Juliette Luiselli

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Education

Initial training

2022 – 2025 **PhD thesis**, *INSA Lyon & INRIA*, Lyon
How chromosomal rearrangements shape genomes : a computational and mathematical modelling study. Under the supervision of Guillaume Beslon and Nicolas Lartillot

2017 – 2022 **ENS Diploma**, *École Normale Supérieure*, Paris
Biology major, Computer Sciences minor

2019 – 2021 **Interdisciplinary Master in Life Sciences**, *ENS*, Paris
Major Ecology & Evolution : Evolutionary Biology, Adaptive Dynamics, Evolutionay Ecology, Computational Biology, etc.

2018 – 2019 **Bachelor of Science in Computer Sciences**, *ENS*, Paris
Compilation, Algorithms, Databases, Machine Learning, Random structures, etc.

2017 – 2018 **Bachelor of Science in Biololgy**, *ENS*, Paris
Bioinformatics, Biostatistics, Molecular Biology, Evolution, Genomics, etc.

2015 – 2017 **Higher School Preparatory Classes : Biology, Chemistry, Physics, Mathematics and Earth Sciences**, *Lycée Saint-Louis*, Paris

Continuing training

Feb 2023 **The Genomics of Transposable Elements.**, *IBENS*, Paris
Winter school for PhD students, by PSL Qlife. Included a poster presentation.

Mar – April 2022 **Computational Biology**, *Utrecht University*, Utrecht
MSc course by Paulien Hogeweg

Research experiences

2022 – 2025 **How chromosomal rearrangements shape genomes : a computational and mathematical modelling study**, *INSA Lyon & INRIA*, Lyon, PhD thesis
Under the supervision of Guillaume Beslon and Nicolas Lartillot

April – July 2024 **Eukaryotic ancestry in a finite world**, *Université de Sherbrooke*, Canada
Research visit and collaboration with Manuel Lafond

Feb – June 2022 **Multilevel stochastic error correction: the role of fission/fusion dynamics in maintaining genome integrity of mitochondria**, *Utrecht University*, Utrecht
Theoretical Biology and Bioinformatics Team, supervised by Paulien Hogeweg

2019 – 2022 **Studying the genome architecture with Aevol**, *INRIA*, Lyon
Beagle Team, supervised by Guillaume Beslon
3 internships, studying the role of transposable elements, population size, and sex and recombination on genome structure.

Feb – June 2020 **Distinguishing different forms of competition in a mechanistic model of eco-evolutionary dynamics**, *Imperial College*, London
Silwood Park – Supervised by James Rosindell

2017 – 2018 **Experimental evolution in a fluctuating environment**, *Institut de Biologie de l'École Normale Supérieure*, Paris
Team of Henrique Teotonio

Conferences

Oct 2024 **Talk at SFE2**, *International Congress in Ecology & Evolution, Lyon*, Talk on the genome streamlining – session Evolutionary genetics and genomics

July 2024 **Talk at Evolution**, *Joint Congress on Evolutionary Biology, Montreal*, Talk on the importance of chromosomal rearrangements – session Evolution Theory

July 2024 **Talk at ISMB**, *Intelligent Systems for Molecular Biology, Montreal*, Talk on genome streamlining – session EvolCompGen

Nov 2023 **Talk at ETEE 2023**, *Empirism & Theory in Ecology and Evolution, Saclay*, Talk on genome streamlining

July 2023 **Poster presentation at SMBE**, *Meeting of The Society for Molecular Biology & Evolution , Ferrara*, Poster presentation on genome streamlining

June 2023 **Invited speaker at Evolution**, *Evolution, Albuquerque*, Talk on Detecting the ecological footprint of selection in comparative phylogeographic datasets

June 2022 **Co-animation of CPM cell modelling workshop**, *NLSEB PhD/Post-doc meeting*, Discovery workshop of CPM simulations for biologists.

Supervision

Feb – April 2024 **Internship supervision of a master student**, *INRIA Lyon*
Supervision of a 4^{th} year student on research project to develop simulations of non-coding genome size evolution in a population.

2022 – 2024 **Project supervision of 5^{th} year students**, *INSA Lyon*
Supervision of 2 groups of 3 students in final year of engineering school for a machine learning project, and a database project.

June 2023 **Internship supervision of 2 high school students**, *INRIA Lyon*
Research project on the effect of population size and mutation rate on genome size and density.

2023 **Project supervision of 4^{th} year students**, *INSA Lyon*
Supervision of 2 groups of 5 students for a software development and machine learning project

Teaching experiences

Feb 2024 **Lecture on Reproductibilty (2h) for 4^{th} year students**, *INSA Lyon*

2022 – 2024 **C^{++} and Python practicals**, *INSA Lyon*
C^{++} and Python discovery with 3^{rd} and 4^{th} year students

2022 – 2023 **Mathematical and software tools practicals**, *IUT Gratte Ciel*, Lyon
Practicals with first year undergraduate students: Python, Maxima, Excel

2018 – 2020 **Weekly official undergraduate Biology examiner**, *Lycée Saint-Louis*, Paris
Testing groups of 3 students each week on their biology and earth sciences knowledge

2017 – 2019 **Private lessons for high school and higher school preparatory classes students**, Paris
Mathematics, Physics, Chemistry, Biology, German

Associative and administrative commitments

Oct 2024 **Volunteer at the international congress on Ecology & Evolution**, Lyon, France
Helping for the organization of the SFE2 conference and attending presentations.

2023 – 2025 **Elected member of the center committee**, Lyon
Representing PhD students and other non-permanent workers at the INRIA Lyon center committee.

2023 – 2025 **Femmes & Sciences**, Lyon
Various interventions with children and teenagers to promote scientific careers for women.

Sept 2021 – Janv 2022 **Tutoring and scientific popularization**, *Primary and secondary schools*, Paris
Accompaniment of students with difficulties in secondary school ("ECLOR" association) and discovery of the theory of evolution and scientific method in primary school ("La main à la pâte" association)

2019 – 2021 **Elected representative student**, IBENS, Paris
Representing students of the biologiacl department at the ENS for all interactions with the teaching staff and the administration.

Dec 2018 – Nov 2020 **Elected member of the Délégation Générale**, *ENS*, Paris
The *Délégation Générale* is a group of 4 students who are the main interface bewteen students and the school administration and manage the student accomodations, storage rooms and other shared spaces. Overall work is described in both year's activity reports (2019 and 2020). Notable contribution to a comprehensive report on the state of school housing and to a proposal to reform of the housing system.

July 2019 **Volunteer at the international Mathematical Models in Ecology and Evolution conference**, *INRIA*, Lyon, France
Helping for the organization of the MMEE conference and attending presentations.

June 2018 – Jan 2019 **Elected member of the student office (Responsible for Arts)**, *ENS*, Paris
The student office is a group of 13 students organizing most of the student cultural life at school.

Skills

Computer Linux, C^{++}, Python (pandas, pytorch, django), JavaScript, OCaml, R, SQL, HTML
Languages French (native), English (fluent), German (fluent), Esperanto (beginner)
Hobbies Volleyball, Fantasy books, Video games, Climbing, Wikipedia

Publications

[1] P. Banse*, **J. Luiselli***, D. P. Parsons, T. Grohens, M. Foley, L. Trujillo, J. Rouzaud-Cornabas, C. Knibbe, and G. Beslon. Forward-in-time simulation of chromosomal rearrangements: The invisible backbone that sustains long-term adaptation. *Molecular Ecology*, december 2023. * co-first authors.

[2] **J. Luiselli**, I. Overcast, A. Rominger, M. Ruffley, H. Morlon, and J. Rosindell. Detecting the ecological footprint of selection. *PloS one*, 19(6):e0302794, 2024.

[3] **J. Luiselli**, J. Rouzaud-Cornabas, N. Lartillot, and G. Beslon. Genome streamlining: effect of mutation rate and population size on genome size reduction. *Genome Biology and Evolution*, page evae250, 2024.