

# CHRISTINA A. DEL CARPIO

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## EDUCATION

- Ph.D. student in Ecology and Evolutionary Biology, Mentor: Robert Wayne, University of California, Los Angeles (2017 – Present)
- B.S. Biology (Animal Behavior) and B.S. Evolutionary Anthropology with Distinction (Behavior, Ecology, and Cognition), 3.428 GPA (4.0 Scale), Duke University (2007 – 2011)

## RESEARCH INTERESTS

- Gene Function
- Molecular Ecology
- Epigenetics
- Gene Regulation
- Behavioral Ecology

## RESEARCH EXPERIENCE

**Duke University Department of Evolutionary Anthropology** 2016 - 2017  
**Laboratory Manager for Tung Lab**

I planned and executed state-of-the-art molecular lab techniques for multiple projects, primarily focused on studying the genomics and epigenomics of non-human primates. A major accomplishment for which I played a lead role in wet-lab work was the development of a novel method, mSTARR-seq, to assess genome-wide effects of DNA methylation on gene regulation (manuscript in review). Techniques included RNA-sequencing (RNA-seq), genomic library construction, sample preparation for high-throughput sequencing, bisulfite sequencing, assay for transposase-accessible chromatin sequencing (ATAC-seq), transformation, transfection, and general cell culture.

**Duke University Department of Evolutionary Anthropology** 2016 - 2017  
**A Comparative Study of Behavioral Thermoregulation in Two Genera: Lemur and Varecia.**

I completed a senior thesis of original research focused on a comparative study of the behavioral thermoregulation of ringtailed lemurs (*Lemur catta*) and ruffed lemurs (*Varecia variegata* and *V. rubra*). I successfully secured three sources of funding for my project: Duke Deans' Summer Fellowship, a Molly Glander Award, and a Duke Undergraduate Research Support Grant. I also applied for an addition to and worked under an existing IACUC protocol. Comparative results support that these three lemur species undergo different levels of heat stress due to coat density and color as reflected in different behavioral patterns across temperature ranges. This work provides insight into how these species respond and cope with changes in temperature, which is of particular concern as we see the mounting impacts of climate change. Additionally, my findings are of interest to researchers across disciplines as lemurs represent a branch of the primate phylogeny that retains many primitive characteristics shared by an early, primate common-ancestor, potentially providing insights into human and other primate origins.

## TEACHING EXPERIENCE

**University of California, Los Angeles** Winter 2019  
**Ecology and Evolutionary Biology 116: Conservation Biology**

I led two two-hour discussion sections of 20 students (40 students total) each week. I wrote quizzes to assess if students completed the readings. I crafted discussion questions to probe student understanding of each week's topic, challenge students to apply knowledge from lecture, and spark discussion of ethical dilemmas in conservation efforts.

**TEACHING EXPERIENCE (CONTINUED)****University of California, Los Angeles****Life Sciences 110: Career Exploration in the Life Sciences** Fall 2018

I facilitated in-class discussions by engaging with individual students about the exercises they were completing. The course size was 60 students. Additionally, I provided qualitative feedback on homework assignments such as values assessments, cover letters, and resumes.

**Duke University Department of Biology** 2011 – 2016**Laboratory Instructor for Biology 201: Introduction to Molecular Biology**

I taught four lab sections (total of 64 students) per semester. I collaborated with the team of instructors to create and evaluate student assessments. I performed various administrative duties focusing on course policy. I modeled lab instruction and trained graduate-student teaching-assistants. Molecular techniques I taught include: nucleic acid isolation, polymerase chain reaction (PCR), molecular cloning, gel electrophoresis, and basic local alignment search tool (BLAST).

**Duke University Department of Biology** 2015**Laboratory Instructor for Biology 202: Introduction to Genetics and Evolution**

I taught lab sections twice per week and discussion section once per week (total of 18 students) for one summer session. I collaborated with the team of instructors to create and evaluate student assessments.

**Duke Talent Identification Program (TIP)** 2013 - 2017**Academic Adventures Instructor for Survival of the Fittest** 2013-2017

I designed a new, one-day course for a class of 16 local gifted 5th and 6th grade students taught twice per year. The curriculum is focused on giving students a foundation in the theory of natural selection through hands-on labs.

**Summer Studies Instructor for DNA: Unlocking the Genetic Code** 2015

I planned and led four days of instruction for a class of 16 gifted students in 7th and 8th grade. Lesson plans included interactive labs, a visit to a genetics research lab, and a collaborative activity with a Cryptography course.

**Scholar Weekends Instructor for Ecology and Evolution** 2015

I designed a new, two-day course for class of 16 local gifted 8<sup>th</sup> – 11<sup>th</sup> grade students taught one weekend. The curriculum is focused on giving students a foundation in evolutionary principles through an ecological lens.

**Academic Adventures Teaching Assistant for Various STEM Courses** 2013 - 2017

I served as teaching assistant for one-day courses for gifted students in 5th and 6th grade, four times per year.

**Scholar Weekends Teaching Assistant for Various STEM Courses** 2013 - 2017

I served as a teaching assistant for a two-day course for a class of 16 gifted students in 8th – 11th grade, twice per year.

**Summer Studies Academic Program Assistant** 2013-2014

I worked with the Academic Director to provide support for the academic staff (13 instructors and 13 TA's) for eight weeks per year. I evaluated and provided feedback for academic staff, and substituted for instructors and teaching assistants as necessary.

**Summer Studies Teaching Assistant for Primate Biology and Forensic Science** 2012

I served as a teaching assistant for two classes of gifted middle school students from around the country (total of 17 students). Each course lasted three weeks. I led hour-long evening study sessions four days a week in which I helped students review and consolidate material as well as prepare them for the next day's lesson.

**PUBLICATION**

Lea, A. J., Vockley, C. M., Johnston, R. A., **Del Carpio, C. A.**, Barreiro, L. B., Reddy, T. E., & Tung, J. (2018). Genome-wide quantification of the effects of DNA methylation on human gene regulation. *eLife*, 7, e37513.

**PRESENTATIONS**

- **Del Carpio, C.A.** (2019). Mental Health Concerns Specific to Graduate Students, How Universities Can Respond, and Resources at UCLA. 20 minute talk at UCLA EcoEvoPub Seminar Series. Los Angeles, CA. May 2, 2019.
- **Del Carpio, C. A.**, Johnston, R. A., Rheinwald J.G., Lowry W. E., Tung, J., Wayne R. K. (2019). Application of CRISPR-Cas9 Edited Cells to Evaluate Gene Function in the North American Gray Wolf (*Canis lupus*).
  - 30 minute talk at The Biomedical Big Data Training Program, The Burroughs Wellcome Fund Inter-school Training Program in Chronic Diseases, and The Genomic Analysis & Interpretation Training Program Annual Joint Research Symposium. Los Angeles, CA. May 28, 2019.
  - Poster presented at UCLA Ecology and Evolutionary Biology Research Symposium. Los Angeles, CA. May 22, 2019.
  - Poster presented at annual National Human Genome Research Institute (NHGRI) Trainee Meeting. Saint Louis, Missouri. April 10, 2019.
  - 5 minute lightning talk at UCLA Conservation Genomics Colloquium. Los Angeles, CA. December 10, 2018.
  - 20 minute talk at UCLA EcoEvoPub Seminar Series. Los Angeles, CA. October 25, 2018.
- **\*Del Carpio, C. A.**, \*Thurlow, L., & Azurdia, D. (2018). Dealing with Imposter Fears. 40 minute talk at Society for the Advancement of Chicanos/Hispanics and Native Americans in Science (SACNAS) UCLA chapter general body meeting. November 13, 2018.
- Lea, A. J., Vockley, C. M., Johnston, R. A., **Del Carpio, C. A.**, Barreiro, L. B., Reddy, T. E., & Tung, J. (2017). mSTARR-seq: Genome-Wide Assay for the Effect of DNA Methylation on Enhancers.
  - Poster presented at the annual Society for the Advancement of Chicanos/Hispanics and Native Americans in Science (SACNAS) Diversity in STEM Conference. San Antonio, TX. October 12, 2018.
  - 20 minute talk at UCLA EcoEvoPub Seminar Series. Los Angeles, CA. May 17, 2018.
  - Poster presented at the annual Meeting of the Amboseli Baboon Research Project. Durham, NC. April 21, 2017.
- **Del Carpio, C. A.** (2018). DNA Methylation in the Domesticated Dog (*Canis familiaris*). Lighting three-minute talk presented at the Society for the Advancement of Chicanos/Hispanics and Native Americans in Science (SACNAS) Research Slam. Los Angeles, CA. January 31, 2018.
- **Del Carpio, C. A.** (2011). A Comparative Study of Behavioral Thermoregulation in Two Genera: Lemur and Varecia. Poster presented at Visible Thinking – A Presentation of Undergraduate Research. Durham, NC. April 20, 2011.

**AWARDS, GRANTS, AND FELLOWSHIPS**

- Best graduate student poster presenter at UCLA Ecology and Evolutionary Biology Research Symposium (2019)
- National Institute of Health (NIH) Genomic Analysis Training Program Training Grant (2018-2019, 2019-2020)
- Best graduate student presenter at the Society for the Advancement of Chicanos/Hispanics and Native Americans in Science (SACNAS) Research Slam (2018)
- National Science Foundation (NSF) Graduate Research Fellowship Program (GRFP) Fellow (2017-2022)
- Spring Dean's List with Distinction (2011)
- Psi Upsilon Francis C. Hardie Omicron-Zeta 1918 Award (2010 – 2011)
- Molly Glander Award, “A Comparative Study of Behavioral Thermoregulation in Two Genera: *Lemur* and *Varecia*” (2010 – 2011)
- Fall Dean's List (2010)
- Duke Undergraduate Research Support Independent Study Grant, “A Comparative Study of Behavioral Thermoregulation in Two Genera: *Lemur* and *Varecia*” (2010)
- Duke Deans Summer Research Fellowship, “A Comparative Study of Behavioral Thermoregulation in Two Genera: *Lemur* and *Varecia*” (2010)
- Psi Upsilon Chi Delta Alumni Association Scholarship (2010)

**ORGANIZATION MEMBERSHIP**

- Scientific Excellence through Diversity Seminar (SEDS) Series, Board Member (2018-2019)
- Society for the Advancement of Chicanos/Hispanics and Native Americans in Science (SACNAS), General Member (2017 – Present) / Board Member: Graduate Student Representative (2018-2019)
- Association for Multi-Ethnic Bioscientists' Advancement (AMEBA), Member (2017 – Present)

**VOLUNTEER SERVICE**

- **SACNAS Lunch with Graduate Students:** I coordinated an event where 3 undergraduates and 3 graduate students were provided a lunch and given an intimate setting to have meaningful conversation. Attendees discussed experiences relating to graduate school, including unspoken rules of grad school culture, funding navigation, and resources for undocumented students. (2019)
- **SACNAS Mentor Match:** I instituted a program to match undergraduates with a graduate student mentor to get feedback on graduate school applications. A total of 7 undergraduates participated and more than 20 graduate students were recruited as potential mentors. (2018)
- **Explore Your Universe Science Festival:** I led a module that taught students of all ages about density through the creation of water bottle lava lamps, which students were able to keep. Over 200 students participated in this module. (2018)
- **SACNAS Early Academic Outreach Program Day:** I led a module on the physics of roller coasters. Students from local high schools completed the activity by constructing marble roller coasters (2018).
- **AWISE STEM Day:** I organized and ran a booth about DNA including a 10min DNA extraction from fruit. Attendees were approximately 200 female students from local middle schools. (2018)

**VOLUNTEER SERVICE (CONTINUED)**

- **Duke Admissions Office:** I am an alumni interviewer, in which I meet with prospective Duke Undergraduates and provide the admissions office with written evaluations. (2013 – Present)
- **Louis Stokes Alliances for Minority Participation (LSAMP):** I was a panelist for a program hosted at UCLA for undergraduate student members of LSAMP who are interested in pursuing a graduate degree in biology. (2018, 2019)
- **ExploraVision:** I was a mentor for a team of four local high school students entering the Toshiba ExploraVision competition. I advised students on limitations and possible future improvements in CRISPR/Cas9 technologies. (2018)
- **Engineer in Training Day:** I was a facilitator for a module on the neuroscience of optical illusions for students interested in STEM careers from four local high schools. (2017)
- **Duke Lemur Center:** I was a tour guide for the world’s largest lemur collection, providing visitors from around the world with an educational introduction to prosimian primates and the center’s research and conservation efforts. I gave one tour (2 hours) per week. (2014 – 2017)
- **Darwin Day at the North Carolina Museum of Natural Sciences:** I facilitated hands-on learning activities about animal-behavior data sampling and wild baboon darting for museum guests of all ages. (2017)
- **Brilliant and Beautiful Foundation:** I was a panelist for “Priming the Pipeline: Getting Girls Ready for the STEM Workforce” during the annual Science Mathematics Advance Research Training (SMART) Scholars Workshop for Girls. (2016)
- **North Carolina Museum of Natural Sciences:** I participated in the filming for a new exhibit about field research in the natural sciences. (2010)
- **Females Excelling More in Math, Engineering, and Science:** Twice per semester, I helped implement educational programs aimed at middle school girls. (2008 – 2010)
- **Crest Street Tutoring:** Once per week, I tutored students in various subjects including high school biology and physics. (2008 – 2009)