

# Afra Salazar

PhD Student — Department of Fundamental Microbiology  
University of Lausanne, Switzerland

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[salazarafra.github.io](https://salazarafra.github.io)

## FIELDS OF RESEARCH

Microbial community ecology and evolution, Evolutionary transitions in individuality, Plasmid evolution

## EDUCATION

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|-------------|---|
| 2021 -      | <b>Doctoral School of the Faculty of Biology &amp; Medicine</b><br>PhD in Life Sciences   University of Lausanne  |
| 2019 - 2021 | <b>Erasmus Mundus Master Programme in Evolutionary Biology (MEME)</b><br>Master in Sciences   University of Groningen & University of Montpellier           |
| 2015 - 2019 | <b>Undergraduate Program of Genomic Sciences</b><br>Bachelor in Sciences   National Autonomous University of Mexico (UNAM)<br><i>Graduated with Honours</i> |

## RESEARCH EXPERIENCE

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| 2021 - | <b>Research Assistant at the Department of Fundamental Microbiology</b><br>Doctoral Student   University of Lausanne, Switzerland<br>Supervised by Dr. Sara Mitri<br><i>Developed a conceptual framework to study the individuality of communities</i><br><i>Built a consumer-resource model to study the eco-evolutionary dynamics of bacterial communities</i> |
| 2021   | <b>Visiting Research Student at the Centre for History &amp; Philosophy of Science</b><br>Six-month master thesis project   University of Leeds, United Kingdom<br>Supervised by Dr. Ellen Clarke<br><i>Philosophical analysis on the evolutionary individuality of bacterial plasmids</i>   |
| 2020   | <b>Research Student at the Groningen Institute for Evolutionary Life Sciences</b><br>Six-month master thesis project   University of Groningen, The Netherlands<br>Supervised by Dr. Marjon de Vos & Dr. Sander van Doorn<br><i>Studied the long term evolution of plasmid host ranges using a model of adaptive dynamics</i>                                    |
| 2020   | <b>Research Student at MIVEGEC</b><br>Three-month master project   University of Montpellier, France<br>Supervised by Dr. Samuel Alizon<br><i>Built an compartmental epidemiological model to study the evolutionary conditions governing symptom onset rates of infectious diseases</i>   |
| 2019   | <b>Research Student at the Department of Fundamental Microbiology</b><br>Six-month internship   University of Lausanne, Switzerland<br>Supervised by Dr. Sara Mitri<br><i>Built a kinetic model to design antibiotic treatments based on microbiota composition to reduce resistance</i>   |

- 2018 **Research Student at the Department of Fundamental Microbiology**  
Summer internship | University of Lausanne, Switzerland  
Supervised by Dr. Sara Mitri  
*Built a consumer-resource model mapping out the effects of different antibiotic treatment strategies on the microbiota of individual patients*
- 2018 **Research Student at the Laboratory of Systems & Synthetic Biology**  
Six-month internship | Center of Genomic Sciences, Mexico  
Supervised by Dr. Rafael Peña Miller  
*Built an agent-based computational model to study plasmid population dynamics in bacterial populations*

## PUBLICATIONS

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- 2025 Salazar, A., & Mitri, S. Can a microbial community become an evolutionary individual? <https://doi.org/10.1016/j.mib.2025.102596>

## PUBLIC PRESENTATIONS

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- 2025  
Oct 16th **Can individuality help us improve community functions?**  
Internal conflicts and organismal adaptation ESEB Special Topic Network  
*Invited talk* | Online seminar
- 2025  
Oct 3rd **Improving Community Breeding Through Evolutionary Individuality First**  
Istituto Veneto di Scienze, Lettere ed Arti  
*Contributed poster* | Alma Dal Co School on Collective Behaviour
- 2025  
July 21th **Transitions in Individuality Beyond History**  
University of Porto  
*Contributed talk* | ISHPSSB
- 2025  
June 3rd **Improving Community Breeding Through Evolutionary Individuality First**  
*Contributed talk* | EMPSEB
- 2025  
Feb 14th **Improving Community Breeding Through Evolutionary Individuality First**  
University of Lausanne  
*Contributed poster* | BIOLOGY25
- 2023  
May 25th **(How) Can we Manipulate Individuality in Multispecies Communities?**  
Max Planck Institute for Evolutionary Biology  
*Contributed talk* | Evolutionary transitions in individuality meeting
- 2023  
March 3rd **Biografía & Ciencia: Redes, Cooperación y Contexto**  
Autonomous University of Nayarit (UAN)  
*Invited talk* | LIBAT Lectures
- 2022  
May 19th **Designing a Community Selection Strategy Based on Individuality First**  
Max Planck Institute for Evolutionary Biology  
*Contributed talk* | Communities and coevolution meeting
- 2021  
May 05th **On the Evolutionary Individuality of Plasmids**  
Centre for History and Philosophy of Science | University of Leeds  
*Invited talk* | HPS Leeds centre visitors day

## HONOURS AND AWARDS

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2025	<b>Biology25 Conference</b> By the Swiss National Science Foundation (SNSF) <i>Awarded with CHF 12,000.00 for event organisation</i>
2019 - 2021	<b>Erasmus Mundus Joint Master Degree (EMJMD) Scholarship</b> By the European Commission <i>Selected as one of six high-ranked students of the Cohort 2019-2021</i> <i>Awarded with EUR 50,000.00</i>
2018	<b>The School of Biology Summer Undergraduate Research Programme</b> By the Faculty of Biology and Medicine, University of Lausanne <i>Selected out of nearly 250 international students of medicine and biology</i> <i>Awarded with CHF 3,200.00, plus travel expenses</i>
2017	<b>Research Methods Training Scholarship</b> By SEP-UNAM-FUNAM <i>Selected to carry out an undergraduate internship at the University of Lausanne</i> <i>Awarded with MXN 85,000.00</i>

## TEACHING EXPERIENCE

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2025	<b>Teaching assistant of Principles of Programming and Modelling in Biology</b> Course for second-year bachelor students in Biology   University of Lausanne <i>Provided assistant instruction for ~100 students</i>
2021- 2024	<b>Teaching assistant of Introduction to Mathematical Models in Biology</b> Elective course for bachelor students in Biology   University of Lausanne <i>Provided one-on-one assistant instruction for ~20 students</i>
2018	<b>Teaching assistant of Introduction to Linear Algebra</b> Undergraduate program of Genomic Sciences   UNAM <i>Provided one-on-one assistant instruction for 24 students</i>

## OTHER RELEVANT COURSES / WORKSHOPS

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2023 Summer	<b>Evolutionary Biology in Guarda Summer School</b> University of Basel & ETH Zurich
2022 Summer	<b>Bordeaux Summer School in Philosophy in Biology &amp; Medicine</b> University of Bordeaux

## REVIEWER

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July 2023	<b>Proceedings of the Royal Society B</b>
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## VOLUNTEERING

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2022 -	<b>Evolutionary Biology Crash Course</b> Web co-designer and advertising
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2025	<b>EMPSEB31 Conference</b> Co-head of communications, website creation, social media advertising
2025	<b>Biology25 Conference</b> Head of communications, website creation, social media advertising and fund-raising

#### TECHNOLOGY

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##### **Programming Languages:**

Julia, R, Python

##### **Other:**

LaTeX, Wolfram Mathematica, Adobe Illustrator

HTML, CSS

#### LANGUAGES

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Spanish (native) & English (C1)