

Sofia C. Carrera

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Professional appointments

Postdoctoral Fellow, Department of Anthropology, Northwestern University 2023-present
Supervisors: Dr. Thomas McDade & Dr. Christopher Kuzawa

Education

PhD in Biopsychology, University of Michigan – Ann Arbor 2023
Advisor: Dr. Jacinta Beehner
MS in Biopsychology, University of Michigan – Ann Arbor 2018
BS in Ecology and Evolutionary Biology, Yale University 2015
Advisor: Dr. Richard Bribiescas

Fellowships, grants, and awards

Postdoctoral Research Fellowship (SPRF), National Science Foundation (\$165,000) 2024-present
Doctoral Dissertation Research Improvement Grant (DDRIG), Biological Anthropology, National Science Foundation (\$23,646) 2020-2023
L. S. B., Leakey Foundation Research Grant (\$14,910) 2019-2021
Graduate Research Fellowship Program (GRFP), National Science Foundation 2016-2021
Best Poster Award, Midwest Primate Interest Group 2021
Leonard Small Award, Rackham International Research Award 2019
University of Michigan (\$7,200)
Pillsbury Graduate Research Award, Department of Psychology 2019
University of Michigan (\$1,000)
Diversity Travel Award, Animal Behavior Society 2019
African Studies Center Research Grant, University of Michigan (\$2,000) 2018
Rackham Professional Development Grant, University of Michigan (\$400) 2018
Rackham Graduate Student Research Grant, University of Michigan (\$1,500) 2017
International Research Experience for Students (IRES), National Science Foundation 2014

Peer-reviewed publications

* undergraduate mentees

Carrera SC, Godoy I, Gault CM, Mensing A, Damm J, Perry SE, & JC Beehner. Stress responsiveness in a wild primate predicts survival across an extreme El Niño drought. *Science Advances*. In press.

Beehner JC, Alfaro, J, Allen C*, Benítez ME, Bergman TJ, Buehler MS, **Carrera SC**, Chester EM, Deschner T, Fuentes A, Gault CM, Godoy I, Jack KM, Kim JD*, Kolinski L, Kulick NK, Losch T, Ordoñez JC, Perry SE, Pinto F, Reilly OT, Johnson ET, Wasserman MD. (2022). Using an onsite laboratory for fecal steroid analysis in wild white-faced capuchins. *General and Comparative Endocrinology* 329. <https://doi.org/10.1016/j.ygcen.2022.114109>

Sen S, **Carrera SC**, Heistermann M, Potter CB, Baniel A, DeLacey PM, Petrullo L, Lu A, & JC Beehner. (2022). Social correlates of androgen levels and dispersal age in juvenile male geladas. *Hormones and Behavior* 146. <https://doi.org/10.1016/j.yhbeh.2022.105264>

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Carrera SC, Sen S, Heistermann M, Lu A, & Beehner, JC. (2020). Low rank and primiparity increase fecal glucocorticoid metabolites across gestation in wild geladas. *General and Comparative Endocrinology* 293. <https://doi.org/10.1016/j.ygcen.2020.113494>

Lu A, Petrullo L, **Carrera SC**, Feder J, Schneider-Crease I, & Snyder-Mackler N. (2019). Developmental responses to early life adversity: Evolutionary and mechanistic perspectives. *Evolutionary Anthropology* 28(5): 249-266. <https://doi.org/10.1002/evan.21791>

Manuscripts in progress

drafts available upon request

Carrera SC, Baniel A, Mhanna Z*, Gannamaneni J*, Snyder-Mackler N, Bergman TJ, Beehner JC, and A Lu. Low rank, primiparity, and male infants slow female reproductive pace in geladas. *In prep.*

Carrera SC, Carba DB, Gettler L, Lee NR, Kuzawa C. Adverse childhood experiences (ACEs) predict behaviors associated with a faster life history. *In prep.*

Research experience

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| Young Lives Study, Department of International Development, University of Oxford | 2022-present |
| <ul style="list-style-type: none">• Consulted on the development of a new survey component to measure physiological biomarkers of stress in a longitudinal cohort study.• Trained 50+ enumerators in 3 study countries (Ethiopia, India, Peru) to collect and preserve hair samples for analysis.• Collaborated in obtaining funding for sample collection and analysis. | |
| Beehner Endocrine Laboratory, University of Michigan | 2016-2022 |
| <ul style="list-style-type: none">• Oversaw the lab transition from radioimmunoassays to enzyme immunoassays (EIAs).• Validated EIAs for the measurement of hormone metabolites in non-human primate excretion samples.• Trained other researchers to conduct EIAs and prepare reagents for in-house assays. | |
| Simien Mountain Gelada Research Project (SMGRP), Ethiopia | 2017-2021 |
| <ul style="list-style-type: none">• Developed a new ethogram (for use with the Animal Observer application) to collect data on mother-infant interactions.• Performed 12 months of fieldwork in the remote Simien Mountains National Park to collect demographic, behavioral, and hormonal data on wild geladas.• Coordinated the continuation of data collection and processing throughout the Covid-19 pandemic and ethnic conflict. | |
| Owl Monkey Project, USA and Argentina | 2015-2016 |
| <ul style="list-style-type: none">• Collected behavioral data and hormonal samples from a population of captive owl monkeys (MD Anderson Research Center, TX).• Collected demographic, behavioral, and hormonal data from a population of wild owl monkeys (Argentina). | |
| Reproductive Ecology Laboratory, Yale University | 2013-2015 |
| <ul style="list-style-type: none">• Measured testosterone metabolites via EIAs to assess the diurnal pattern in owl monkeys, a partially nocturnal species. | |
| Veterinary Wildlife Services, Kruger National Park, South Africa | 2014 |
| <ul style="list-style-type: none">• Validated an EIA to measure cortisol in wild buffalo fecal samples and assess disease status. | |

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Asociación Fauna Forever, Peru

2013

- Collected behavioral and home-range data on 8 primate species living in a remote area of the Peruvian Amazon to inform conservation efforts.
- Trained new research volunteers and led teams into the rainforest.

Oral and poster presentations

American Association of Biological Anthropologists

- “*Female geladas accelerate weaning in larger groups – possibly to reduce infanticide risk.*” **Carrera SC**, et al. (2022). Denver, CO.
- “*Lactating geladas increase glucocorticoids in response to male takeovers.*” Mansi Z*, **Carrera SC**, & JC Beehner. (2022). Undergraduate Research Symposium. Denver, CO.
- “*Variation in time to weaning in wild geladas.*” **Carrera SC** & JC Beehner. (2018). Austin, TX.

Human Biology Association

- “*Higher gravidity predicts lower hypertension risk in rural South Africa.*” **Carrera SC** & AW Kim. (2022). Denver, CO.

Midwest Primate Interest Group

- “*Larger group size is associated with faster weaning in wild geladas.*” **Carrera SC**, et al. (2021). Chicago, IL.

International Society for Evolution, Medicine, and Public Health

- “*Wild capuchins with higher glucocorticoid reactivity were more likely to survive a severe El Niño event.*” **Carrera SC**, et al. (2021). Virtual.

Animal Behavior Society

- “*In a non-seasonal primate, off-peak births require more time foraging during pregnancy.*” **Carrera SC**, Lu A, & JC Beehner. (2019). Chicago, IL.

Invited Talks

- “*Individual variation in life history*” **Carrera SC**. (2024). Kobor Lab, BC Children’s Hospital Research Institute, University of British Columbia.
- “*Wild capuchins with a stronger HPA axis response were more likely to survive a catastrophic El Niño event*” **Carrera SC**. (2023). Evolution, Ecology, and Behavior Colloquium, University of Illinois Urbana-Champaign.

Teaching experience

Psych 402 – Biology of Maternal Effects, University of Michigan

2022

Lead Instructor: Sofia Carrera

- Designed and taught a seminar for upper-level undergraduates.
- Integrated primary literature from diverse fields to develop an understanding of how mothers impact their offspring’s development.
- Discussed implications for biomedicine, public health, and health inequities.

Psych 230 – Introduction to Behavioral Neuroscience, University of Michigan

2018

Lead Instructor: Dr. Kent Berridge

- Graduate Student Instructor: Led discussion sections and review sessions.

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- Anthrobio 463 – Statistical Modeling and Data Visualization in R, University of Michigan 2017
Lead Instructor: Dr. Andrew Marshall
- Graduate Student Instructor: Designed and led lab sections for this new course. Held weekly problem-solving sessions. Graded weekly and final problem sets.
- Guest lecture – Hormones and Behavior, University of Michigan 2020
Instructor: Dr. Jennifer Cummings
“Sex-biased investment: sons vs. daughters”
- Guest lecture – Behavioral Endocrinology Seminar, Loyola Marymount University 2020
Instructor: Dr. Kristen Covino
“Glucocorticoids as a measure of early-life adversity”

Mentoring experience

- Undergraduate Research Opportunity Program (UROP), University of Michigan 2017-2022
- Mentored 6 freshmen and sophomores working in the Beehner Endocrinology Lab.
 - Assisted them in designing research projects, taught them laboratory skills, and helped them prepare poster presentations for the UROP Symposium.
- Beehner Endocrinology Laboratory, University of Michigan 2019-2022
- Mentored 4 of 6 UROP students through their graduation. Taught advanced laboratory and statistical techniques as well as manuscript preparation.
 - Oversaw the honors thesis research for one of these students which she presented at the Committee on Diversity Undergraduate Research Symposium at the 91st Annual Meeting of the American Association of Biological Anthropologists (2022).
- Association for Women in Science (AWIS), University of Michigan 2017-2020
- Led small groups of undergraduates, graduate students, and postdocs in discussions about being a woman in STEM.

Science communication and engagement

K-12 audiences

- Scientist Spotlights, UM Museum of Natural History
- Females Excelling More in Math, Engineering, and the Sciences (FEMMES)
- Simien Lodge Annual Conservation Classes, Ethiopia

Lay audiences

- Talks for tourists of the Simien Mountains, Ethiopia
- The ‘Arch and Anth Podcast’ (ep. 144)
- Nerd Nite Talks, Ann Arbor District Library
- The ‘But Why?’ podcast, Vermont Public Radio

Policy makers, tour guides, government officials

- Research talks about the latest gelada research and conservation efforts, Debark, Ethiopia
- Conservation talk, Kruger National Park, South Africa

Training

- STEM communication fundamentals – Researchers Expanding Lay-Audience Teaching and Engagement (RELATE)
- Science Communication Fellowship – Portal to the Public, University of Michigan Museum of Natural History
- ComSciCon – Michigan State University

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Certificates

Diversity, Equity, and Inclusion Certificate Rackham Graduate School, University of Michigan	2022
Evolutionary Medicine Summer Institute Triangle Center for Evolutionary Medicine (TriCEM)	2021
Data wrangling, analysis and AB testing with SQL Coursera, University of California – Davis	2020
SQL for data science Coursera, University of California – Davis	2020
Social Determinants of Population Health Summer Session in Epidemiology, University of Michigan School of Public Health	2019

Service

Peer reviewer – *Conservation Physiology, General and Comparative Endocrinology, Mammalian Biology*
Biopsychology area DEI taskforce – Student member
Biopsychology Graduate Admissions Committee – Student member
Biopsychology area 10-year review committee – Student member

Skills

Bioinformatics | Git | Github | High-performance computing
R | R Markdown | R Shiny | SQL
BioRender | Adobe Photoshop
Radioimmunoassay | Enzyme immunoassay validation
English (native) | Spanish (fluent) | Amharic (beginner)