

BRETT JAMES TIPPLE

CURRICULUM VITAE

- ADDRESS** 257 South 1400 East, Salt Lake City, UT 84112-0840
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- APPOINTMENTS** UNIVERSITY OF UTAH SALT LAKE CITY, UT
Research Assistant Professor, Department of Biology, 2010-Present
- UNIVERSITY OF UTAH SALT LAKE CITY, UT
Faculty Affiliate, Global Change and Sustainability Center, 2013-Present
- UNIVERSITY OF UTAH SALT LAKE CITY, UT
Postdoctoral Researcher, Department of Biology, 2009-2010
Supervisors: James R. Ehleringer, Thure E. Cerling
- EDUCATION** YALE UNIVERSITY NEW HAVEN, CT
Ph.D., Geology and Geophysics, 2009
Dissertation: *Leaf Waxes as Environment Recorders: An Empirical Evaluation and Paleoclimate Applications.*
Advisor: Mark Pagani
- YALE UNIVERSITY NEW HAVEN, CT
M. Phil., Geology and Geophysics, 2005
Thesis: *A Biomarker Record of the Paleogene Evolution and Expansion of C₄ Plants.*
- INDIANA UNIVERSITY BLOOMINGTON, IN
B.S. with Distinction, Geological Sciences, 2003
Senior Thesis: *Carbon Isotopic Evidence for a Methane Supported Microbial Community from a Late Archean Silty-Shale: Witwatersrand Basin.*
Advisor: Lisa M. Pratt
- TEACHING** UNIVERSITY OF UTAH SALT LAKE CITY, UT
Instructor, Stable Isotope Biogeochemistry and Ecology (BIOL 7475), 2010-2017
Instructor, Isotopes in Large-Scale Environmental Research (GEO 7476), 2016
Instructor, Individual Undergraduate Research (BIOL 4955), 2011, 2012
- YALE UNIVERSITY NEW HAVEN, CT
Graduate Teaching and Laboratory Assistant, Mineralogy and Petrology, 2008
Lecturer, Introduction to Geochemistry, 2006
Graduate Teaching Fellow (Level II), Global Environmental Change, 2005
Graduate Teaching Fellow (Level I), Introduction to Geochemistry, 2004

ADVISING

Postdoctoral Researchers:

Jennifer E. Johnson, University of Arizona, 2014-2016

Melissa A. Berke, University of Utah, 2011-2013

Graduate Student Committees:

Lehai Hu (M.S./Ph.D., Geology and Geophysics) University of Utah, M.S. 2015/Ph.D. expected 2019

Clement Bataille (Ph.D., Geology and Geophysics) University of Utah, 2014

Thuan Chau (P.S.M., Environmental Science) University of Utah, 2013

Graduate Student Research-in-Residence Advisees:

Amanda L.D. Bender (Ph.D., Earth and Planetary Science) Washington University in St. Louis, 2016

Tiffany B. Saul (Ph.D., Anthropology) University of Tennessee, Knoxville, 2016

Undergraduate Thesis Mentees:

Elizabeth Young (B.S., Biology) University of Utah, 2014

Stephannie Covarrubias (B.A. [Honors], Biology) University of Utah, 2014

Susanna Khachatryan (B.S., Biology) University of Utah, 2012

Yasmeen Hussain (B.S. [Honors], Mathematics; Biology) University of Utah, 2012

Katherine French (B.S., Chemistry) Yale University, 2009

Sara Enders (B.S., Geology and Geophysics) Yale University, 2006

Jennifer Haghpanah (B.S., Chemistry; B.A., Mathematics) Quinnipiac University, 2005

COMMUNITY OUTREACH

Presented lectures at the Salt Lake Unified Police Department's *Cold Case Summit* (June, 2014; May 2016).

Science Fair Mentor for New Haven Public Schools (2008) and Salt Lake City Public Schools (2012, 2013).

Presented petroleum geochemistry and oil spill forensics talk at a community forum following a large oil spill within Salt Lake City (2010).

Co-authored layman's article on stable isotopes for *Bee Culture Magazine* (2010).

Mentor for Armonk, NY High School Science Program (2004, 2005).

SYNERGISTIC ACTIVITIES

Rapporteur and Agreement Holder Representative: Implementation of Nuclear Techniques to Improve Food Traceability Systems (CRP D52037), Research Coordination Meeting 4, Department of Nuclear Science and Applications, Joint FAO/International Atomic Energy Agency Division of Nuclear Techniques in Food and Agriculture (November, 2015; November, 2016).

Organized and Co-chaired: 25g. *Plant Compounds and their Isotope Ratios as Ecohydrological Tracers*, Goldschmidt Conference (June, 2014).

Organized and Co-chaired: PP12B. *New Approaches to Cenozoic Terrestrial Ecosystem and Climate Reconstructions*, American Geophysical Union Fall Meeting (December, 2009).

Peer Referee for *Earth and Planetary Science Letters*, *Food Chemistry*, *Geochimica et Cosmochimica Acta*, *Geology*, *Geochemistry*, *Geophysics*, *Geosystems*, *Nature*, *Nature Geoscience*, *Organic Geochemistry*, *Quaternary Science Reviews*, *The Proceedings of the National Academy of Science of the United States of America*, *Plant, Cell and Environment*, *PLOS ONE*.

Proposal Reviewer for the National Science Foundation (EAR, BIO, OCE, CAREER), Chilean Fondo Nacional de Desarrollo Científico y Tecnológico, National Institute of Justice, Sigma Xi, the Geological Society of America, and the National Geographic Society.

PUBLICATIONS

Peer-Reviewed Scientific Journals

([#]Postdoctoral Researcher author, ^{*}Graduate Student author, [§]Undergraduate Student author)

29. **Tipple, B.J.** and Ehleringer, J.R., (*Submitted, Invited*) Distinctions in heterotrophic and autotrophic-based metabolism as recorded in the hydrogen and carbon isotope ratios of normal-alkanes, *Oecologia*.
28. Chesson, L.A., Barnette, J.E., Bowen, G.J., Brooks, J.R., Casale, J.F., Cerling, T.E., Cook, C.S., Douthitt, C.B., Howa, J.D., Hurley, J.M., Kreuzer, H.W., Lott, M.J., Martinelli, L.A., O'Grady, S.P., Podlesak, D.W., **Tipple, B.J.**, Valenzuela, L.O., West, J.B., and Ehleringer, J.R. (*Submitted*) Stable isotope analysis in plant and animal ecology – with application to forensic science in the Americas, *Oecologia*.
27. **Tipple, B.J.** and Chesson, L.A. (*Submitted, Invited*) Standard methods for sampling and analyzing beeswax for hydrogen isotope analysis, *Journal of Apicultural Research*.
26. **Tipple, B.J.**, ^{*}Jameel, Y., ^{*}Chau, T.H., ^{*}Mancuso, C.J., Bowen, G.J. Dufour, A., Chesson, L.A., and Ehleringer, J.R. (2017) Stable hydrogen and oxygen isotopes of tap water reveal structure of the San Francisco Bay Area's water systems and adjustments during a major drought, *Water Research*, 119, 212-224.
25. ^{*}Chau, T.H., **Tipple, B.J.**, ^{*}Hu, L., Fernandez, D., Cerling, T.E., Chesson, L.A. (2017) Reconstruction of travel history using coupled $\delta^{18}\text{O}$ and $^{87}\text{Sr}/^{86}\text{Sr}$ measurements of hair, *Rapid Communications in Mass Spectrometry*, 31, 1-8.
24. ^{*}Jameel, Y., Brewer, S., Good, S.P., **Tipple, B.J.**, Ehleringer, J.R., and Bowen, G.J. (2016) Spatiotemporal variation in the tap water isotope ratios of Salt Lake City: a novel indicator of urban water system structure and dynamics, *Water Resources Research*, 52, 1-20.
23. Ehleringer, J.R., Barnette, J.E., ^{*}Jameel, Y., **Tipple, B.J.**, and Bowen, G.J. (2016) Urban water – A new frontier in isotope hydrology, *Isotopes in Environmental and Health Studies*, 52, 4-5, 477-486.

22. Cerling, T.E., Barnette, J.E., Bowen, G.J., Chesson, L.A., Ehleringer, J.R., Remien, C.H., Shea, P.A., **Tipple, B.J.**, and West, J.B. (2016) Forensic stable isotope biogeochemistry, *Annual Reviews of Earth and Planetary Sciences*, 44, 175-206.
21. **Tipple, B.J.**, Hambach, B., Barnette, J.E., Chesson, L.A., and Ehleringer, J.R. (2016) The influences of cultivation method on inflorescence lipid distributions, concentrations, and carbon isotope ratios of *Cannabis sp.*, *Forensic Science International*, 262, 233-241.
20. [#]Berke, M.A., **Tipple, B.J.**, Hambach, B., and Ehleringer, J.R. (2015) Life-form specific gradients in compound specific $\delta^2\text{H}$ of modern leaf waxes along a North American Monsoonal transect, *Oecologia*, 179, 4, 981-997.
19. Ehleringer, J.R., Chesson, L.A., Valenzuela, L.O., **Tipple, B.J.**, and Martinelli, L.A., (2015) Humans and Society – Amazing insights from stable isotope biogeochemistry, *Elements*, 11, 4, 259-264.
18. **Tipple, B.J.**, [#]Berke, M.A., Hambach, B., Roden, J.S., and Ehleringer, J.R. (2015) Predicting leaf wax *n*-alkane $^2\text{H}/^1\text{H}$ ratios: controlled water source and humidity experiments with hydroponically grown trees confirm predictions of Craig-Gordon model, *Plant, Cell and Environment*, 38, 6, 1035-1047.
17. Chesson, L.A., **Tipple, B.J.**, Barnette, J.E., Cerling, T.E., and Ehleringer, J.R. (2015) The potential for application of ink stable isotope analysis in questioned document examination, *Science & Justice*, 55, 1, 27-33.
16. ^{*}Bataille, C., Mastalerz, M. **Tipple, B.J.**, and Bowen, G.J. (2013) Influence of organic provenance and preservation on the carbon isotope variations of dispersed organics in ancient floodplain sediments, *Geochemistry, Geophysics, Geosystems*, 14, 11, 4874-4891.
15. **Tipple, B.J.**, ^{*}Chau, T.H., Chesson, L.A., Fernandez, D., and Ehleringer, J.R. (2013) Isolation of the strontium pools and isotope ratios in modern human hair, *Analytica Chimica Acta*, 798, 1, 64-73.
14. Chesson, L.A., **Tipple, B.J.**, Erkkila, B.R., and Ehleringer, J.R. (2013) Hydrogen and oxygen stable isotope analysis of pollen collected from honey, *Grana*, 52, 4, 305-315.
13. **Tipple, B.J.** and Pagani, M. (2013) Environmental control on eastern broadleaf forest species' leaf wax distributions and D/H ratios, *Geochimica et Cosmochimica Acta*, 111, 1, 64-77.
12. Dirghangi, S.S., Pagani, M., Hren, M.T., and **Tipple, B.J.** (2013) Distribution of glycerol dialkyl glycerol tetraethers in soils from two environmental transects in the USA, *Organic Geochemistry*, 59, 1, 49-60.
11. **Tipple, B.J.**, [#]Berke, M.A., [§]Doman, C.E., [§]Khachatryan, S. and Ehleringer, J.R. (2013) Leaf *n*-alkane record the plant-water environment at leaf flush, *The Proceedings of the National Academy of Sciences*, 110, 7, 2659-2664.
10. Chesson, L.A., **Tipple, B.J.**, Mackey, G.N., Fernandez, D., and Ehleringer, J.R. (2012) Strontium isotope ratios of tap water from the coterminous USA, *Ecosphere*, 3, 7, Article 67.

9. **Tipple, B.J.**, Chesson, L.A., Erkkila, B., Ehleringer, J.R., and Cerling, T.E. (2012) B-HIVE: Beeswax Hydrogen Isotopes as Validation of Environment Part II. Compound-specific hydrogen isotope analysis, *Food Chemistry*, 134, 1, 494-501.
8. **Tipple, B.J.**, Pagani, M., Krishnan, S., Dirghangi, S.S., Galeotti, S., Agnini, C., Giusberti, L., and Rio, D. (2011) Coupled high-resolution marine and terrestrial records of carbon and hydrologic cycles variations during the Paleocene-Eocene Thermal Maximum (PETM), *Earth and Planetary Science Letters*, 311, 1-2, 82-92.
7. Chesson, L.A., **Tipple, B.J.**, Erkkila, B., Ehleringer, J.R., and Cerling, T. (2011) B-HIVE: Beeswax Hydrogen Isotopes as Validation of Environment Part I. Bulk honey and honeycomb stable isotope analysis, *Food Chemistry*, 125, 2, 576-581.
6. **Tipple, B.J.** and Pagani, M. (2010) A 35 Myr terrestrial higher plant *n*-alkane stable carbon and hydrogen isotope record from the Gulf of Mexico: Implications for North American C₄ grasslands and hydrologic cycle dynamics, *Earth and Planetary Science Letters*, 299, 1-2, 15, 250-262.
5. **Tipple, B.J.**, Meyers, S.R., and Pagani, M. (2010) The carbon isotope ratio of Cenozoic CO₂: a comparative evaluation of available geochemical proxies, *Paleoceanography*, doi:10.1029/2009PA001851.
4. Edwards, E.J., Osborne, C.P., Strömberg, C.A.E., Smith, S.A., Bond, W.J., Christin, P.-A., Cousins, A.B., Duvall, M.R., Fox, D.L., Freckleton, R.P., Ghannoum, O., Hartwell, J., Huang, Y., Janis, C.M., Keeley, J.E., Kellogg, E.A., Knapp, A.K., Leakey, A.D.B., Nelson, D.M., Saarela, J.M., Sage, R.F., Sala, O.E., Salamin, N., Still, C.J., and **Tipple, B.J.** (2010) The origins of C₄ grasslands: Integrating evolutionary and ecosystem science, *Science*, 328, 5978, 587-591.
3. Pedentchouk, N., Sumner, W., **Tipple, B.J.**, and Pagani, M. (2008) δ¹³C and δD Composition of *n*-alkanes from modern angiosperms and conifers: An experimental set-up in central Washington state, USA, *Organic Geochemistry*, 39, 8, 1066-1071.
2. **Tipple, B.J.** and Pagani, M. (2007) The early origins of terrestrial C₄ photosynthesis, *Annual Review of Earth and Planetary Sciences*, 35, 435-461.
1. Pagani, M., Zachos, J., Freeman, K.H., **Tipple, B.J.**, and Bohaty, S. (2005) Marked change in atmospheric carbon dioxide concentrations during the Oligocene, *Science*, 309, 600-603.

Peer-Reviewed Book Chapters

8. Svečnjak, L., Chesson, L.A., Gallina, A., Maia, M., Martinello, M., Mutinelli, F., Necati Muz, M., Nunes, F., Özdemir, N., Saucy, F., **Tipple, B.J.**, Wallner, K., Waś, E., and Waters, T., (Submitted) Standard methods for *Apis mellifera* beeswax research, (Ed) Svečnjak, L., *The COLOSS Beebook*, Volume IV. International Bee Research Association, Cardiff, UK.
7. Chesson, L.A. and **Tipple, B.J.** (Forthcoming, September 2017) Forensic identification of human skeletal remains using isotopes: A brief history of applications from archaeological dig sites to modern crime scenes, (Eds) Latham, K. Bartelink, E.J. Finnegan, M., *New*

Perspectives in Forensic Human Skeletal Identification, 500 pages. Elsevier Press. ISBN: 978-0-128-05429-1.

6. Bartelink, E.J., Berg, G.E., Chesson, L.A., **Tipple, B.J.**, Beasley, M.M., Prince-Buitenhuis, J.R., MacInnes, H., MacKinnon, A.T., Latham, K., (*Forthcoming, September 2017*) Applications of stable isotope forensics for geolocating unidentified human remains from past conflict situations and large-scale humanitarian efforts, (Eds) Latham, K. Bartelink, E.J. Finnegan, M., *New Perspectives in Forensic Human Skeletal Identification*, 500 pages. Elsevier Press. ISBN: 978-0-128-05429-1.
5. Chesson, L.A., **Tipple, B.J.**, Ehleringer, J.E., Parks, T., and Bartelink, E.J. (*Forthcoming, Summer 2017*) Forensic applications of isotope landscapes (“isoscapes”): A tool for predicting region-of-origin in forensic anthropology cases, (Eds) Boyd, D, Boyd, C., *Forensic Anthropology: Theoretical Framework and Scientific Basis*, 356 pages. John Wiley & Sons Limited, London, UK. ISBN: 978-1-119-22638-3.
4. Chesson, L.A., **Tipple, B.J.**, Chakraborty, S., and Rogers, K. (2017) Odds and Ends, (Eds) Carter, J.F., Chesson, L.A., *Food Forensics: Stable Isotopes as a Guide to Authenticity and Origin*, 352 pages. CRC Press, Boca Raton, FL. ISBN: 978-1-498-74172-9.
3. Chesson, L.A., Bartelink, E.J., **Tipple, B.J.**, Cerling, T.E., and Ehleringer, J.E. (2017) Forensic applications of isotope geochemistry: Linking materials to individuals, locations, and times, (Ed) Bergslien, E., *Forensics Geoscience: Advances and Applications*, American Geophysical Union Press. ISBN: 978-1-119-05390-3.
2. Bartelink, E.J., Mackinnon, A.T., Prince-Buitenhuis, J.R., **Tipple, B.J.**, and Chesson, L.A. (2016) Stable isotope forensics as an investigative tool in missing person investigations, (Eds) Morewitz, S.J., Sturdy-Colls, C., *Handbook of Missing Persons*, pp. 443-462, Springer International Publishing. New York, New York. ISBN: 978-3-319-40197-3.
1. Chesson, L.A., **Tipple, B.J.**, Howa, J.D., Bowen, G.J., Barnette, J.E., Cerling, T.E., and Ehleringer, J.R. (2014) Stable Isotopes in Forensics Applications, *Treatise on Geochemistry*, 2nd Edition, Volume 14, pp. 285-317.

Technical Reports

3. **Tipple, B.J.** (*Forthcoming*) Isotope analyses of hair as a trace evidence tool to reconstruct human movements: Establishing the effects of the “Human Ecosystem” on strontium and oxygen isotope ratios, 92 pages.
2. Chesson, L.A., Howa, J.D. and **Tipple, B.J.** (2016) Isotope testing of heroin for provenancing, United Nations Office on Drugs and Crime, 9 pages.
1. **Tipple, B.J.** (2015) Isotope analyses of hair as a trace evidence tool to reconstruct human movements: combining strontium isotope with hydrogen/oxygen isotope data, Department of Justice, National Criminal Justice Reference Service, Document Number 248977, 51 pages.

Non-Peer Reviewed Contributions

4. Cook, C.S., Erkkila, B., Cerling, T.E., Chakraborty, S., Ehleringer, J.R., and **Tipple, B.J.** (*Forthcoming*) Stable isotope biogeochemistry and Ecology Laboratory Manual.
3. **Tipple, B.J.** and Ehleringer, J.R. (2016) Carbon isotopes — The chemist’s tool to trace marijuana cultivation environment, *Atlas of Science*, <http://bit.ly/2eY44xm>.
2. **Tipple, B.J.** (2013) Capturing climate variability during our ancestors’ earliest days, *The Proceedings of the National Academy of Sciences*, 110, 4, 1144-1145.
1. Chesson, L.A. and **Tipple, B.J.** (2010) The isotope waggle dance: how the honey bee communicates with the chemist, *Bee Culture*, 183, 8, 30-32.

Publications in Progress

4. *Bender, A.L.D., **Tipple, B.J.**, and Bradley, A.S. (*In Preparation*) Investigating species-specific differences in hydrogen isotopic fractionation of leaf wax alkanes among *Solanum* species.
3. *Saul, T.B., Chesson, L.A., **Tipple, B.J.**, Steadman, D.W. (*In Preparation*) An exploration of the effects of taphonomy on the isotope ratios of human hair.
2. §Covarrubias Avalos, S., Valenzuela, L.O., **Tipple, B.J.**, Chesson, L.A., and Ehleringer, J.R. (*In Preparation*) The distributions and relationships of carbon and nitrogen isotopes in human hair with socioeconomic factors in the Salt Lake Valley, Utah.
- 1 **Tipple, B.J.**, Valenzuela, L.O., Chesson, L.A., and Ehleringer, J.R. (*In Preparation*) Combining strontium and oxygen isotope ratios of hair for human provenancing.

RESEARCH GRANTS

Funded Proposals (total = \$1.87 million)

National Institute of Justice: NIJ-2016-4305: \$270,894.26 (11/1/2016-10/31/2018), PI: L.A. Chesson, co-PI: **B.J. Tipple**. “A comprehensive test of the methods and models used to assign geographic origin to human skeletal remains with stable isotope data.”

United States Fish and Wildlife Service, Wildlife without Border – African Elephant Conservation Fund: F15AS00001: \$63,523.73 (2/1/2016-1/31/2017), PI: T.E. Cerling, co-PI: **B.J. Tipple**, L.A. Chesson. “Isotopic Verification Of Region & Year (IVORY).”

National Institute of Justice: 2013-DN-BX-K009: \$367,399 (10/1/2013-3/31/2016), PI: **B.J. Tipple**. “Isotope analyses of hair as a trace evidence tool to reconstruct human movements: Establishing the effects of the “Human Ecosystem” on strontium and oxygen isotope ratios.”

Charles Stark Draper Laboratory, University Research and Development (URAD) Program: \$109,736 (7/1/2013-6/27/2014), PI: J.R. Ehleringer, co-PI: **B.J. Tipple**, T.E. Cerling, G.J. Bowen. “Hair as a recorder of region-of-origin and travel history.”

National Institute of Justice: 2011-DN-BX-K544: \$342,000 (9/1/2011-8/31/2014), PI: **B.J. Tipple**. “Isotope analyses of hair as a trace evidence tool to reconstruct human movements: combining strontium isotope with hydrogen/oxygen isotope data.”

National Science Foundation: IOS 1052551: \$707,500 (4/15/2011-3/31/2015), PI: J.R. Ehleringer, co-PI: **B.J. Tipple**. “Hydrogen isotopes in *n*-alkanes of tree leaves and needles: experimental studies with ecophysiological, ecosystem, climate, and dust-related applications.”

Yale University: John F. Enders Fellowship and Research Grant, \$2,000 (5/1/2006-9/30/2006), “Tree leaf waxes as environment recorders: An empirical evaluation with paleoclimate applications.”

Geological Society of America: Graduate Student Research Grant, \$2,500 (5/1/2005-9/30/2005), “(U-Th)/He and fission-track detrital grain double-dating as a paleo-wildfire indicator: Implications to the PETM.”

Yale Institute of Biospheric Studies: Field Ecology Grant, \$2,000 (11/1/2004-10/31/2005), “Establishing the carbon isotope ratio of Paleogene CO₂ from sedimentary charcoal.”

Submitted Proposals

Utah Science Technology and Research (USTAR): FY17-Spring Technology Acceleration Program (TAP): \$206,380.80 (03/29/2017, Duration: 12 Months), PI: **B.J. Tipple**. “Cannabis Isotope Verification of Indoor Cultivation (CIVIC).”

Utah Science Technology and Research (USTAR): FY17-Winter University Technology Acceleration Grant (UTAG): \$163,750 (2/23/2017, Duration: 12 Months), PI: **B.J. Tipple**. “Stable carbon isotopes as natural cannabis taggant.”

Utah Science Technology and Research (USTAR): FY17 Fall Technology Acceleration Program (TAP): \$195,282 (10/04/2016, Duration: 12 Months), PI: J.R. Ehleringer, co-PI: **B.J. Tipple**. “Stable isotopes as natural marijuana taggant.”

National Institute of Justice: NIJ-2016-4305: \$277,736.54 (1/28/2016, Duration: 24 Months), PI: **B.J. Tipple**. “Isolating and measuring the hydrogen isotope ratios of refractory *Cannabis* lipids from authentic plant materials to establish cultivation location.”

National Institute of Justice: NIJ-2015-3985: \$270,894.26 (4/8/2015, Duration: 24 Months), PI: L.A. Chesson, co-PI: **B.J. Tipple**. “A comprehensive test of the methods and models used to assign geographic origin to human skeletal remains with stable isotope data.”

National Institute of Justice: NIJ-2015-3985: \$344,288.45 (4/8/2015, Duration: 36 Months), PI: **B.J. Tipple**. “Isolating and measuring the hydrogen isotope ratios of refractory cannabis lipids from authentic plant materials and infused-edibles to establish cultivation location.”

Broad Agency Announcement: 15-Q-3358: \$572,000 (3/20/2015, Duration: 24 Months), PI: **B.J. Tipple**. “Database and statistical models of opium/heroin chemistry to establish origin.”

National Institute of Justice: NIJ-2014-3744: \$257,000 (4/18/2014, Duration: 24 Months), PI: L.A. Chesson, co-PI: **B.J. Tipple**. “Geographic assignment of unidentified human remains using stable isotope analysis.”

National Institute of Justice: NIJ-2013-3362: subcontract to Utah \$137,153 (4/8/2013, Duration: 12 Months), PI: C. Juarez, co-PI: **B.J. Tipple**. “Region of origin identification for deceased undocumented Mexicans.”

National Science Foundation: DEB 1327705: Pre-Proposal (1/23/2013), PI: **B.J. Tipple**. “Distinguishing biochemistry from environment: The role of plant growth form and photosynthetic pathway in shaping leaf wax lipid isotope ratios.”

National Science Foundation: IOS 1325812: Pre-Proposal (1/18/2013), PI: **B.J. Tipple**, co-PI: A. Diefendorf. “Assessing the carbon isotopic relationships between woody angiosperms and conifers: controls of the environment versus taxonomy.”

National Science Foundation: IOS 1324626: Pre-Proposal (1/18/2013), PI: A. Diefendorf, co-PI: **B.J. Tipple**. “Climate, timing, and carbon allocation controls on ¹³C biosynthetic fractionation during leaf wax and terpenoid synthesis.”

National Science Foundation: EAR 1246261: \$267,660 (5/31/2012, Duration: 24 Months), PI: **B.J. Tipple**. “Strontium isotope variation in snowmelt-dominated streams and watersheds: Isotopic end members, models, and temporal trends.”

National Science Foundation: IOS 1221669: Pre-Proposal (1/9/2012), PI: A. Diefendorf, co-PI: **B.J. Tipple**. “Plant wax and defense compound carbon isotope fractionation and abundance patterns in tree leaves and needles across climate and plant functional types.”

Environmental Protection Agency: RFQ-RT-11-00159: \$102,000 (10/24/2011, Duration: 24 Months), PI: Chesson, L.A., co-PI: **B.J. Tipple**. “Determination of sediment organic C & N concentrations and isotopes.”

Gulf of Mexico Research Initiative: GRI2011-I-053: total \$5,193,595; subcontract to Utah \$309,803 (7/13/2011, Duration: 36 Months), PI: J.B. Anderson, co-PIs: A. Armitage, R. Barnes, C. Houser, J. Kessler, Q. Li, C. Nichol, S. Pennings, P. Santschi, K. Schwehr, E. Siemann, **B.J. Tipple**, D. Wallace. “Laguna Madre Consortium.”

SCHOLARSHIPS, FELLOWSHIPS, AND ACADEMIC AWARDS

Best Poster Presentation – FIRMS/Isotope Analysis, ANZFSS International Symposium on the Forensic Sciences, Auckland, New Zealand (2016)

Estwing Hammer Award, Estwing Manufacturing Corporation/Graduate School of Arts and Sciences, Yale University (2008)

Graduate Research Fellowship, National Science Foundation (2004-2007)

John F. Enders Fellowship & Research Grant, Graduate School of Arts and Sciences, Yale University (2006)

Graduate Student Research Grant, Geological Society of America (2005)

Field Ecology Grant, Yale Institute of Biospheric Studies (2004)

Best Undergraduate Research Project Award, Indiana University (2003)

Bill and Jan Cordua Scholarship, Department of Geological Sciences, Indiana University (2003)

William C. Menke Scholarship, Indiana University (2002)

Bill Armstrong/Little 500 Scholarship, Indiana University Student Foundation (2002)

Charles Deiss Scholarship, Department of Geological Sciences, Indiana University (2001)

Elected Phi Beta Kappa, Indiana University (2001)

PRESENTATIONS

Invited Lectures

Stable hydrogen and oxygen isotopes of water: A reservoir of environmental information, School of Natural Sciences, University of California, Merced, Merced, CA (April, 2017).

Crawling onto the land: The evolution of stable isotope-based proxies to reconstruct past terrestrial environments, ConocoPhillips School of Geology and Geophysics, University of Oklahoma, Norman, OK (March, 2017).

Exploring the "human ecosystem" with isotopes of water, Department of Earth and Planetary Sciences, Washington University in St. Louis, St. Louis, MO (December, 2016).

A framework to develop isoscape models for product origin and tracing questions, International Atomic Energy Agency, Research Coordination Meeting for the *Implementation of Nuclear Techniques to Improve Food Traceability Systems*, Vienna, Austria (November, 2016).

Applications of stable isotopes in cold case investigations, Utah Division for the International Association for Identification Spring Conference, Weber County Sheriff's Office, Ogden, UT (May, 2016).

Using isotope analysis to assist in cold case investigations, Cold Case Summit, Unified Police Department of Greater Salt Lake, Salt Lake City, UT (May, 2016).

Stable isotopes in the forensic sciences, College of Agriculture and Natural Resources, University of Delaware, Newark, DE (March, 2016)

Using oxygen and strontium isotopes to dissect a human ecosystem: A spatial and temporal study of water and human hair from Southern California, American Academy of Forensic Sciences, Las Vegas, NV (February, 2016).

Translational Geochemistry: Applying stable isotopes to societal and biogeoscience questions, Department of Geosciences, Weber State University, Ogden, UT (February, 2016).

A framework to interpret isotope ratios for product origin and tracing questions, International Atomic Energy Agency, Research Coordination Meeting for the *Implementation of Nuclear Techniques to Improve Food Traceability Systems*, Kampala, Uganda (October, 2015).

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Coupled marine and terrestrial records of carbon cycle variation during the PETM. Department of Geological Sciences, Brown University, Providence, RI (July, 2011).

Fingerprints of oil - how scientists can distinguish one oil from another. Community Lecture Series – The Life of an Urban Stream, Salt Lake City, UT (August, 2010).

Leaf wax compound specific isotope ratios: Insights from the Modern and application to Cenozoic climates and floral dynamics. Distinguish Lecturer Series, Department of Geology and Geophysics, University of Utah, Salt Lake City, UT (February, 2010).

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A Neogene higher plant n-alkane carbon and hydrogen isotope record from the Gulf of Mexico, Conoco-Philips, Houston, TX (December, 2008).

Contributed Presentations (*Oral, #Poster)

Tap water isotopes reveal the San Francisco Bay Area's plumbing and responses to a major drought[#], American Geophysical Union, Annual Meeting, San Francisco, CA (December, 2016).

Strontium isotope ratios of human hair from the United States: Trends, Patterns, and Aberrations[#], ANZFSS International Symposium on the Forensic Sciences, Auckland, New Zealand (September, 2016).

Strontium isotope ratios of hair for human provenancing^{*}, American Academy of Forensic Sciences, Orlando, FL (February, 2015).

Establishing the environmental controls and mechanisms shaping the $^2\text{H}/^1\text{H}$ ratios of leaf wax n-alkanes^{*}, Goldschmidt Conference, Sacramento, CA (June, 2014).

Both water source and atmospheric water impact leaf wax n-alkane $^2\text{H}/\text{H}$ values of hydroponically grown angiosperm trees[#], American Geophysical Union Annual Meeting, San Francisco, CA (December, 2013).

Combining strontium and oxygen isotope ratios of hair for human provenancing[#], Geological Society of America Annual Meeting, Denver, CO (October, 2013).

Isolation of strontium pools and isotope ratios in modern human hair[#], Forensic Isotope Ratio Mass Spectrometry (FIRMS) Meeting, Montreal, Canada (September, 2013).

The spatial patterns of water management practices are reflected in the strontium isotope ratios of human hair[#], American Geophysical Union Annual Meeting, San Francisco, CA (December, 2012).

Transpiration and atmospheric water impact the leaf wax n-alkane $^2\text{H}/\text{H}$ values of hydroponically grown angiosperm trees[#], Organic Geochemistry – Gordon Research Conference, Holderness, NH (August, 2012).

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A 35 Myr higher plant n-alkane stable carbon and hydrogen isotope record from the Gulf of Mexico: Implications to North American C_4 grasslands and hydrologic cycle dynamics[#], Organic Geochemistry – Gordon Research Conference, Holderness, NH (August, 2008).

Orographic and climatic influence on leaf wax carbon and hydrogen isotopic ratios: A field survey from Northern California[#], American Geophysical Union Annual Meeting, San Francisco, CA (December, 2008).

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