

# Román Zapién-Campos

MSCA & UKRI PostDoctoral Fellow @ University College London

## contact

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ORCID  
LinkedIn

## nationality

Mexican

## languages

Spanish - native  
English - fluent (C2)

## programming

python, R, bash & C++  
mathematica & octave

## research interests

ecology & evolution  
theoretical modelling  
quantitative biology  
microbiology

## education (\*) & research experience

2023 –	<b>University College London</b> <i>PostDoc</i> - Centre for Life's Origins and Evolution Quantitative ecology and evolution of microbial communities <i>Advisor</i> : Prof Wenying Shou	London, UK
2022 – 2023 (15 months)	<b>Max Planck Institute for Evolutionary Biology</b> <i>PostDoc</i> Bayesian inference of interactions from microbiome datasets <i>Advisor</i> : Prof Arne Traulsen	Plön, Germany
2018 – 2021	<b>* Max Planck Institute for Evolutionary Biology</b> <i>PhD</i> IMPRS for Evolutionary Biology <i>Thesis</i> : Modelling the ecology of host-associated microbiomes <i>Advisor</i> : Prof Arne Traulsen <i>Summary</i> : we developed models to study hosts and their microbiomes. Topics included: the colonization of hosts by microbes, parental inheritance of microbes, and the effect of differences in selection. Methods included: stochastic and differential equations.	Plön, Germany
2015 – 2016	<b>* University College London</b> <i>MRes</i> Biosciences - Computational Biology <i>Coursework</i> : seminars, scientific literature and skills, math. ecology & research project. <i>Thesis</i> : The evolution of Hutchinson's niche & mutualism <i>Advisor</i> : Dr David Murrell <i>Summary</i> : we developed a spatial model to study the evolution of mutualism, finding that public goods could make communities more resilient to eco-evolutionary hazards.	London, UK
2015 & 2017 (11 months)	<b>Center for Research and Advanced Studies of the IPN (CINVESTAV)</b> Mexico <i>Research intern in Microcosms Community Dynamics</i> <i>Advisor</i> : Prof Gabriela Olmedo-Álvarez	Irapuato,
2013 (2 months)	<b>CINVESTAV</b> <i>Summer undergraduate research in Microbial Ecology modeling</i> <i>Advisors</i> : Prof Gabriela Olmedo-Álvarez & Prof Moisés Santillán	Irapuato, Mexico
2012 (6 months)	<b>* Polytechnic University of Madrid</b> <i>Magalhães/SMILE Exchange Semester</i> <i>Coursework</i> : advanced numerical methods, processes optimization, machine learning and neural networks, biomaterials & nanotechnology.	Madrid, Spain
2012 (2 months)	<b>CINVESTAV</b> <i>Summer undergraduate research in Biological Circuitry modeling</i> <i>Advisor</i> : Prof Moisés Santillán Zerón	Monterrey, Mexico
2011 (2 months)	<b>CINVESTAV</b> <i>Summer undergraduate research in Synthetic Biology</i> <i>Advisors</i> : Prof Agustino Martínez Antonio & Prof Alexander DeLuna	Irapuato, Mexico

2009 – 2013

**\* National Polytechnic Institute (IPN)**

Silao, Mexico

BSc Biotechnological Engineering

*Related coursework:* microbiology, biochemistry, molecular biology, bioengineering, differential equations, vectorial calculus, probability and statistics, basic physics, thermodynamics, unit operations & industrial process design.

*Thesis:* The role of the antagonism in the self-assembly of bacterial communities

*Advisors:* Prof Gabriela Olmedo-Álvarez & Prof Moisés Santillán (CINVESTAV)

*Summary:* using a cellular automaton we investigated the role of experimentally quantified antagonism to preserve the biodiversity in *Bacillus* communities from an oligotrophic pond in Cuatro Ciénegas - Mexico. This thesis was done from 2014 to 2015.

## publications & preprints

1. Gao Y, Pichugin Y, Traulsen A & **Zapién-Campos R** (2025). Evolution of irreversible differentiation under stage-dependent cell differentiation. *Scientific Reports*. doi: 10.1038/s41598-025-91838-8
2. **Zapién-Campos R**, Bansept F, & Traulsen A. (2024). Stochastic models allow improved inference of microbiome interactions from time series data. *PLoS Biology*. doi: 10.1371/journal.pbio.3002913
3. **Zapién-Campos R**, Bansept F, Sieber M, & Traulsen A. (2022). On the effect of inheritance of microbes in commensal microbiomes. *BMC Ecology and Evolution*, 22(1), 1-13. doi: 10.1186/s12862-022-02029-2
4. **Zapién-Campos R**, Sieber M, & Traulsen A. (2022). The effect of microbial selection on the occurrence-abundance patterns of microbiomes. *Interface: Journal of the Royal Society*, 19(187): 20210717. doi: 10.1098/rsif.2021.0717
5. **Zapién-Campos R**, Sieber M, & Traulsen A. (2020). Stochastic colonization of hosts with a finite lifespan can drive individual host microbes out of equilibrium. *PLoS computational biology*, 16(11), e1008392. doi: 10.1371/journal.pcbi.1008392
6. **Zapién-Campos R**, Olmedo-Álvarez G & Santillán M. (2015) Antagonistic interactions are sufficient to explain self-assembly of bacterial communities in a homogeneous environment: a computational modeling approach. *Frontiers in Microbiology*. 6:489, 1–9 pp. doi: 10.3389/fmicb.2015.0048

## 3rd party funding & fellowships

2024 – 2026 Fellowship	<b>Marie Skłodowska-Curie Actions (European Commission &amp; UKRI)</b> 236,748.48 EUR Awarded to applicants (15.8% in 2023) holding a PhD to carry out their postdoctoral research, acquire new skills and develop their career.	London, UK
2015 – 2016 Fellowship	<b>National Council of Science and Technology (CONACYT)</b> 300,000 MXN + 10,560 GBP Awarded to top ranked Mexican applicants to pursue graduate STEM studies abroad.	London, UK
2011 - 2013 Scholarship	<b>Interinstitutional Program for the Strengthening of Research and Graduate Studies of the Pacific (Programa Delfín)</b> 13,000 MXN (2013), 13,000 MXN (2012) & 13,000 MXN (2011) Awarded to top ranked BSc applicants for a 2-months intership in a lab of their choice.	Irapuato, Monterrey & Irapuato, Mexico

## teaching & supervision

2025 (2 lectures)	<b>University College London</b> <i>Data Science Methods in Biology</i> . Lecturer <i>Related activities:</i> lectures, practicals, and grading of year 2 BSc Biological Sciences students.	London, UK
2023 (6 weeks)	<b>Max Planck Institute for Evolutionary Biology</b> <i>Modelling and inference from microbiome data</i> . Supervisor <i>Related activities:</i> supervision of Yan Giencke (MSc) in Prof Arne Traulsen's group.	Plön, Germany
2021 (4 lectures)	<b>University of Lübeck</b> <i>Mathematical biology in action during the covid-19 pandemic</i> . Lecturer <i>Related activities:</i> lectures and review of assignments of students in MSc Mathematics.	Lübeck, Germany
2021 (12 weeks)	<b>Max Planck Institute for Evolutionary Biology</b> <i>Mobility data analysis during the covid-19 pandemic in Germany</i> . Supervisor <i>Related activities:</i> supervision of Carissa Reid (MSc) in Prof Arne Traulsen's group.	Online
2017 (6 weeks)	<b>CINVESTAV</b> <i>Statistics in R workshop</i> . Instructor <i>Related activities:</i> teaching a group of graduate students and staff Statistics and its implementation in R, including: Exploratory Data Analysis, Statistics and R coding.	Irapuato, Mexico
2014 (6 weeks)	<b>CINVESTAV</b> <i>Programming Club: Introduction to Python and R</i> . Instructor <i>Related activities:</i> leading a group of undergrad and grad students to learn programming and scripting skills in Python and R analysing their own data.	Irapuato, Mexico

## peer-review for scientific journals

BMC Biology (1x), Journal of Nonlinear Science (1x), Molecular Ecology (1x), and PLoS Computational Biology (2x).

## organization of scientific events

2022	<b>Max Planck Institute for Evolutionary Biology</b> <i>Mathematical modelling of microbiomes</i> . Co-organizer <i>Related activities:</i> invitation of international speakers, internal and external communication, preparation of a scientific program, chairing and management of the event.	Plön, Germany
2019	<b>Max Planck Institute for Evolutionary Biology</b> <i>Scientific retreat of the doctoral school (IMPRS)</i> . Co-organizer <i>Related activities:</i> preparation of a scientific and career development program, invitation of international speakers, internal and external communication, chairing and management of the event.	Oeversee, Germany
2019	<b>Max Planck Institute for Evolutionary Biology</b> <i>Internal symposium (Aquavit)</i> . Co-organizer <i>Related activities:</i> preparation of a scientific program, internal communication, chairing and management of the event.	Plön, Germany

## scientific outreach

2020 – 2021	<b>Max Planck Institute for Evolutionary Biology</b> <i>Communication of the covid-19 pandemic</i> . Team member <i>Related activities:</i> produced interactive online plots to communicate the current state of the pandemic in Germany and Schleswig-Holstein to the public and government. I also developed a timelapse map to show the spread of cases across Germany. * We received a letter of acknowledgement from the state governor Daniel Günther.	Plön, Germany
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2010 – 2015 **National Polytechnic Institute** Silao, Mexico  
*UPIIG's Science Club. Co-organizer*  
*Related activities:* study and discussion of STEM topics, participation in scholar events, and organization of seminars lead by students and local scientists about their research expertise and the experience of being and becoming a scientist.

## talks, conferences & workshops

### Invited Talk

2023 **DFG Research Training Group for Translational Evolutionary Research** Plön, Germany  
*Seminar series*

2022 **Mexican Society of Mathematics** Online  
*National Congress 2022*

### Contributed Talk

2025 **Gordon Research Conference** Ventura, USA  
*Stochastic Physics in Biology*

2024 **Max Planck Institute for Evolutionary Biology** Plön, Germany  
*Developments in Evolutionary Theory*

2024 **University of Warwick** Warwick, UK  
*Discussions on Microbial Ecology*

2022 **Max Planck Institute for Evolutionary Biology** Plön, Germany  
*Physical and Chemical Determinants of Biological Evolution*

2022 (3 weeks) **International Centre for Theoretical Physics** Trieste, Italy  
*Eco-evolutionary Dynamics of Microbial Communities*

2022 **Max Planck Institute for Evolutionary Biology** Plön, Germany  
*Meetings on Microbial Ecology and Evolution*

2019 **Max Planck Institute for Evolutionary Biology** Plön, Germany  
*Evolution of Interacting Populations*

2016 **Society of Mexican Students in the United Kingdom** Edinburgh, UK  
*XIV Symposium of Mexican Studies and Students*

2015 **Mexican Scientific Society of Ecology** San Luis Potosí, Mexico  
*V Mexican Congress of Ecology*

### Poster

2025 **The Francis Crick Institute** London, UK  
*INTERPHACE symposium*

2025 **Gordon Research Seminar** Ventura, USA  
*Stochastic Physics in Biology*

2024 **The Francis Crick Institute** London, UK  
*London Mathematical Biology Conference*

2020 & '21 **Society for Mathematical Biology** Online  
*eSMB 2020 and SMB 2021*

2019 to '21	<b>Max Planck Institute for Evolutionary Biology</b> <i>Internal symposium: Aquavit. (Won best poster in 2019 &amp; 2020)</i>	Plön, Germany and Online
2019	<b>Gordon Research Conference &amp; Gordon Research Seminar</b> <i>Animal-Microbe Symbioses</i>	West Dover, USA
2017	<b>Mexican Association of Microbiology</b> <i>XL National Congress of Microbiology</i>	Guadalajara, Mexico

**Participant**

2013 (1 week)	<b>Center for Research in Mathematics</b> <i>Summer school on molecular dynamics and quantum chemistry</i>	Guanajuato, Mexico
2012 (1 week)	<b>Center for Research in Mathematics</b> <i>Summer school on mathematical modeling of biological systems</i>	Guanajuato, Mexico
2012 (1 week)	<b>Iberoamerican Society of Bioinformatics</b> <i>International workshops in bioinformatics 2012</i>	Cuernavaca, Mexico