Egor Lappo

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Please note: in 2022 I have changed my name. Prior to that, I was known as **Egor Alimpiev**.

Education

2022-2026 **PhD in Biology**
Stanford University, Stanford, CA

2018-2022 **Bachelor of Science with Honors in Mathematics**
Stanford University, Stanford, CA
GPA: **3.98/4.0**. Advisor: Ciprian Manolescu. Honors thesis titled *Concordance of spatial graphs*.

Publications

[1] M. Karageorgi et al. "Beneficial reversal of dominance maintains a large-effect resistance polymorphism under fluctuating insecticide selection." In: *Nature Ecology & Evolution* (2025). DOI: 10.1038/s41559-025-02853-x.

[2] E. Lappo and N. A. Rosenberg. "Coalescent theory of the ψ directionality index." In: *G3: Genes, Genomes, Genetics* (2025), jkaf202. DOI: 10.1093/g3journal/jkaf202.

[3] M. C. Bitter et al. "Continuously fluctuating selection reveals fine granularity of adaptation." In: *Nature* (2024). DOI: 10.1038/s41586-024-07834-x.

[4] M. Bitter et al. *Pervasive fitness trade-offs revealed by rapid adaptation to shifting population densities in large experimental populations of Drosophila melanogaster*. 2024. DOI: 10.1101/2024.10.28.620721.

[5] E. Lappo and N. Rosenberg. "A lattice structure for ancestral configurations arising from the relationship between gene trees and species trees." In: *Discrete Applied Mathematics* 343 (2024), pp. 65–81. DOI: 10.1016/j.dam.2023.09.033.

[6] E. Lappo and N. Rosenberg. "Solving the Arizona search problem by imputation." In: *iScience* 108831 (2024). DOI: 10.1016/j.isci.2024.108831.

[7] E. Lappo. "Concordance of spatial graphs." In: *Canadian Mathematical Bulletin* 66 (4 2023), pp. 1091–1108. DOI: 10.4153/S000843952300019X.

[8] E. Lappo, K. Denton, and M. Feldman. "Conformity and anti-conformity in a finite population." In: *Journal of Theoretical Biology* 563 (2023), p. 111429. DOI: 10.1016/j.jtbi.2023.111429.

[9] E. Lappo, N. Rosenberg, and M. Feldman. "Cultural transmission of move choice in chess." In: *Proceedings of the Royal Society B* 290 (2023), p. 20231634. DOI: 10.1098/rspb.2023.1634.

[10] E. Alimpiev and N. Rosenberg. "A compendium of covariances and correlation coefficients of coalescent tree properties." In: *Theoretical Population Biology* 143 (2022), pp. 1–13. DOI: https://doi.org/10.1016/j.tpb.2021.09.008.

[11] E. Lappo and N. Rosenberg. "Approximations to the expectations and variances of ratios of tree properties under the coalescent." In: *G3: Genes, Genomes, Genetics* (2022). DOI: 10.1093/g3journal/jkac205.

[12] E. Alimpiev and N. Rosenberg. "Enumeration of coalescent histories for caterpillar species trees and p-pseudocaterpillar gene trees." In: *Advances in Applied Mathematics* 131 (2021), p. 102265. DOI: https://doi.org/10.1016/j.aam.2021.102265.

Conference presentations

Oral presentations

2024 Cultural Evolution Society
Cultural transmission of move choice in chess.

2024 Modeling and Theory in Population Biology workshop at BIRS
Cultural evolution modeling of move choice in chess. Recording available at BIRS website.

2024 Joint Mathematics Meetings
Enumeration of rankings for a certain class of rankable TCNs.

Poster presentations

2024 The Allied Genetics Conference
Solving the Arizona search problem by imputation.

2025 Society for Molecular Biology and Evolution
Coalescent theory of the ψ directionality index.

Honors, Awards, and Fellowships

2023 Honorable Mention for the Morgan Prize
Frank and Brennie Morgan Prize for Outstanding Research in Mathematics by an Undergraduate Student is an annual award given to an undergraduate student in the US, Canada,

or Mexico who demonstrates superior mathematics research. The prize has been described as the highest honor given to an undergraduate in mathematics.

2022 Stanford Graduate Fellowship
Provides a stipend to outstanding students pursuing doctoral degrees in science and engineering at Stanford.

2022 Undergraduate Research Award
Awarded by the Department of Mathematics to one graduating senior for superior work in a senior thesis.

2021 Excellence in Teaching Award
Awarded by the Department of Biology to superb teaching assistants.

2020 Humanities Research Intensive Fellowship
Support for individual research projects and access to grants.

2017 Gold Medal at the International Biology Olympiad
Ranked 11th in the world and top of my national team.

Teaching

2024, 2025 **GENE 220**: Introduction to Genetics, Ethics, and Society
Stanford University
Student-run course.

2024 **BIO 244**: Fundamentals of Molecular Evolution
Stanford University
Taught by Prof. Dmitri Petrov. Wrote exams and problem sets, gave lectures, held weekly sections, office hours.

2023 **BIO 82**: Genetics
Stanford University
Held weekly sections, office hours.

2021 **BIO 187**: Mathematical Population Biology
Stanford University
Taught by Prof. Noah Rosenberg. Gave lectures, assisted students with final projects.

2020-2022 Course Grader in the Mathematics Department
Stanford University
Graded classes in general, algebraic, and differential topology, algebra.

Service

Peer review
Peer reviewer for *PNAS*, *Theoretical Population Biology*, *American Journal of Play*.

2022 Stanford Biology PhD Preview Program Mentor
Worked with prospective applicants from historically excluded groups on their application materials (CV, statement of purpose), held interview prep sessions.

Technical skills

- C, Nix, Rust, Python, Haskell
- Statistical programming in R and Bayesian computation with Stan
- SageMath and Mathematica

Languages

- *Russian* (Native)
- *English* (Native)
- *Chinese* (Beginner)