

CRYSTAL M. REYNAGA

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EDUCATION

- UNIVERSITY OF CALIFORNIA, IRVINE** 2013 - June 2018 (expected)
Ph.D. in Ecology & Evolutionary Biology
Dissertation: Morphological and mechanical correlates of novel locomotor modes
Advisor: Dr. *Manny Azizi*
Committee members: Drs. *Matt McHenry & Donovan German*
- UNIVERSITY OF CALIFORNIA, SANTA CRUZ** 2010 - 2012
B.S. in Marine Biology, with Honors Thesis
Advisor: Dr. *Rita S. Mehta*
- UNIVERSITY OF CHICAGO** 2008 - 2010
Anticipated Major(s): Biological Sciences and Romance Languages & Literatures (Spanish)
Completed 1st and 2nd year college education

RESEARCH EXPERIENCE

- UNIVERSITY OF CALIFORNIA, IRVINE** 2013 - Present
PhD Candidate, Department of Ecology & Evolutionary Biology
Advisor: Dr. *Manny Azizi*
Collaborators: Drs. *Henry Astley & Caitrin Eaton*
- CALIFORNIA STATE UNIVERSITY, LONG BEACH** 2012 - 2013
Research Assistant, Department of Biological Sciences
PIs: *Kimberly Dolphin & Dr. Ashley Carter*
- UNIVERSITY OF WASHINGTON** Summer 2012
Undergraduate Researcher, Functional Morphology & Ecology of Marine Fishes Course
Friday Harbor Laboratories
Advisors: Drs. *Lara Ferry & Andrew Clark*
- UNIVERSITY OF CALIFORNIA, SANTA CRUZ** 2010 - 2012
Undergraduate Research Assistant, Department of Ecology & Evolutionary Biology
Advisor: Dr. *Rita Mehta*
Collaborators: Drs. *Andrea Ward & David Collar*
- UNIVERSITY OF CHICAGO** 2008 - 2010
Laboratory Assistant, Department of Organismal Biology & Anatomy
Advisor: Dr. *Victoria Prince*

PUBLICATIONS

1. Collar, D. C., **Reynaga, C.M.**, Ward, A.B., and Mehta, R.S. 2013. A revised metric for quantifying body shape in vertebrates. *Zoology* 116:246-257.

MANUSCRIPTS IN PREPARATION

2. **Reynaga, C.M.**, Astley, H. and Azizi, E. Morphological and kinematic specializations of quadrupedal walking frogs. *In preparation for Journal of Experimental Biology*.
1. **Reynaga, C.M.**, Ferry, L. and Clark, A. The effects of body shape and elongation on the swimming kinematics of pholid and stichaeid fishes. *In preparation*.

PUBLISHED ABSTRACTS

6. **Reynaga, C.M.**, Eaton, C., Azizi, E. (2017). Effects of compliance on hindlimb kinematics of jumping Cuban tree frogs (*Osteopilus septentrionalis*). *Integrative and Comparative Biology* 57, E138-E138.
5. **Reynaga, C.M.**, Astley, H., Azizi, E. (2016). Morphological and kinematic constraints of quadrupedal walking in frogs. *Integrative and Comparative Biology* 56, E182-E182.
4. **Reynaga, C.M.**, Azizi, E. (2015) Force transmission pathways in the axial muscles of the common carp, *Cyprinus carpio*. *Integrative and Comparative Biology* 55, E320-E320.
3. **Reynaga, C.M.**, Danos, N., Azizi, E. (2014) Conflicts between locomotor modes: terrestrial and aquatic locomotion in the Senegal running frog, *Kassina senegalensis*. *Integrative and Comparative Biology* 54, E337-E337.
2. **Reynaga, C.M.**, Ferry, L.A., Clark, A.J. (2013) A comparative study of body shape and swimming kinematics in pholid and stichaeid fishes. *Integrative and Comparative Biology* 53, E3337-E337.
1. **Reynaga, C.M.**, Collar, D.C., Ward, A.B., Mehta, R.S. (2012) A revised metric to quantify body shape diversity in vertebrates. *Integrative and Comparative Biology* 52, E145-E145.

PRESENTATIONS

*Award winning presentation

21. **Crystal Reynaga**, Caitrin Eaton & Emanuel Azizi (2017). Hindlimb mechanics and response of jumping from compliant substrates in tree frogs. Oral presentation in the *Society for Experimental Biology Annual Meeting*, Gothenburg, Sweden.
20. ***Crystal Reynaga**, Caitrin Eaton & Emanuel Azizi (2017). Effects of compliant substrates on jumping. Oral presentation in the *NSF-GRFP Research Symposium*, UC Irvine, Irvine CA.
19. **Crystal Reynaga**, Caitrin Eaton & Emanuel Azizi (2017). Frog Olympics: Jumping off unsteady diving boards. Oral presentation in the *Associated Graduate Students (AGS) Symposium*, UC Irvine, Irvine CA.
18. **Crystal Reynaga**, Caitrin Eaton & Emanuel Azizi (2017). Effects of substrate compliance during jumping in the Cuban tree frog. Oral presentation in the *Winter Ecology and Evolutionary Biology Graduate Student Symposium (WEEBGSS)*, UC Irvine, Irvine CA.
17. **Crystal Reynaga**, Caitrin Eaton & Emanuel Azizi (2017). Effects of substrate compliance on hindlimb kinematics of jumping in Cuban tree frogs, *Osteopilus septentrionalis*. Poster presentation in the *Society for Integrative and Comparative Biology Annual Meeting*, New Orleans LA.
16. **Crystal Reynaga**, Caitrin Eaton & Emanuel Azizi (2016). Investigating the effects of substrate compliance on jumping in Cuban tree frogs. Oral presentation in the Southwest Regional Meeting for the *Society for Integrative and Comparative Biology*, California State University Fullerton, Fullerton CA.
15. **Crystal Reynaga**, Caitrin Eaton & Emanuel Azizi (2016). Effects of substrate compliance during Jumping in the Cuban tree frog, *Osteopilus septentrionalis*. Poster presentation in the *Society for Advancing Chicanos/Hispanics and Native Americans (SACNAS) in Science: The National*

- Diversity in STEM Conference*, Long Beach CA.
14. **Crystal Reynaga**, Henry Astley & Emanuel Azizi (2016). Morphological and kinematic constraints of quadrupedal walking in frogs. Oral presentation in the *Society for Integrative and Comparative Biology Annual Meeting*, Portland OR.
 13. **Crystal Reynaga**, Henry Astley & Emanuel Azizi (2015). Morphological and kinematic constraints of quadrupedal walking in frogs. Oral presentation in Southwest Regional Meeting of the *Society for Integrative and Comparative Biology*, Cal Poly Pomona, Pomona CA.
 12. **Crystal Reynaga & Emanuel Azizi** (2015). Force transmission pathways in axial muscles of the common carp, *Cyprinus carpio*. Oral presentation in *Winter Ecology and Evolutionary Biology Graduate Student Symposium*, UC Irvine, Irvine CA.
 11. **Crystal Reynaga & Emanuel Azizi** (2015). Force transmission pathways in axial muscles of the common carp, *Cyprinus carpio*. Poster presentation in *Society for Integrative and Comparative Biology Annual Meeting*, West Palm Beach FL.
 10. **Crystal Reynaga**, Nicole Danos, Emanuel Azizi (2014). Conflicts between locomotor modes: running and jumping locomotion in the Senegal running frog, *Kassina senegalensis*. Poster presentation in *Society for Integrative and Comparative Biology Annual Meeting*, Austin TX.
 9. **Crystal Reynaga**, Nicole Danos, Emanuel Azizi (2013). Conflicts between locomotor modes: terrestrial and aquatic locomotion in the Senegal running frog, *Kassina senegalensis*. Oral presentation in Southwest Regional Meeting of the *Society for Integrative and Comparative Biology*, UC Riverside, Riverside CA.
 8. **Crystal Reynaga**, Nicole Danos, Emanuel Azizi (2013). Limb kinematics during terrestrial and aquatic locomotion in the Senegal running frog, *Kassina senegalensis*. Oral presentation in *Competitive Edge Summer Symposium*, UC Irvine, Irvine CA.
 7. **Crystal Reynaga**, Lara Ferry, Andrew Clark (2013). A comparative study of body shape and swimming kinematics in pholid and stichaeid fishes. Poster presentation in the *Society for Integrative and Comparative Biology Annual Meeting*, San Francisco CA.
 6. **Crystal Reynaga**, Lara Ferry, Andrew Clark (2012). A comparative study of body shape and swimming kinematics in pholid and stichaeid fishes. Oral presentation in *Southwest Regional Meeting of the Society for Integrative and Comparative Biology*, CSU San Bernardino, San Bernardino CA.
 5. **Crystal Reynaga**, David Collar, Andrea Ward, Rita Mehta (2012). A revised metric to quantify body shape diversity in vertebrates. Poster presentation in *CAMP Statewide Research Symposium*, UC Irvine, Irvine CA.
 4. **Crystal Reynaga**, David Collar, Andrea Ward, Rita Mehta (2012). A revised metric to quantify body shape diversity in vertebrates. Oral presentation in *Society for Integrative and Comparative Biology Annual Meeting*, Charleston SC.
 3. **Crystal Reynaga**, David Collar, Andrea Ward, Rita Mehta (2011). A revised metric to quantify body shape diversity in vertebrates. Oral presentation in *Wainwright Functional Morphology Meeting*, Carmel Valley CA.
 2. **Crystal Reynaga**, David Collar, Andrea Ward, Rita Mehta (2011). A revised metric to quantify body shape diversity in vertebrates. Poster presentation at the *SACNAS National Conference*, San Jose CA.
 1. **Crystal Reynaga**, David Collar, Andrea Ward, Rita Mehta (2011). A revised metric to quantify body shape diversity in vertebrates. Poster presentation at the *Undergraduate Summer Research Symposium*, UC Santa Cruz, Santa Cruz CA.

GRANTS, AWARDS & FELLOWSHIPS

Research grants: 9 total; \$169,815

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| 2017 | Best Oral Research Presentation , NSF GRFP Research Symposium, UC Irvine, \$100. |
| 2017 | Society of Experimental Biology (SEB) Travel Grant , £140. |

- 2014-2017 **Broadening Participation Committee Travel Award**, Society for Integrative and Comparative Biology (SICB), \$2,000
- 2014-2017 **Dept. of Ecology and Evolutionary Biology Travel Award**, UC Irvine, \$1,500.
- 2014-2017 **Biological Sciences Dean's Office Travel Award**, UC Irvine, \$1,000.
- 2016 **Graduate Assistance in Areas of National Need (GAANN) Research Fellowship**, US Dept. of Education, \$1,000
- 2016 **GAANN Fellowship**, US Dept. of Education, \$10,486
- 2015 **Diverse Educational Community and Doctoral Experience (DECADE) Research Award**, UC Irvine, Graduate Division, \$1,800
- 2013-2018 **National Science Foundation Graduate Research Fellowship Award (NSF-GRFP)**, \$136,000
- 2013-2017 **Graduate Opportunities Fellowship**, UC Irvine, Graduate Division, \$17,000
- 2011, **Charlotte Mangum Student Housing Award**
- 2013-2015 Society for Integrative and Comparative Biology (SICB)
- 2011-2012 **Initiative for Maximizing Student Diversity Fellowship (IMSD)**, UC Santa Cruz, National Institutes of Health, \$3,500
- 2011-2012 **California Alliance for Minority Participation Fellowship (CAMP)**, UC Santa Cruz, National Science Foundation, \$4,800
- 2012 **Friday Harbor Marine Lab Scholarship**, University of Washington, \$1,800
- 2011 **National Science Foundation Research Experiences for Undergraduates (NSF-REU 0819009)**, UC Santa Cruz, \$3,915
- 2009-2010 **Sam and Roslyn Berkman Scholarship**, University of Chicago

TEACHING EXPERIENCE

- 2016 **Guest Lecturer**, *Exercise Science Seminar (BIOE 117B)*, UC Irvine, Irvine CA. Lectured and lead a discussion on the diversity of muscle function, and how muscles perform as motors, struts, and brakes. This seminar included about 20 students. Instructor of Record: Dr. *Manny Azizi*.
- 2016 **Teaching Assistant**, *Biology of Birds Laboratory (BIOE 160L)*, UC Irvine, Irvine CA. Supervised field (lab) bird observations throughout Orange County Parks. Additionally, involved in course administration: graded exams and final papers. Instructor of Record: Dr. *John Avise*.
- 2013-2015 **Teaching Assistant**, *Physiology Laboratory (BIOE 112L)*, UC Irvine, Irvine CA. Prepared, instructed, and supervised weekly physiology laboratory experiments and assignments. Graded lab reports and exams, assisted students outside of class with course material, assignments, and scientific writing. Instructor of Record: Dr. *Nancy Aguilar-Roca*. Evaluated highly by student evaluations:
"She is a very diligent instructor and would always provide us good feedback on our assignments. She goes above and beyond compared to other TA's to prepare us for the current assignments (homework, lab reports) or for future assignments (future lab reports). Her feedback helps me become a better writer, more specifically lab report writing, which is extremely important here at UCI. In addition, she is very enthusiastic lecturer and makes students more interested in participating in the lab."
- 2014 **Teaching Assistant**, *Marine Biology (BIOE 120)*, UC Irvine, Irvine CA. Assisted students outside of class with course material and was involved in course administration. Instructors of Record: Drs. *Nancy Aguilar-Roca & Donovan German*.

STUDENT MENTORING

(33 students for ~ 624 total hours; *Undergraduate research project; ²⁶Current career in STEM)

Galatea Strong* (2016-present), Ashley Hughes* (2014-2015), Yasmin Gutierrez* (2014-2015), Elizabeth Mendoza[☯] (2016), Alica Corrales (2016), Luc D'Hauthuille (2016), Kenny Huynh (2016), Kirolos Kelada (2016), Lupita Lopez (2016), Aylin Mojica (2016), Nuria Perez Varela (2016), Jordyn Rodwell (2016), Dany Atallah (2015), Alexander Beechko[☯] (2015), Thomas Carpino[☯] (2015), Noah Ghossein[☯] (2015), Jourdan Mason (2015), Jasmin Melara (2015), Courtney Powell[☯] (2015), Joli Quinceno (2015), Bianka Dominguez (2014-2015), Judith Granados (2014-2015), Leidy Cruz (2014-2015), Andrew DiMauro[☯] (2014), Melvin Lorenzo[☯] (2014), David Novo (2014), Ivory Paulk[☯] (2014), Flora Wang (2014), Nicholas White[☯] (2014), Sarah Valles[☯] (2013-2014)

UNIVERSITY AND PROFESSIONAL SERVICE

Graduate Representative, *Graduate Dean's Advisory Council on Diversity*, UC Irvine, 2015-2017.

The primary function of this group provides ideas, insight, and expertise with faculty and administration to expand and enhance the Graduate Division's efforts to recruit and retain outstanding students from diverse backgrounds.

UC Irvine Graduate Division Student Representative, for the Annual Biomedical Research Conference for Minority Students (ABRCMS) 2016, *Tampa FL*.

Graduate Student Lead Mentor, *UC Irvine Graduate Division*, Summer(s) 2014-2016. Mentored 6-10 undergraduate students each summer in the Summer Undergraduate & Masters Research Program. This program is designed to prepare students from diverse backgrounds for graduate school. Mentoring covered successfully applying for graduate school, applying for fellowships, academic writing, preparing academic presentations, academic career planning, advice on all aspects of life as a graduate student, and academic research methods.

Ecology & Evolutionary Biology Brown-Bag Lunch, *UCI Dept. of Ecology & Evolutionary Biology*, Spring 2016. Established and developed a monthly brown-bag dialogue series for graduate students to access a supportive community, tailored resources, and professional development opportunities through invited speakers. In coordination with Dr. *Ann Sakai*, DECADE Faculty Mentor.

UC Irvine Graduate Division Student Representative, for the Northern California Forum for Diversity in Graduate Education, 2016, San Jose State University, *San Jose CA*.

DECADE Student Council STEM Co-Chair, for the UCI Diverse Educational Community and Doctoral Experience (DECADE), *UC Irvine*, 2015-2016. Developed the "DECADE Student Council Strategic Plan" this document provides university-wide strategies to help effectively address challenges for academic enhancement and inclusion for all graduate students at UCI.

Member of organizational committee, for the Graduate Student Invited Speaker (GSIS), Dept. Ecology and Evolutionary Biology, UC Irvine, Fall 2015.

Leadership mentor, for Diverse Educational Community and Doctoral Experience: Partnering in Leadership for Undergraduate Students (DECADE-PLUS) Program, *UC Irvine*, 2014-2015. Mentored seven first year undergraduate Chancellor's Excellence Scholars. The focus of this program is to increase retention of these incoming minority and underrepresented scholars through mentoring, with a focus on academics.

UC Irvine Graduate Division Student Representative, for the Annual Biomedical Research Conference for Minority Students (ABRCMS) 2014, *San Antonio TX*.

Member of organizational committee, for the Winter Dept. of Ecology and Evolutionary Biology Graduate Student Symposium (WEEBGSS), *UC Irvine*, Winter 2015.

PROFESSIONAL DEVELOPMENT

Safe Zone Training, *UC Irvine*, Spring 2016. Program empowers individuals as Allies to remain informed, supportive, and affirming of the LGBTQIA+ Community at UCI.

Science Communication, *UC Irvine*, Spring 2015. Trainee under teacher, guide and mentor, Sandra Tsing Loh, host of the syndicated radio show “The Loh Down on Science”. This program explores the art and science of effective writing, performance, and audience interaction.

Certified Undergraduate Research Mentor in the Laboratory, *UC Irvine*, Fall 2014. Training and development workshop series on undergraduate research mentoring in the laboratory setting. A curriculum developed by the Wisconsin Program for Scientific Teaching with support from the Howard Hughes Medical Institute.

Mentor Excellence Program, *UC Irvine*, Summer 2013. Training and development workshop series on building a mentoring relationship, communication and interpersonal connections, ethics in academics, research and personal decisions, and resilience in balancing academics and wellness through mentorship. Programing offered by the Graduate Division.

Teaching Assistant Professional Development Workshops, *UC Irvine*, Summer 2013. Training and development workshop series on instructional design, responsibilities, pedagogical theory and practice, and University policies and resources. Programing offered by the Teaching, Learning & Technology Center.

UCI Graduate Division Competitive Edge Summer Research Program, *UC Irvine*, Summer 2013. A summer pre-entry program for incoming female and minority PhD students underrepresented in their disciplines to conduct research under the direct supervision and guidance of a faculty member, Dr. *Manny Azizi*. This program featured workshops and seminars about campus resources, fostering professional development, establishing peer support networks, and developing academic strategies to enhance the graduate education experience.

PUBLIC OUTREACH

Naples Elementary School— Second Grade Outreach, *Long Beach CA*. 2014-Present. Partnered with Ms. Aide Gonzalez to develop interactive presentations and laboratory activities that address current laboratory research. Previous topics include: natural history of the Senegal running frog, muscle and vertebrate anatomy, anatomical measurements, and simple model building. Additional curriculum development in progress.

Washington Middle School— 7th and 8th Grade Outreach, *Long Beach CA*. 2017. Developed an interactive presentation on my current research, “How our muscles move and activate”. With a post-discussion on STEM diversity in the sciences proposing questions like “What does a scientist look like?”

Helen Bernstein High School STEM Volunteer Tutor, *Hollywood CA*. 2013. Provided after school tutoring in a variety of STEM disciplines to students in a low-income/low-performing high school.

Haiti Compassion Volunteer with Ambassadors Fellowship, *Port-au-Prince, Haiti*. Summer 2011. Provided financial assistance and service to students and people within a neighborhood affected by the January 2010 earthquake, by organizing and administering a children’s summer day camp which involved teaching English, crafts, and various educational activities.

Volunteer Camp Assistant at Hope Unlimited, *Campinas, Brazil*. Summer 2010. Prepared and supervised outreach activities prepared for orphan and street children through education and providing a loving homelike environment designed to cultivate their trust and encourage growth.

Girls’ Cross-Country Coaches’ Assistant and Camp Councilor, *Long Beach Polytechnic High School*. Summer 2008. *Catalina Island, CA*. Guided daily workouts, activities, monitored athlete activity, and safety of 50 female high school athletes.

JOURNALS SERVED AS MANUSCRIPT REVIEWER

Anatomia, Histologia, Embryologia

PROFESSIONAL MEMBERSHIPS

Society for Experimental Biology (SEB)

Society for Integrative and Comparative Biology (SICB)

Society for Advancing Chicanos and Native Americans in the Sciences (SACNAS)

SKILLS

Laboratory: high-speed motion analysis, fine-wire electromyography (EMG), processing specimens, clearing and double staining specimens, morphometrics and meristics, pressure and force transducers, materials testing, physical and computer-based modeling, and microscopy including SEM.

Computer/Programming: Statistical Program “R”, Statistical Program “JMP”, data acquisition and analysis with IGOR, and data mining and analysis in Matlab.

Language: Studied Spanish for 6 years— fluency in reading, writing, and conversational speaking.

REFERENCES

Available upon request.