

M. Elise Lauterbur

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CURRENT POSITION

Assistant Professor in Evolutionary Biology
University of Vermont

2024 - present

EXPERIENCE

NSF Postdoctoral Fellow in Biology
University of Arizona

2021 - 2024

Postdoctoral Researcher

Department of Ecology and Evolutionary Biology
University of Arizona
PI: David Enard

September 2019 – February 2021

EDUCATION

Stony Brook University, Department of Ecology and Evolution, Stony Brook, NY
Ph.D. in Ecology and Evolution

2019

Advisors: Liliana Dávalos and Patricia C. Wright

Dissertation: “*In extremis*: Breaking coalescent models in small populations and concerted convergence of mammalian cyanide adaptation”

Oberlin College and Conservatory, Oberlin, OH

2008

B.A., Biology, minor in Environmental Studies
Advisor: Keith Tarvin

B.M., Historical Performance (Recorder), minor in Historical Performance (Baroque Flute)
Advisors: Alison Melville (major) and Kathy Stewart (minor)

COMPETITIVE GRANTS and FELLOWSHIPS

2021 - 2024	NSF Postdoctoral Research Fellowship in Biology Rules of Life: Ecological Drivers of Disease Adaptation	\$204,000
2018	EECG Research Award, American Genetics Association Genetic complexity of cyanide adaptation in specialist herbivores	\$9,673
2017 - 2018	Dissertation Fellowship, American Association of University Women	\$20,000
2017	Alumni Fellowship, Oberlin College	\$5,000
2016	Mamont Scholar Program, Explorer’s Fund	\$3,500
2015	Graduate Student Research Proposal Incentive Program	\$1,000
2015	Research Grant, Oakland Zoo Discovering the mechanisms of exceptional cyanide tolerance in bamboo lemurs	\$10,000
2015	Tinker Field Research Grant, Tinker Foundation Uncovering signatures of bat-plant coevolution	\$2,500
2015	Grants in Aid of Research, American Society of Mammalogists	\$1,050
2015	Research Grant, RW Primate Fund The mechanisms of exceptional cyanide tolerance in bamboo lemurs	\$4,000

2014	Research Grant, RW Primate Fund The biochemical and genetic basis of cyanide tolerance in bamboo lemurs	\$3,070
2008	Graduate Council Fellowship, Stony Brook University (postponed)	\$50,000
2008	NSF Graduate Research Fellowship (declined)	\$121,500
2008	Presidential Fellowship, Stony Brook University	\$1,000

PUBLICATIONS

* mentored undergraduate student, ** mentored masters student, † mentored PhD student

- Gould, E., ... **Lauterbur, M.E.**, ... & Fidler, F. (2023). Same data, different analysts: Variation in effect sizes due to analytical decisions in ecology and evolutionary biology. *EcoEvoXiv. In Revision* at BMC Biology
- Lauterbur, M. E.**, Munch, K., & Enard, D. (2023). Versatile detection of diverse selective sweeps with Flex-sweep. *Molecular Biology and Evolution*, msad139. (corresponding author)
- Lauterbur, M. E.**, Cavassim, M. I. A., Gladstein, A. L., Gower, G., Pope, N. S., Tsambos, G., ... & Gronau, I. (2022). Expanding the stdpopsim species catalog, and lessons learned for realistic genome simulations. *Elife*, 12, RP84874 (co-corresponding author)
- Eppley, T. M., Hoeks, S., Chapman, C. A., Ganzhorn, J. U., Hall, K., Owen, M. A., ... **Lauterbur, M. E.** ... *Santacruz, N. ... & Santini, L. (2022). Factors influencing terrestriality in primates of the Americas and Madagascar. *PNAS*, 119(42), e2121105119. [Washington Post](#) [The Times](#) [BBC](#)
- Jacquet, S., Culbertson, M., Zhang, C., El Filali, A., De La Myre Mory, C., Pons, J. B., Filippi-Codaccioni, O., **Lauterbur, M.E.**, Ngoubangoye, B., Duhayer, J. and Verez, C., Park, C., Dahoui, C., Carey, C. M., Brennan, G., Enard, D., Cimarelli, A., Rothenburg, S., Elde, N. C., Pontier, D. & Etienne, L. (2022). Adaptive duplication and genetic diversification of protein kinase R contribute to the specificity of bat-virus interactions. *Sci. Adv.*, 8(47), eadd7540.
- Souilmi, Y., **Lauterbur, M.E.**, Tobler, R., Huber, C.D., Johar, A.S., Moradi, S.V., ... & Enard, D. (2021). An ancient viral epidemic involving host coronavirus interacting genes more than 20,000 years ago in East Asia. *Curr. Biol.*, 31(16), 3504-3514. [Smithsonian](#) [New York Times](#)
- Di, C., Moreno, J. M., Salazar-Tortosa, D. F., **Lauterbur, M. E.**, & Enard, D. (2021). Decreased recent adaptation at human mendelian disease genes as a possible consequence of interference between advantageous and deleterious variants. *Elife*, 10, e69026.
- Itoigawa, A., Fierro, F., Chaney, M.E., **Lauterbur, M.E.**, Hayakawa, T., Tosi, A.J., ... & Imai, H. (2021). Lowered sensitivity of bitter taste receptors to β -glucosides in bamboo lemurs: an instance of parallel and adaptive functional decline in TAS2R16?. *Proc. Royal Soc. B*, 288(1948), 20210346.
- Santana, S.E., Kaliszewska, Z.A., Leiser-Miller, L.B., **Lauterbur, M.E.**, Arbour, J.H., Dávalos, L.M., & Riffell, J.A. (2021). Fruit odorants mediate co-specialization in a multispecies plant–animal mutualism. *Proc. Royal Soc. B*, 288(1956), 20210312. [Science Alert](#)
- Leiser-Miller, L.B., Kaliszewska, Z.A., **Lauterbur, M.E.**, Mann, B., Riffell, J.A. and Santana, S.E., 2020. A fruitful endeavor: scent cues and echolocation behavior used by *Carollia castanea* to find fruit. *Integrative Organismal Biology*, 2(1), p.obaa007. <https://doi.org/10.1093/iob/obaa007>
- Bankoff, R. J., Jerjos, M., Hohman, B., **Lauterbur, M.E.**, Kistler, L., & Perry, G. H. (2017). Testing Convergent Evolution in Auditory Processing Genes between Echolocating Mammals and the Aye-Aye, a Percussive-Foraging Primate. *GBE*, 9 (7): 1978–1989, <https://doi-org.proxy.library.stonybrook.edu/10.1093/gbe/evx140>
- Herrera, J.P., Wright, P.C., **Lauterbur, M.E.**, Ratovonjanahary, L. (2011). The effects of habitat disturbance on lemurs at Ranomafana National Park, southeast Madagascar. *Int. J. Primatol.*, 32(5): 1091-1108. DOI: 10.1007/s10764-011-9525-8

SELECTED COMPETITIVE AWARDS AND HONORS

Young Investigator Award , Society for Molecular Biology and Evolution	2020
Sigma Xi Travel Award , Stony Brook University chapter	2018
IMC-12 (12th International Mammalogical Congress) Travel Grant , American Society of	2017

Mammalogists

- Best Talk (Best use of quantitative methods in conservation research)**, Student Conference on Conservation Science-New York 2017
- Cedarbrook Award for Best Talk**, Department of Ecology and Evolution, Stony Brook University 2017
- Best Teaching Assistant Award**, Department of Ecology and Evolution, Stony Brook University 2017
- George C. Williams Award for Research in Evolutionary Biology**, Department of Ecology and Evolution, Stony Brook University 2017
- Robert R. Sokal Award for Research in Statistical Biology**, Department of Ecology and Evolution, Stony Brook University 2015 & 2016
- Summer Institute of Statistical Genetics Scholarship**, Department of BioStatistics, University of Washington 2015
- Phi Beta Kappa**, invited member, Oberlin College 2008
- Sigma Xi**, associate member, Oberlin College 2008

PREPRINTS

* mentored undergraduate student, ** mentored masters student, † mentored PhD student

Lauterbur, M.E., *Heder, S., Yohe, L.R., & Dávalos, L.M. (2020). Species tree disequilibrium positively misleads models of gene family evolution. *bioRxiv*. <https://doi.org/10.1101/2020.01.08.899518> (corresponding author)

Lauterbur, M.E. (2019). Coalescent models at small effective population sizes and population declines are positively misleading. *bioRxiv*, 705335. doi:10.1101/705335. (corresponding author)

Lauterbur, M.E. (2019). orthoCapture: Facilitation Gene Capture Probe Design for Non-Model Species. *bioRxiv*, 703942. doi:10.1101/703942. (corresponding author)

MANUSCRIPTS IN PREPARATION

‡ co-first or co-corresponding author

‡Vazquez, J.M., ‡**Lauterbur, M.E.** (co-first authors), Gray-Sandoval, G.K., Enard, D., Sudmant, P. (Enard and Sudmant co-corresponding authors). Extensive longevity and DNA virus-driven adaptation in nearctic *Myotis* bats. *In prep.*

Lauterbur, M. E. & Enard, D. Ecological drivers of genomic disease adaptation in mammals. *In prep.*

Rivera, N., Oliveira, H., Cummings, C., Mavian, C., Perea, S. Speer, K., ..., Global Union of Bat Diversity Networks, Ingala, M., ‡**Lauterbur, M.E.** (Ingala and **Lauterbur** co-corresponding authors). Bats in Habitats, Bats as Habitats: A new ecological framework for understanding synergistic interactions across levels of community organization. *In prep.*

Lauterbur, M. E., Peralta, J. Hughes, G. Malewicz, K., Tongasoa, L., Amin, H., Jacox, A. Zakamanana, F., Nirina, T.E., Andrianantenaina, J.C., Velontsara, J.B., Concheiro-Guisan, M., Dávalos, L.M., Wright, P.C.. Dietary cyanide adaptation in bamboo-specialized mammals. *In prep.*

NON-PEER REVIEWED PUBLICATIONS

* mentored undergraduate student, ** mentored masters student, † mentored PhD student

Lauterbur, M. E., & Govindjee, G. (2022). Paul C. Lauterbur (1929–2007): Inventor of MRI, Father of 13C NMR and 2003 Nobel Laureate. *LS - An International Journal of Life Sciences*, 11(1): 8-27. DOI: 10.5958/2319-1198.2022.00001.X

Lauterbur, M.E., †Kling, K.J., **Lamb, A.R., Sbeglia, G.C., Zamora, A.J. (2017). Primatology on the Pier: The 2016 Joint meeting of the International Primatological Society and the American Society of Primatologists. *Evolutionary Anthropology*, 26: 3-6. doi:10.1002/evan.21520

INVITED TALKS

Bayesian mediation models reveal patterns of host genomic disease adaptation

driven by environment (2024, March) – Probabilistic Modeling in Genomics, *Invited Session Chair*

Evolutionary patterns, processes, and diversity of adaptation to ecological threats (2023, Dec.) -

Department of Biology, University of Vermont

Genomic signals of disease adaptation reflect ecological drivers of pathogen exposure (2023, July) – Gordon Research Seminar, Dynamics of Ecological and Evolutionary Change

Expanding the stdpopsim species catalog, and lessons learned for realistic genome simulations (2023, March) – PopSim Satellite to Probabilistic Modeling in Genomics Conference

Patterns and processes of adaptation to environmental threats (2023, February) – Department of Botany and School of Computing, University of Wyoming

Ancient epidemics through the lens of a non-model species, the cave bat (2022, October) – Genomes of Animals and Plants, Cantana Bio

Ecological Drivers of Genomic Disease Adaptation (2022, January) – Biological Sciences Departmental Seminar, Northern Arizona University

TEACHING AND CURRICULUM DEVELOPMENT

- Virtual STEMEd for Girls Developer**, American Association of University Women 2021 - 2024
- Software Carpentry Certified Instructor** 2018 - present
The Unix Shell, R for Reproducible Scientific Analysis, Version Control with Git, Plotting and Programming in Python
- Instructor-of-record**, Comparing Ecosystems in Madagascar (ANP 307) and Summer 2018
Independent Research Projects (ANP 487),
Summer Study Abroad in Madagascar, Stony Brook University
- Instructor-of-record**, Conservation Biology (BIO 336/BEE 572, co-listed masters course), Fall 2017
Stony Brook University
- Instructor and Resident Coordinator**, Comparing Ecosystems in Madagascar (ANP 307) June 2016
and Independent Research Projects (ANP 487), Summer Study Abroad in Madagascar,
Stony Brook University
- Instructor and Resident Coordinator**, Experiential Learning in Madagascar – January 2016
International Study Abroad Internship course for masters and undergraduate students
- Instructor and Co-Developer**, Introduction to Statistics (CSM 599, PhD course) Summer 2015
Stony Brook University Manhattan
- Teaching Assistant**, Conservation Biology Fall 2013, 2014, 2015
(BIO 336/BEE 572 co-listed masters course), Stony Brook University
- Teaching Assistant**, Madagascar Study Abroad, Fall 2009
Methods in Studying Primates (ANP 350), Primate Behavior (ANP 325),
Topics in Physical Anthropology – Ecosystem Diversity (ANP 391), &
Independent Research in Physical Anthropology (ANP 487), Stony Brook University

SELECTED CONTRIBUTED PRESENTATIONS

* mentored undergraduate student, ** mentored masters student, † mentored PhD student

Lauterbur, M.E. & Enard, D. (2024, July). Bayesian mediation models reveal patterns of host genomic disease adaptation driven by environment. *Selected Symposium Talk, Society for Molecular Biology and Evolution* – Puerto Vallarta, Mexico.

Lauterbur, M.E. & Enard, D. (2023, July). Genomic signals of disease adaptation reflect ecological drivers of pathogen exposure. Poster, Gordon Research Conference, Dynamics of Ecological and Evolutionary Change – Smithfield, RI.

Lauterbur, M.E., Munch, K. & Enard, D. (2023, July). Versatile detection of diverse selective sweeps with Flex-sweep. *Selected Symposium Talk, Society for Molecular Biology and Evolution* – Ferrara, Italy.

†Gray-Sandoval, G.K., **Lauterbur, M.E.**, Vazquez, J.M., Sudmant, P., Etienne, L. & Enard, D. (2023, July). Quantifying virus-driven adaptation in *Myotis* genomes using the McDonald Kreitman test. Poster, Society for Molecular Biology and Evolution – Ferrara, Italy.

Lauterbur, M.E. & Enard, D. (2022, August). Intrinsic and Ecological Factors Drive Virus Adaptation in Bats. *Selected Podium Presentation, International Conference for Bat Research* – Austin, TX.

- Lauterbur, M.E.** & Enard, D. (2021, March). Hidden in Time: Extending the Time Window of Detecting Diverse Selective Sweeps. Poster, Probabilistic Modeling in Genomics – virtual.
- Lauterbur, M.E.**, *Malewicz, K., *Amin, H.E., Wright, P.C., Dávalos, L.M. (2019, November). Surviving cyanide: concerted genomic adaptations to dietary cyanide in bamboo lemurs (*Prolemur* and *Hapalemur* spp.). *Selected Podium Presentation, 'Non-human primates - Novel insights into evolution and medicine'* workshop – Phoenix, AZ.
- Lauterbur, M.E.** (2018, August). orthoCapture: Facilitating Gene Capture Probe Creation for Non-Model Organisms. *Selected Podium Presentation, 2018 Phylogenomics Software Symposium – Montpellier, France.*
- Lauterbur, M.E.** (2017, October). Genetic diversity estimates of small populations impacted by model choice. *Selected Podium Presentation, Student Conference on Conservation Science – New York, NY. (Awarded Best Talk – Best use of quantitative methods in conservation research)*
- Lauterbur, M.E.**, Tongasoa, L., Peralta, J., Concheiro-Guisan, M., & Wright, P.C. (2017, July). Peeing Poison: The Biochemistry of Bamboo Lemur Cyanide Survival. *Selected Podium Presentation, International Mammalogical Congress - Perth, Australia. (Awarded competitive travel grant to present)*
- Lauterbur, M.E.**, Tongasoa, L., Peralta, J., Concheiro-Guisan, M., & Wright, P.C. (2017, June). Peeing Poison: The Biochemistry of Bamboo Lemur Cyanide Survival. Podium Presentation, Evolution, Portland, OR. ([youtube](#))
- Lauterbur, M.E.** (2016, August). Testing the Energy Conservation Hypothesis: Rethinking the role of environment constraints in BMR. Poster, Joint Meeting of the International Primatological Society and the American Society of Primatologists.
- Lauterbur, M.E.** (2016, March). Lemurs are not Special, but Aye-Ayes are: Primate Basal Metabolic Rates in Phylogenetic Context. Poster, American Society for Physical Anthropology. In *American Journal of Physical Anthropology* (vol. 159, Pp. 203-203).
- †Kling, K.J., **Lauterbur, M.E.**, & Wright, P.C. (2016, March). Do grooming bouts diminish ectoparasite load in wild *Propithecus edwardsi* in the rainforests of Madagascar? Poster, American Society for Physical Anthropology. In *American Journal of Physical Anthropology* (Vol. 159, pp. 193-193).
- **Lamb, A. R., **Lauterbur, E.**, & Wright, P. C. (2016, March). *Propithecus* playing around: Does female leadership influence play? Poster, American Society for Physical Anthropology. In *American Journal of Physical Anthropology* (Vol. 159, pp. 200-201).
- Lauterbur, M.E.**, Greene, B.L., & Wright, P.C. (2014, March). Drivers of high infant mortality in *Propithecus edwardsi*: The role of resource availability. Poster, American Society for Physical Anthropology. In *American Journal of Physical Anthropology* (Vol. 153, pp. 165-165).

INVITED PUBLIC LECTURES

Peeing Poison – Stony Brook University Natural History Club (Fall 2017)

Keynote Talk – Bulkeley Middle School Madagascar Day, Rhinebeck, NY (Fall 2015)

The Natural History of Madagascar: From Proto-Lemurs to Bamboo Lemurs – East Setauket Travel Club, East Setauket, NY (Spring 2015)

DEPARTMENT AND UNIVERSITY SERVICE

Code of Conduct Subcommittee Member, Committee for Community, Anti-Racism, and Equity (CARE), Department of Ecology and Evolutionary Biology, University of Arizona Spring – Summer 2024

Member of Committee for Community, Anti-Racism, and Equity (CARE), Department of Ecology and Evolutionary Biology, University of Arizona Spring 2021 – Fall 2022

Retention subcommittee member, College of Science Student Success Initiative, University of Arizona Fall 2020 – Spring 2021

PROFESSIONAL SERVICE and OUTREACH

Chair of Advisory Board, Yunkawasi Conservation May 2021 – present

STEM Advisory Board , American Association for University Women	October 2022 – August 2023
Global Union of Bat Networks Working Group Leader	October 2022 – present
Mentor , High school research mentorship program, STAR Lab	2021 – 2023
Outreach , Mission Garden, Tucson AZ	2021 – 2023
stdpopsim Workshop Organizer , PopSim Consortium	2020 – 2021
Reviewer : PNAS, MBE, GBE, Proc. Royal Soc. B, BMC Ecol. Evol., G3, Advanced Science	
Outside reader , J. Peralta, MS 2017 & J. Kim, MS 2017, John Jay College of Criminal Justice	
Mentor , 6 graduate students, 4 undergraduate students, 5 high school students	
<ul style="list-style-type: none"> • Sarah Heder, Undergraduate Honors Thesis (BS 2019), Stony Brook University; current position: The Nature Conservancy • Kaitlyn Malewicz, Undergraduate Honors Thesis (BS 2018), Stony Brook University; current position: PhD Candidate, Virginia Tech University • Hassan Amin, Undergraduate research (2017-2018, BS 2018), Stony Brook University; current position: DVM, Cornell University • Nicole Santacruz, Undergraduate research (2017-2018, BS Cum Laude 2019), Stony Brook University; current position: DVM Candidate, Cornell University 	