# Élise Kerdoncuff

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## Education and Professional Experience

**2025-current** **Postdoc**, Human Evolutionary Genetics team at Pasteur Institute, Paris, France. Tracing Ancestral Genomes from Genome-Wide Genealogies: Insights Into Human Genetic History in the Pacific.

**2022-2025** **Postdoc**, Moorjani Lab at University of California, Berkeley, USA. Study of South Asian population evolutionary history and development of local ancestry inference methods.

**2018-2021** **PhD**, *Detection of Recent Decline in Population by a Genomic Approach*, Stochastic Models for the Inference of Life Evolution group (CIRB, Collège de France) and Atelier de Bio-Informatique group (Muséum National d'Histoire Naturelle - MNHN). Supervised by Guillaume Achaz and Amaury Lambert, Sorbonne University.

**2015-2017** **Master**, Ecology, Biodiversity, Evolution, speciality: Evolutionary Ecology, Sorbonne University.

**2012-2015** **Bachelor**, Bi-disciplinary bachelor of biology and mathematics, Sorbonne University at the Roscoff Marine Station, France.

**Exchange**, 3$^{rd}$ year of bachelor (09/2014-06/2015) at the National University of Singapore, Singapore.

## Publications, Preprints

1. **Kerdoncuff, E.\***, Skov L.\*, Patterson N., Zhao W., Lueng Y.K., Schellenberg G.D., Smith J., Ganna A., Dey AB., Kardia S., Lee J., Moorjani P. 50,000 years of Evolutionary History of India: Insights from 2,700 Whole Genome Sequences. *bioRxiv* preprint (\*EK and LS contributed equally to this work)

2. **Kerdoncuff, E.**, Ianni-Ravn, M., Roze, D., Novembre, J., Lambert, A., Achaz, G. How demography shapes linkage disequilibrium with or without recombination. *bioRxiv* preprint

3. Freund, F.\*, **Kerdoncuff, E.\***, Matuszewski, S., Lapierre, M., Hildebrandt, M., Jensen, J. D., Ferretti, L., Lambert, A., Sackton, T. B., Achaz, G. Interpreting the pervasive observation of U-shaped Site Frequency Spectra. (2023) *PLOS Genetics* (\*FF and EK contributed equally to this work)

4. Foutel-Rodier, F., Blanquart, F., Courau, P., Czuppon, P., Duchamps, J., Gamblin, J., **Kerdoncuff, E.**, Kulathinal, R., Régnier, L., Vuduc, L., Lambert, A., Schertzer, E. From individual-based epidemic model to McKendrick-von Foerster PDEs: a guide to modeling and inferring COVID-19 dynamics. (2022) *Journal of Mathematical Biology*

5. **Kerdoncuff, E.**, Lambert, A., Achaz, G. Testing for population decline using maximal linkage disequilibrium blocks. (2020) *Theoretical Population Biology.*

6. Ribardière, A., Centanni, J., Dano, A., Coudret, J., Daguin-Thiébaut, C. Houbin, C., **Kerdoncuff, E.**, Jambut, S., Cordaux,R., Broquet, T. Female-biased sex ratios unrelated to *Wolbachia* infection in European species of the *Jaera albifrons* complex (marine isopods). (2018) *Journal of Experimental Marine Biology and Ecology*.

## Presentations

### Invited

- *Human Evolutionary Genetics group weekly seminar*, May 2024, Pasteur Institute, Paris, France.
- *Workshop on Li-Stephens based methods and applications*, December 2022, Harvard, USA.
- *Center for Theoretical and Evolutionary Genetics weekly seminar*, April 2022, UC Berkeley, USA.
- *Workshop : Evolutionary Genomics and Life History Traits*, October 2019, Montpellier, France.
- *Séminaire du CESCO*, June 2019, MNHN, Paris, France.

### Contributed talks

- *Probabilistic Modeling in Genomics*, March 2025, Cold Spring Harbor, USA.
- *Bay Area Population Genomics*, November 2024, Berkeley, USA.
- *New Frontiers in Reconstructing Human Evolution History*, June 2023, Hannover, Germany.
- *Bay Area Population Genomics*, October 2022, Berkeley, USA.
- *Popgroup53*, January 2020, Leicester, Royaume-Uni.
- *GDR Approches Interdisciplinaires en Evolution Moléculaire (AIEM)*, November 2019, Toulouse, France.
- *Annual Meeting Society for Molecular Biology and Evolution (SMBE), Symposium: The Coalescent in the Era of Population-Scale Genomics*, July 2019, Manchester, Royaume-Uni.
- *Mathematical and Computational Evolutionary Biology (MCEB)*, May 2019, Porquerolles, France.
- *Séminaire de l'ISYEB*, May 2019, MNHN, Paris, France.
- *CIRB seminar*, February 2019, Collège de France, Paris, France.
- *Popgroup52*, January 2019, Oxford, Royaume-Uni.

### Poster

- *Annual Meeting Society for Molecular Biology and Evolution (SMBE)*, July 2024, Puerto Vallarta, Mexico.
- *Population, Evolutionary, and Quantitative Genetics Conference*, June 2022, Asilomar, USA.
- *Probabilistic Modeling in Genomics*, October 2019, Aussois, France.
- *GDR AIEM*, November 2018, Lille, France.
- *MCEB*, June 2018, Saint-Martin-de-Londres, France.
- *GDR AIEM*, November 2017, Lyon, France.

## Media

2024    Interviews on the Indian Evolutionary History:
- General audience newspapers: *Times of India*
- Scientific newspapers: *New scientist*, *Live Science*
- Radio/Podcast : *Sher-E-Punjab AM 600 Vancouver*

2021    Podcast episode of *Chercheuses* on my PhD journey: In French

## Teaching Experience

2022    *University of California, Berkeley*, Quantitative Biology Bootcamp, Teaching Assistant (15h).

2022    *University of California, Berkeley*, Computational Biology Skill Seminar, lecture (1h, Video).

2018-2019    *Sorbonne Université, Paris*, Python, Teaching Assistant (40h).

2017-2018    *IUT de Vélizy*, C Language, class and tutorials (45h).

## Mentoring/Supervision

2023-current    **Meaghan Marohn**, PhD Candidate UC Berkeley.
Revisiting the evolution of lactase persistence : insights from South Asian genomes.

2024    **Mara Baylis**, Rotation student UC Berkeley, 3 months.
Description, origin and functional impact of the haplotype carrying the BTNL2 gene inherited from Denisovan and present in human populations.

| 2021 | **Pierre Imbert**, M2 Bio-Informatique Paris Diderot, 6 months. |
| | Benchmark of inference methods: a focus on population decline. |
| 2019 | **Ludovic Fourteau**, M1 Bio-Informatique Paris Diderot, 3 months. |
| | Effect of a single recombination event on the diversity in a population. |
| 2019 | **Rebecca Clodion**, M1 Bio-Informatique Paris Diderot, 3 months. |
| | The mysterious U spectrum: a population analysis of the genetic diversity. |

## Grants/Scholarship

| 2024 | Symposium SMBE 2024 (Organisation grant 4,250$). |
| 2023 | Keystone Symposia Future of Science Fund scholarship (Travel grant 1,200$). |
| 2020-2021 | ATER Collège de France grant for a fourth year of PhD (Salary >20,000€). |
| 2017-2020 | Interfaces pour le vivant (IPV) doctoral school grant for a three year PhD (Salary >50,000€). |

## Service

**Reviewer:**
- *BMC Biology* (2025)
- *American Journal of Human Genetics* (2024)
- *Molecular Biology and Evolution* (2024)
- *Human Population Genetics and Genomics* (2024-2025)
- *European Journal of Human Genetics* (2022-2023)

**Symposium organiser:** *Haplotype-based methods and frameworks for inference of evolutionary history.* SMBE 2024, Puerto Vallarta, Mexico.

**Student/postdoc representative of the ISYEB (elected member):** Institute meetings participation. Organisation of monthly seminars and yearly Young Research day; from 2018 to 2021.

**Jury:** Best poster and best presentation of the symposium 'Evolutionary Ecology' of the 6th Young Natural History Scientists' Meeting, 12-16 mars 2019, MNHN, Paris, France.

**Volunteer at conferences:** Evolution 2018, Montpellier, France.

**Student representative of the SDUEE Master (elected member):** Council meetings participation; from 2016 to 2018.

## Computer skills

| Languages | C, Python |
| | Familiar with the usage of a computer cluster |
| Github | |

- Scripts of paper *50,000 years of Evolutionary History of India (github.com/MoorjaniLab/LASI-DAD)*
- Scripts and data of paper *Interpreting the pervasive observation of U-shaped Site Frequency Spectra (github.com/fabfreund/usfs_mmc)*
- Code of the four gamete test chopping algorithm into Maximum Lindage Disequilibrium blocs *(github.com/Ekerdoncuff/algo_4GT_genome)*

## References/Collaborators

- Priya Moorjani, Postdoc advisor, Assitant Professor at *UC Berkeley*: moorjani@berkeley.edu
- Guillaume Achaz, PhD advisor, Professor at *Université Paris-Cité*: guillaume.achaz@mnhn.fr
- Amaury Lambert, PhD advisor, Professor at *École Normale Supérieure*: amaury.lambert@ens.fr