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Irene García-Ruiz

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- EDUCATION

2023 – Present Columbia University, USA

POSTDOC IN ECOLOGY, EVOLUTION AND ENVIRONMENTAL BIOLOGY

Thesis: “The evolution of cooperative breeding in vertebrates”. Supervisor: Prof Dustin Rubenstein.

2018 – 2022 University of Bern, Switzerland

PHD IN BEHAVIOURAL ECOLOGY AND EVOLUTION | *Distinction, Insigni cum laude*

Thesis: “Mechanisms that shape the evolution of cooperative breeding”. Grade: Distinction, *Insigni cum laude*. Supervisor: Prof Michael Taborsky.

2015 – 2016 University of Exeter, UK

MSC ANIMAL BEHAVIOUR | *Distinction, Dean's Commendation Prize*

Thesis: “Can flexible male courtship displays be maintained through sexual selection?” Grade: Distinction. Supervisor: Prof Tim W. Fawcett.

2010 – 2014 University of Valencia, Spain

DEGREE IN BIOLOGY | *Distinction, Extraordinary Graduation Prize*

Thesis: “Phenology of emergence by Mediterranean sympatric cave-dwelling bats during their breeding period”. Grade: Distinction with Honours. Supervisor: Prof Juan S. Monrós.

• PUBLICATIONS

PUBLISHED

García-Ruiz I, Taborsky M. (2024) Nepotism mediates enforced cooperation in asymmetric negotiations. *iScience*, 27(7), 110334. <https://doi.org/10.1016/j.isci.2024.110334>

Hollon SH, **García-Ruiz I**, Veen T, Fawcett TW. (2023) The evolution of dynamic and flexible courtship displays that honestly reveal male quality. *Behavioral Ecology and Sociobiology*, 77(24), 1-14. <https://doi.org/10.1007/s00265-023-03296-9>

García-Ruiz I, Taborsky M. (2022) Group augmentation on trial: helpers in small groups enhance antipredator defence of eggs. *Biology Letters*, 18(10), 20220170. <https://doi.org/10.1098/rsbl.2022.0170>

García-Ruiz I, Quiñones A, Taborsky M (2022). The evolution of cooperative breeding by direct and indirect fitness effects. *Science Advances*, 8(21), eabl7853. <https://doi.org/10.1126/sciadv.abl7853>

García-Ruiz I, Machado M, Monsalve MÁ, Monrós JS. (2017). Phenology of emergence by Mediterranean sympatric cave-dwelling bats during their breeding period. *Acta chiropterologica*, 19(2), 357-365. <https://doi.org/10.3161/15081109ACC2017.19.2.012>. Full version [here](#)

IN PREPARATION

García-Ruiz I, Rubenstein D. (*submitted*) Fitness drivers of division of labour in vertebrates.

García-Ruiz I, Arduini L, Taborsky M. (*in prep.*) Influence of help prevention time on punishment and alloparental care in a cooperative breeder that pays to stay.

García-Ruiz I, Perret A, Taborsky M. (*in prep.*) Egg predator defence depends on both rank and size in a cooperatively breeding cichlid fish.

Engelhardt SC, **García-Ruiz I**, Taborsky M. (*in prep.*) Social complexity and cognition.

COLLABORATIONS

Johnston, R. A., Vulllioud, P., Thorley, J., Kirveslahti, H., Shen, L., Mukherjee, S., ... & Tung, J. (2021). Morphological and genomic shifts in mole-rat 'queens' increase fecundity but reduce skeletal integrity. *Elife*, 10, e65760.

Abalos, J., i de Lanuza, G. P., Carazo, P., & Font, E. (2016). The role of male coloration in the outcome of staged contests in the European common wall lizard (*Podarcis muralis*). *Behaviour*, 153(5), 607-631.

PEER-REVIEWING

Theoretical Population Biology (2023)

Biological Reviews (2022)

- CONFERENCE TALKS & POSTERS

INVITED TALKS

2022 | "The evolution of cooperative breeding". Invited by the Science Society. Host: Prof. Catarina Cunha, University of New York City.

ORAL PRESENTATIONS

2024 | "*Fitness drivers of division of labour in vertebrates*" at the at the European Conference on Behavioural Biology, ECBB, University of Zurich, Switzerland.

2023 | "*Nepotism mediates enforced cooperation in asymmetric negotiations*" at the Behaviour congress, University of Bielefeld, Germany.

2022 | "*The evolution of cooperative breeding by direct and indirect fitness effects*" at the International Society for Behavioural Ecology conference, ISBE, University of Stockholm, Sweden.

2021 | "*Group benefits are essential and sufficient for the evolution of cooperative breeding*" at the conference Behavioural Ecology and Evolution conference, BEE. Online.

2019 | "*The evolution of alloparental care through group augmentation*" at the conference Modelling Ecology and Evolution, MEEZ, University of Zurich, Switzerland.

2018 | "*Mechanisms that shape the evolution of cooperative breeding*" at a Symposium at the University of Konstanz, Germany.

2014 | "*Phenology of emergence by Mediterranean sympatric cave-dwelling bats during their breeding period*" at the Fifth conference of the Spanish Association for the Conservation and Study of Bats, SECEMU, University of Alcalá de Henares, Spain.

POSTER

2024 | "*Fitness drivers of division of labour in vertebrates*" at the Postdoc Research Symposium, Columbia University, USA.

2018 | "*Can flexible male courtship displays be maintained through sexual selection?*" at the conference Biology18, University of Neuchatel, Switzerland.

- OTHER OUTREACH ACTIVITIES

INTERVIEWED

JULY 2024 | Interviewed for the [Mysteries of Science](#) podcast, by The Week Junior magazine.

JUNE 2022 | Interviewed for the [National Swiss Radio](#) on how the evolution of altruism may depend on environmental conditions.

JUNE 2022 | Interviewed for the newspapers [Higgs](#) (German) and [Levante](#) (Spanish) on the evolution of cooperation and alloparental care.

PRESS

OCTOBER 2022 | Our paper "*Group augmentation on trial: helpers in small groups enhance antipredator defence of eggs*" published in [Biology Letters](#) was picked up by the [Science ORF](#) and [MyScience](#) newspapers.

JUNE 2022 | Our paper "*The evolution of cooperative breeding by direct and indirect fitness effects*" published in [Science Advances](#), was picked up by over 35 newspapers in English ([Technology Networks](#)), German ([APA](#)), Spanish ([El Periodico](#)), French ([myScience](#)), Portuguese ([Revista Planeta](#))... A non-exhaustive list can be found [here](#).

SCIENTIFIC EXHIBITION

2024 | Volunteer in the **Girls' Science Day**, helping to design and carrying STEM-related experiments (*Fossil Frontiers: A Prehistoric Excavation*) for middle school girls, held at Columbia University.

2023 | Volunteer in the **Girls' Science Day**, helping to design and carrying STEM-related experiments (*Dye Solarized Cells*) for middle school girls, held at Columbia University.

2012 | Volunteer in the **Expociencia Conference**, held in the Scientific Park of the University of Valencia.

- GRANTS & AWARDS

2023 | **Marie Skłodowska-Curie Actions (MSCA) Seal of Excellence**, awarded to outstanding researchers.

2023 | **Swiss National Science Foundation (SNSF) Postdoc Mobility grant**. (CHF 120 000 salary plus CHF 10 000 research funding for 2 years).

2022 | **ISBE Travel Award**. Conference attendance grant (\$300).

2016 | **Dean's Commendation Prize**, for outstanding achievement during my master's degree.

2014 | **Extraordinary Graduation Prize**, for obtaining the highest mark at the end of my bachelor's degree.

2013 | **Talent Attraction scholarship**. Scholarship to do research collaboration. Awarded for having the highest mark of the year's class. (2700 €)

2010 | **Winner of the First National Olympiad of Geology** (Spain). Scholarship for the 1st year enrolment in studies of the degrees offered by the University of Valencia.

- **TEACHING ACTIVITIES**

COURSE TEACHING

Jan 2024 | Teacher assistant at the course "*Tropical Biology*" carried out at the Mpala Research Center in Kenya. Organized by Columbia University, USA.

Oct 2023 | Teacher at the course "*R Workshop: Data management and visualization*" to undergraduate, master and PhD students. Organized by Columbia University, USA.

March 2021 | Chair during group discussion in the course "*The use of Machine Learning models in Behaviour, Ecology & Evolution*", organized by the University of Neuchatel, Switzerland.

May 2019 | Teacher of cichlid behaviour at LTK module 20 (introduction to basic fish behaviour for animal experimentation license).

February – April 2018 | Teaching assistant in the course "*Statistics for Biology*" at the University of Bern, Switzerland.

March 2017 | Teacher of the course "*Advanced Statistics with SPSS*" at the Royal College of Physicians of Valencia, Spain.

SUPERVISION OF JUNIOR RESEARCHERS

2020 | Supervisor of Alexis Perret for his master's thesis: "Effect of rank on alloparental care in a cooperative breeder cichlid fish".

2020 | Supervisor of Kim Bourbon for her master's thesis: "Do helpers of *Neolamprologus pulcher* adjust their helping behaviour to the costs of helping?".

2019 | Supervision of Dominik Michael Hirsbrunner and Yijun Guo for their bachelor's project: "Do helpers of *N. pulcher* adjust their helping behaviour to the costs of helping?".

- **OTHER RESEARCH EXPERIENCE**

Oct 2017 – Dec 2017 Duke University, USA

RESEARCH ASSISTANT | Evolutionary Anthropology department

Position hold at the Kuruman River Reserve, South Africa.

How experimentally induced transitions to queen status influence the physiology and genomics of skeletal growth and aging in Damaraland mole rats. Competing demands of growth, immune defence, and reproduction by helpers and breeders in meerkats. Supervisors: Prof Jenny Tung and Dr Rachel Johnston.

Aug 2017 – Oct 2017 University of Cambridge, UK

INTERNSHIP | Zoology department.

Position hold at the Kuruman River Reserve, South Africa.

Ecological and evolutionary causes and consequences of cooperative breeding in the Damaraland mole rat. Supervisors: Prof Tim Clutton-Brock, Dr Markus Zottl and Dr Philippe Vulliod.

March 2017 – July 2017 University of Valencia, Spain

INTERNSHIP | Ethology Department

Intergenerational transmission of oviposition preference in *Drosophila melanogaster* through modulation in the microbiota. Supervisor: Dr Pau Carazo.

March 2017 Valencia, Spain

MEDICAL STATISTICS ANALYST | Employed by ICS-Medical.

Sept 2014 – Sept 2015 University of Valencia, Spain

INTERNSHIP | Ethology Department

Characterization of the chorus of wolves howling in semi-freedom in Galicia, Spain. Supervisor: Dr Vicente Palacios.

Sept 2013 – Jul 2014 University of Valencia, Spain

INTERNSHIP | Ethology Department

Lizard's communication, with focus on the study of coloration and dynamic visual signals (stamp movements and nod) in the species *Podarcis muralis* in Pyrenees, Spain. Supervisor: Prof Enrique Font.

Jan 2014 – Jun 2014 Valencia, Spain

INTERNSHIP | Limne Foundation

Environmental Volunteering and Fluvial Stewardship. I carried out works like bat tracking and otter monitoring, and prepared the Annual Report about the Rivers Project 2013 based on data collected by volunteers.

Sept 2012 - Apr 2013 University of Valencia, Spain

INTERNSHIP | Marine Zoology Department

For the Environment Department of the Valencian Community.
Study of the parasites of the striped dolphin (*Stenella coeruleoalba*) in the Mediterranean waters and in the stranding network of cetaceans and sea turtles in the Valencian Community.
Supervisor: Prof Juan Antonio Raga.

- **SKILLS**

IT

Programming:	C++, make, bash scripting, slurm, Linux
Statistics:	R, SPSS, Bayesian modelling with JAGS
Behavioural observations:	Pocket Observer, Boris
Audio analysis:	Abode Audition, Spectrogram
General Software:	Microsoft Office, CLion, R-Studio

OTHERS

Advanced Open Water Diver (PADI certification)
Animal husbandry
Driving License Type B

- **LANGUAGES**

English: Advanced (CAE certification).
Spanish: Native speaker.
German: Basic-Intermediate.
Catalonian: Advanced.