak, C., Hartman, A., **Lupien, R.L.**, 2019. A 1.5 Myr History of the Atlantic Meridional Overturning Circulation from Nd isotopes. Abstract presented at Goldschmidt 2019, Barcelona, Spain.
6. Yehudai, M., Goldstein, S.L., Pena, L.D., Jaume-Seguí, M., Kim, J., Hartman, A.E., **Lupien, R.L.**, 2019. Modes of the Atlantic Meridional Overturning Circulation from Nd Isotopes. Abstract presented at Goldschmidt 2019, Barcelona, Spain.
7. Lamb, H., Asrat, A., Ramsey, C.B., Cohen, A., Chapot, M., Davies, S., Dean, J., Deino, A., Düsing, W., Foerster, V., Grove, M., Junginger, A., Lane, C., Leng, M., **Lupien, R.L.**, Pearson, E., Roberts, H., Russell, J., Schäbitz, F., Trauth, M., Vidal, C., 2019. The 600,000-year palaeoenvironmental record from Chew Bahir, Ethiopia: testing hypotheses of climate change and human origins. Abstract presented at the 2019 INQUA 20th Congress, Dublin, Ireland.
8. Cohen, A.S., Billingsley, A., Campisano, C., **Lupien, R.L.**, Muiruri, V., Owen, B., Russell, J.M., Stockhecke, M., Yost, C., HSPDP Team Members, 2019. A comparative analysis of African Plio-Pleistocene patterns of environmental variability and biological evolutionary implications. Abstract presented at the 2019 INQUA 20th Congress, Dublin, Ireland.
9. **Lupien, R.L.**, Russell, J.M., Beck, C., Feibel, C., Cohen, A.S., 2018. Early Pleistocene Millennial-Scale Hydroclimate Fluctuation in Kenya with Implications for Hominin Evolution. Abstract presented at the 2018 AGU Fall Meeting, Washington, D.C.
10. Russell, J.M., **Lupien, R.L.**, Cohen, A.S., Beck, C., Campisano, C., Castañeda, I., Deino, A., Feibel, C., Kingston, J., Lamb, H., Potts, R., 2018. Orbital-scale controls on Plio-Pleistocene African climate. Abstract presented at the 2018 AGU Fall Meeting, Washington, D.C.
11. *Subramanian, A., **Lupien, R.L.**, Russell, J.M., Potts, R., Deino, A., Behrensmeier, A.K., Dommair, R., 2018. Middle to Late Pleistocene Paleoenvironmental Variations at the Ologesailie Basin, Kenya. Abstract presented at the 2018 AGU Fall Meeting, Washington, D.C.
12. Cohen, A.C., Billingsley, A., Campisano, C., **Lupien, R.L.**, Muiruri, V.M, Bernhard, O.R., Russell, J.M., Stockhecke, M., Yost, C.L., and The HSPDP Team Members, 2018. Records of Plio-Pleistocene environmental variability from the Hominin Sites and Paleolakes Drilling Project (HSPDP): Comparison with other African records and implications for hominin evolution. Abstract presented at the 2018 AGU Fall Meeting, Washington, D.C.
13. Castañeda, I.S., Thompson-Munson, M.E., Gilchrist, S., **Lupien, R.L.**, Russell, J.M, Salacup, J., Feibel, C., Cohen, A.S., 2018. Early Pleistocene temperature history of Paleolake Lorenyang, West Turkana Basin (Kenya). Abstract presented at the 2018 AGU Fall Meeting, Washington, D.C.
14. deMenocal, P.B., Polissar, P., Uno, K., Rose, C., Tierney, J., **Lupien, R.L.**, Russell, J., 2018. Paleoenvironmental Contexts of Hominin Evolution. Abstract presented at the 2018 AGU Fall Meeting, Washington, DC.
15. deMenocal, P.B., Polissar, P., Uno, K., Rose, C., Tierney, J., **Lupien, R.L.**, Russell, J., 2018. Paleoenvironmental Contexts of Hominin Evolution. Abstract presented at the 2018 GSA Annual Meeting, Indianapolis, IN.
16. Westover, K., Stone, J., Rabideaux, N., Yost, C.L., **Lupien, R.L.**, Kingston, J., 2018. Extreme hydroclimate variability in the Late Pliocene of Kenya's Baringo Basin: the diatom record. Abstract presented at the 2018 GSA Annual Meeting, Indianapolis, IN.

17. **Lupien, R.L.**, Russell, J.M., Cohen, A.S., Beck, C., Campisano, C., Castañeda, I., Deino, A., Feibel, C., Kingston, J., Lamb, H., Pearson, E., Potts, R., 2018. East African Paleoclimate and Human Evolution. Abstract presented at the 12th Graduate Climate Conference, Seattle, WA.
18. **Lupien, R.L.**, Russell, J.M., Cohen, A.S., Beck, C., Campisano, C., Castañeda, I., Deino, A., Feibel, C., Kingston, J., Lamb, H., Pearson, E., Potts, R., 2018. Site-Corrected Leaf Wax Biomarker Records Synthesized to Characterize East African Plio-Pleistocene Climate. Abstract presented at Goldschmidt 2018, Boston, MA.
19. Goldstein, S.L., Pena, L.D., Yehudai, M., Jaume-Seguí, M., Kim, J., Knudson, K., Basak, C., Hartman, A.E., **Lupien, R.L.**, 2018. The Atlantic Meridional Overturning Circulation Over Time From Nd Isotopes. Abstract presented at Goldschmidt 2018, Boston, MA.
20. **Lupien, R.L.**, Russell, J.M., Campisano, C., Feibel, C., Deino, A., Kingston, J., Potts, R., Cohen, A., 2017. A synthesis of Plio-Pleistocene leaf wax biomarker records of hydrological variation in East Africa and their relationship with hominin evolution. Abstract presented at the 2017 AGU Fall Meeting, New Orleans, LA.
21. **Lupien, R.L.**, Russell, J.M., Castañeda, I., Campisano, C., Cohen, A.C., 2017. Plio-Pleistocene biomarker records of climate in East Africa. Abstract presented at the 2017 Past Global Changes Open Science Meeting, Zaragoza, Spain.
22. **Lupien, R.L.**, Russell, J.M., Cohen, A., Feibel, C., Beck, C., Castañeda, I., 2016. Leaf wax biomarker reconstruction of Early Pleistocene hydrological variation during hominin evolution in West Turkana, Kenya. Abstract presented at the 2016 AGU Fall Meeting, San Francisco, CA.
23. **Lupien, R.L.**, Russell, J.M., Castañeda, I., Cohen, A., Feibel, C., Beck, C., 2015. Leaf wax biomarker record of rainfall from West Turkana, Kenya. Abstract presented at the 2016 Graduate Climate Conference, Woods Hole, MA.
24. **Lupien, R.L.**, Russell, J.M., Castañeda, I., Cohen, A., Feibel, C., Beck, C., 2015. Leaf wax biomarker record of rainfall from West Turkana, Kenya. 2015 Geological Society of America Annual Meeting, Baltimore, November 2015
25. Thompson-Munson, M., Castañeda, I.S., **Lupien, R.L.**, Russell, J.M., 2015. Late Pliocene and Early Pleistocene temperature reconstructions from paleolakes of the West Turkana and North Awash Basins, East Africa. Abstract presented at the 2015 GSA Annual Meeting, Baltimore, MD.
26. **Lupien, R.L.**, Pena, L., Goldstein, S., 2014. AMOC variability during the last 400 ka from Nd isotopes in the Southern Ocean. Abstract presented at the 2014 AGU Fall Meeting, San Francisco, CA.
27. **Lupien, R.L.**, Pena, L., Goldstein, S., 2013. Southern Ocean Nd isotope end-member variability during the last 400 kyr. Abstract presented at the 2013 AGU Fall Meeting, San Francisco, CA.
28. Pena, L.D., Goldstein, S.L., **Lupien, R.L.**, 2013. Abrupt Changes in Thermohaline Circulation During the Mid-Pleistocene Transition. Abstract presented at the 11th International Conference on Paleooceanography, Barcelona, Spain.
29. **Lupien, R.L.**, Harms, T.A., Hames, W.E., 2012. New constraints on cooling ages for Proterozoic accreted arc and metamorphic core zone rocks of the Big Sky orogen, SW Montana. Abstract presented at the 2012 GSA Northeastern Section Meeting, Hartford, CT.