

Holly L. Lutz

Scripps Institution of Oceanography | Department of Pediatrics
Center for Microbiome Innovation
University of California San Diego
9500 Gilman Drive
La Jolla, California 92093

email: hlutz@health.ucsd.edu
Phone: (817) 683-3244
www.hollylutz.com

EDUCATION

PhD Cornell University – Dept. of Ecology and Evolutionary Biology, Dept. of Population Medicine and Diagnostic Sciences, Lab of Ornithology; August 2016

BA University of Chicago – Department of Biological Sciences, Specialization in Ecology and Evolutionary Biology; June 2009

PROFESSIONAL APPOINTMENTS

2020 – pres. Assistant Project Scientist II, Department of Pediatrics, University of California San Diego School of Medicine; Scripps Institution of Oceanography, UC San Diego
2016 – pres. Research Associate, Integrative Research Center, Field Museum of Natural History
2019 – 2020 Postdoctoral Scholar, University of California San Diego School of Medicine; Scripps Institution of Oceanography, UC San Diego
2017 – 2018 Postdoctoral Fellow, University of Chicago, Department of Surgery
2014 – 2015 Resident Graduate Student, Field Museum of Natural History
2011 – 2016 Graduate Student, Cornell University

FELLOWSHIPS & GRANTS

Fellowships

2017 - 2019 National Science Foundation Postdoctoral Research Fellowship in Biology
2015 Bouchet Graduate Diversity Fellow, Edward A. Bouchet Graduate Honor Society
2014 - 2015 Lester Armour, William A. & Stella Rowley Fellow, Field Museum of Natural History
2013 - 2016 National Science Foundation Graduate Research Fellow
2011 - 2012 Presidential Life Sciences Fellow, Cornell University
2008 - 2009 REU Research Fellow, Field Museum of Natural History

Grants

2019 Negaunee Seed Grant, Field Museum of Natural History (\$28,100)
2019 Grainger Research Fund, Field Museum of Natural History (\$12,375) - declined
2018 Council on Africa, Chicago, IL (\$5,976)
2015 Athena Fund, Cornell Lab of Ornithology (\$4,000)
2014 Illumina MiSeq Grant, Pritzker Lab. of Molecular Systematics & Evolution (\$5,000)
2014 CALS Alumni Association Grant (\$545)

2014 Cornell Center for Comparative and Population Genomics (\$750)
 2013 NSF Malaria Research Coordination Network (\$1,975)
 2013 American Society of Naturalists (\$200)
 2013 Athena Fund, Cornell Lab of Ornithology (\$1,800)
 2012 Sigma Xi, Cornell Chapter (\$400)
 2012 Andrew W. Mellon Grant (\$1,000)
 2012 NSF Malaria Research Coordination Network (\$3,000)
 2011 Krammer Graduate Research Grant (\$1,000)

PUBLICATIONS

In Review

Dodiya, H. B., **Lutz, H. L.**, Patel, P., Leibowitz, J., Zhang, C., Weigle, I., Xia, J., Oshomuvwe, D. Olszewski, M., Zhang, X., Schipma, M. J., Butovsky, O., Tanzi, R. E., Gilbert, J. A., Sisodia, S. S. Early life microbiome perturbation results in sex-specific changes of brain amyloidosis and microglia phenotypes in APPPS1-21 Alzheimer's transgenic mice. *Journal of Experimental Medicine*.

Lutz, H. L., Gilbert, J. A., Dick, C. W. Tripartite associations between Afrotropical bats, eukaryotic parasites, and microbial symbionts. *Molecular Ecology*.

Colella, J. P., Bates J. M., Burneo, S., Camacho, A., Carrion, C., Constable, I., D'Elia, G., Dunnum, J., Greiman, S., Hoberg, E., Lessa, E., Liphardt, S., Londono, M., Losos, E., **Lutz, H. L.**, Ordóñez Garza, N., Peterson, T., Martin, M. L., Ribas, C., Strumming, B., Torres Pérez, F. T., Thompson, C., Weksler, M., Cook, J. A. Leveraging natural history biorepositories as a global, decentralized, pathogen surveillance network. *PLoS Pathogens*.

Fecchio, A., Clark, N. J., Bell, J. A., Skeen, H., **Lutz, H. L.**, Vaughan, J. A., Tkach, V. V., Schunck, F. C. Ferreira, F. C., Braga, É. M., Lugarini, C., Wamiti, W., Dispoto, J. H., Galen, S. C., Kirchgatter, K., De La Torre, G. M., Sagario, M. C., Cueto, V. R., González-Acuña, D., Voelker, G., Collins, M. D., Hellgren, O., Ellis, V. A., Bensch, S., Ricklefs, R. E., Weckstein, J. D., Wells, K. Global hotspots of haemosporidian prevalence in birds and drivers of infection. *Global Ecology and Biogeography*.

Publications

In Press. Özen, S.*, **Lutz, H. L.***, Rivera, V. M., Batu, E. D., Anderson, E., Salas Garcia, Aldrovandi, M. G., Pazarbasi, İ, Akbaba, T., Bilginer, Y., Balat. A., Peynircioglu, B., Reiff, A., Gilbert, J. A., Dedeoglu, F., Hausmann, J. S. Microbiome is not linked to clinical disease severity of Familial Mediterranean Fever in an international cohort of children. *Clinical and Experimental Rheumatology*.
 *Co-first authors

2020. **Lutz, H. L.**, Vangelatos, A., Gottel, N., Osculati A., Visona, S., Finley, S. J., Tuomisto, S., Karhunen P., Gilbert, J. A., T. Javan, G. T. Manner of death and demographic effects on

- microbial community composition in organs of the human cadaver. *Frontiers in Microbiology*, 11:569630.
2020. Jackson, E. W., Wilhelm, R., Johnson, M., **Lutz, H. L.**, Danforth, I., Gaydos, J., Hart, M., Hewson, I. Diversity of sea star-associated densoviruses and transcribed endogenized viral elements of densovirus origin. *Journal of Virology*.
2020. Miller, S. E., Barrow, L. N., Ehlman, S. M., Goodheart, J.A., Greiman, S. E., **Lutz, H. L.**, Misiewicz, T. M., Smith, S. M., Tan, M., Thawley, C. J., Cook, J. A., Light, J. E. Building natural history collections for the 21st Century and beyond. *BioScience*, 70(8). doi: 10.1093/biosci/biaa069
2020. Song, S. J., Sanders, J., Delsuc, F., Metcalf, J. Amato, K., Taylor, M. W., Mazel, F., **Lutz, H. L.**, Winker, K., Graves, G. R., Humphrey, G., Gilbert, J. A., Hackett, S. J., White, K. P., Skeen, H. R., Kurtis, S. M., Withrow, J., Braile, T., Miller, M., McCracken, K., Maley, J., Blanton, J. M., McKenzie, V. J., Knight, R. Comparative analyses of vertebrate gut microbiomes reveal convergence between birds and bats. *mBio*. doi. 10.1128/mBio.02901-19
2019. **Lutz, H. L.**, Jackson E. W., Webala, P. W., Babyesiza, W. S., Kerbis Peterhans, J. C., Demos, T. C., Patterson, B. D., Gilbert, J. A. Ecology and host identity outweigh evolutionary history in shaping the bat microbiome. *mSystems* doi: 10.1128/mSystems.00511-19
2019. Demos T. C., Webala P. W., **Lutz, H. L.**, Kerbis Peterhans J. C., Goodman S. M., Cortés-Delgado N., Bartonjo M., Patterson B. D. Molecular systematics and coalescent delimitation of a cryptic radiation of African long-fingered bats (Chiroptera, Miniopteridae). *Zoologica Scripta*. doi.org/10.1111/zsc.12388
2019. Fecchio, A., Bell, J., Bosholn, M., Vaughan, J., Tkach, V., **Lutz, H. L.**; Cueto, V., Gorosito, C., González-Acuña, D., Stromlund, C., Kvasager, D., Comiche, K., Kirchgatter, K., Pinho, J., Berv, J., Anciaes, M., Fontana, C., Zyskowski, K., Sampaio, S., Dispoto, J., Galen, S., Weckstein, J. D., Clark, N. An inverse latitudinal gradient in infection probability and phylogenetic diversity for *Leucocytozoon* blood parasites in New World birds. *Journal of Animal Ecology*. doi: 10.1111/1365-2656.13117
2019. Phillips C. D., Dunnum J. L., Dowler R. C., Bradley L. C., Garner H. J., MacDonald K. A., Lim B.K., Revelez M. A., Campbell M. L., **Lutz, H. L.**, Cook J. A., Bradley R. D., and the Systematic Collections Committee of the American Society of Mammalogists. Curatorial guidelines and standards of the American Society of Mammalogists for collections of genetic resources. *Journal of Mammalogy*. 100(6), 1690-1694.
2019. **Lutz, H. L.**, Carryl, S., Santymire, R. M. 2019. Wildlife Microbial Genomics and Endocrinology. In D. Marco (editor). *Microbial Ecology: Current Advances from Genomics, Metagenomics, and other Omics*. Caister Academic Press, Poole, UK. <https://doi.org/10.21775/9781912530021>.
2019. Barrow, L. N., McNew, S. M., Mitchell, N., Galen, S. C., **Lutz, H. L.**, Skeen, H., Valqui, T., Weckstein, J. D., Witt, C. C. Deeply conserved susceptibility in a multi-host, multi-parasite system. *Ecology Letters*, 22(6), 987-998.

2019. Fecchio, A., Bell, J.A., Pinheiro, R., Cueto, V., Gorosito, C., **Lutz, H.L.**, Gaiotti, M., Paiva, L., França, L., Toledo-Lima, G., Tolentino, M., Pinho, J., Tkach, V., Fontana, C., Grande, J., Santillán, M., Caparroz, R., Roos, A., Bessa, R., Nogueira, W., Moura, T., Nolasco, E., Comiche, K., Kirchgatter, K., Guimarães, L., Dispoto, J., Marini, M., Weckstein, J.D., Batalha-Filho, H., Collins, M. D. Avian host composition, local speciation, and dispersal drive the regional assembly of avian malaria parasites in South American birds. *Molecular Ecology*, 28(10), 2681-2693.
2019. **Lutz, H. L.**, Ramírez-Puebla, T., Abbo, L., Schlundt, C., Sjaarda, A. K., Durand, A., Hanlon, R. T., Gilbert, J. A., Mark Welch, J. L. A simple microbiome in the European common Cuttlefish, *Sepia officinalis*. *mSystems*.00177-19.
2019. Fecchio, A., Wells, K., Bell, J. A., Tkach, V. V., **Lutz, H. L.**, Weckstein, J. D., Clegg, S. M., Clark, N. J. . Climate variation influences host specificity in avian malaria parasites. *Ecology Letters*, doi: 10.1111/ele.13215
2017. **Lutz, H. L.**, Tkach, V. T., Weckstein, J. D. Methods for Specimen-based Studies of Avian Symbionts. Pp. 157-183 in M. S. Webster (editor). *The Extended Specimen: Emerging Frontiers in Collections-based Ornithological Research*. Studies in Avian Biology (no. 50). CRC Press, Boca Raton, FL. <https://doi.org/10.1093/auk/ukz024>.
2016. **Lutz, H. L.**, Marra, N. J., Grewe, F., Carlson, J., Palinauskas, V., Valkiunas, V., Stanhope, M. J. Laser capture microdissection microscopy and genome sequencing of the avian malaria parasite, *Plasmodium relictum*. *Parasitology Research*, 115, 4503 – 4510.
2016. **Lutz, H. L.**, Patterson, B. D., Kerbis, J. C., Webala, P. W., Stanley, W. T., Gnoske, T. P., Hackett, S. J., Stanhope, M. J. Diverse sampling of East African bats and birds supports a chiropteran origin of malaria parasites in primates and rodents. *Molecular Phylogenetics and Evolution*, 99, 7-15.
2015. **Lutz, H. L.**, Hochachka, W. M., Engel, J. I., Bell, J. A., Tkach, V. V., Bates, J. M., Hackett, S. J., Weckstein, J. D. Parasite prevalence corresponds to host life history in a diverse assemblage of Afrotropical birds and haemosporidian parasites. *PLOS ONE*, 10(4), e0121254.
2013. **Lutz, H. L.**, Weckstein, J. D., Patané, J. L., Bates, J. M., Aleixo, A. Biogeography and spatio-temporal diversification of *Selenidera* and *Andigena* toucans (Aves: Ramphastidae). *Molecular Phylogenetics and Evolution*, 69, 873 – 883.

INVITED SEMINARS

- Lutz, H. L.** 2020. Insights into the bat microbiome and evidence for convergent evolution of microbial associations in flighted tetrapods. Graduate Student Invited - Suzanne Ott Prather Annual Lecture Series, University of Nebraska-Lincoln, Lincoln, NE.
- Lutz, H. L.** 2018. Host-symbiont ecology of Afrotropical vertebrates. Conservation and Science Lecture Series, Lincoln Park Zoo, Chicago, IL.
- Lutz, H. L.** 2017. Bats and birds and bugs and things. Moore Lab of Zoology, Occidental College, Los

Angeles, CA.

Lutz, H. L. 2017. Wildlife microbiome and host-symbiont biology in Afrotropical birds and bats. A. Watson Armour Seminar Series, Field Museum of Natural History, Chicago, IL.

Lutz, H. L. 2015. Phylogenetics of haemosporidia in Afrotropical vertebrates, presented at the Annual Yale Bouchet Conference on Diversity and Graduate Education, Yale University, New Haven, CT.

Lutz, H. L. 2014. Evolution of malaria parasites in African vertebrates, presented to the Council on Africa, Field Museum of Natural History, Chicago, IL, USA.

Lutz, H. L., Weckstein, J. D., Engel, J. I., Bates, J. M., Hackett, S. J. 2013. Evolution and diversity of malarial parasites in the African tropics, presented at Makerere University Department of Biological Sciences Symposium on Afrotropical Biodiversity, Kampala, Uganda.

TEACHING EXPERIENCE

Co-Instructor Autumn 2020
Scripps Institution of Oceanography
University of California San Diego
Course: SIO242A Marine Biotechnology I

Teaching Assistant Winter 2016
Cornell University, Ithaca, NY
Department of Ecology and Evolution, College of Agriculture and Life Sciences
Course: BIOEE2640 Tropical Field Ornithology in the Dominican Republic
Center for Biodiversity and Sustainability, Punta Cana Ecological Foundation
Instructor: Prof. André Dhondt

Teaching Assistant Spring 2014
Cornell University, Ithaca, NY
Department of Ecology and Evolution, CALS
Course: BIOEE1780 Introduction to Evolutionary Biology and Diversity
Lead Instructor: Robert Reed

Head Teaching Assistant Autumn 2012
Cornell University, Ithaca, NY
Department of Ecology and Evolution, CALS
Course: BIOEE1780 Introduction to Evolutionary Biology and Diversity
Lead Instructor: Brian Lazzaro

Residency Advisor Summer 2010, 2011, 2012
Field Museum of Natural History, Chicago, IL
Pritzker Laboratory for Molecular Systematics and Evolution
Program: DNA Research Summer Residency for high school students

Design of residency projects and training of high school students and instructors in molecular research methods, e.g., screening African birds for malarial parasites, molecular identification of cryptic species in African rodents, and analysis of host-parasite associations between birds and blood parasites from Peruvian cloud forests.

Teaching Assistant

Autumn 2008

The University of Chicago, Chicago, IL

Department of Biological Sciences

Course: BIOSCI20184 Biodiversity

Instructor: Dr. or Prof Michael LaBarbera

INTERNATIONAL FIELD WORK

following scientific expeditions range from 1.5 - 2 months

2018. Kenya. Lead organizer. Bat collection, parasite and pathogen specimen preparation, specimen export and import; student training.

2016. Kenya. Lead organizer. Bat collection, parasite and pathogen specimen preparation, specimen export and import; student training.

2016. Uganda. Co-organizer. Bird and mammal specimen collection and preparation, parasite and pathogen collection and preservation, specimen export and import; student training.

2014. Kenya. Lead organizer. Bat collection, parasite and pathogen specimen preparation, specimen export and import; student training.

2014. Honduras. Co-organizer. Bird, parasite and pathogen specimen preparation, student training.

2013. Uganda. Co-organizer. Bird and mammal specimen collection and preparation, parasite and pathogen collection and preservation; student training.

2011. Mozambique. Team member. Bird and mammal specimen collection and preparation, parasite and pathogen collection and preservation

2010. Peru. Team member. Bird and symbiont collection and specimen preparation.

2009. Malawi. Team member. Bird and mammal specimen collection and preparation, parasite and pathogen collection and preservation.

SERVICE & OUTREACH

American Society for Microbiology

July 2020 - present

mSystems Editorial Board

Editor

American Society of Mammalogists

July 2019 - present

Conservation Committee

Curatorial Guidelines Committee

Contributing Blog Writer

January 2017 - 2018

www.micronow.com

American Society of Microbiology

Graduate and Professional Student Assembly

2011 - 2014

Student Advocacy Committee, Cornell University, Ithaca, NY

Editorial review

(Book) *Backyard Biology: Investigate Habitats Outside Your Door with 25 Projects (Build it Yourself Series)*, Authors: Donna Latham, Beth Hetland, Nomad Press: White River Junction, VT. 2012.

Peer review for *American Naturalist*, *Current Microbiology*, *EcoHealth*, *Ecology & Evolution*, *Folia Zooligica*, *Frontiers in Microbiology*, *International Journal of Parasitology*, *ISMEJ*, *Journal of Avian Biology*, *Journal of Biogeography*, *Journal of Ornithology*, *Malaria Journal*, *Microbial Biotechnology*, *Parasitology*, *Parasitology Research*, *Zoologica Scripta*

Education: General Public

Members' Nights at Field Museum of Natural History, educating public on role of collections and scientific research in conservation, medicine and health, and societal progress. Pop-up science talks at various public venues in Chicago, during which I discuss my research in general terms and field questions as well as provide hands-on experiences with scientific tools and specimens.

PROFESSIONAL SOCIETIES & MEMBERSHIPS

American Society of Mammalogists
American Society of Parasitologists
American Ornithologists Union
American Society for Microbiology
Bat Conservation International
Ecological Society of America

Other Honors

In 2012, I was honored by the naming of a tropical avian louse species after my contributions to parasite collections: *Cotingacola lutzae*, ex. *Laniocera hypopyrra* (Cinereous Mourner).

Valim, M. & Weckstein, J. D. 2012. Two new species of *Brueelia* Kéler, 1936 (Ischnocera, Philopteridae) parasitic on Neotropical trogons (Aves, Trogoniformes). *ZooKeys* 128: 1–13 (2011) doi: 10.3897/zookeys.128.1583