

PIRET AVILA

Academy Research Fellow | University of Helsinki | Helsinki, Finland



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Faculty of Biological and Environmental Science,
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EMPLOYMENT HISTORY

- 09.2024 – ...** **Academy Research Fellow**
Organismal and Evolutionary Biology Research Programme,
Faculty of Biological and Environmental Sciences,
PO Box 65 (Viikinkaari 1), 00014
University of Helsinki, Finland
- 04.2022 – 08.2024** **Research fellow**
Institute for Advanced Study in Toulouse (IAST),
Department of Social and Behavioural Sciences (SBS),
Toulouse School of Economics,
University of Toulouse 1 Capitole, Toulouse, France
- 02.2017 – 03.2022** **Postdoctoral researcher**
Department of Ecology and Evolution, University of Lausanne, Lausanne,
Switzerland
Advisor: Laurent Lehmann

EDUCATION

- 01.2013 - 01.2017** **Ph.D. (with distinction) in Ecology and Evolutionary Biology**
viva: 13.01.2017
University of Jyväskylä, Jyväskylä, Finland
Title: “New Insights on the Role of Ecology and Life-history in Social Evolution”
Advisor: Lutz Fromhage
- 09.2009 - 07.2011** **M.Sc. (cum laude) in Physics**
Tallinn University, Tallinn, Estonia
Title: “Analysis of the Stochastic Super-Exponential Growth Model”
Advisor: Astrid Rekker

01.2011 - 05.2011	Erasmus exchange studies at master level, Utrecht University, Utrecht, Netherlands
01.2007- 07.2009	B.Sc. in Physics (Minor in Mathematics) Tallinn University, Tallinn, Estonia

REFEREED PUBLICATIONS

Entries marked with an asterisk (*) represent my most significant contributions.

***Avila, P.,** Lehmann, L. (2023) Life history and deleterious mutation rate coevolution. *Journal of Theoretical Biology*, 573, 111598. ([PDF](#))

***Avila, P.,** Mullan C. (2023) Evolutionary game theory and the adaptive dynamics approach: adaptation where individuals interact. *Proceedings of the Royal Society B*, 378, 20210502. ([PDF](#))

***Avila, P.,** Priklopil, T., Lehmann, L. (2021) Hamilton's rule, gradual evolution, and the optimal (feedback) control of reaction norms and other function-valued traits. *Journal of Theoretical Biology* 526, 110602. ([PDF](#))

Avila, P., Fromhage, L., Lehmann, L. (2019) Sex allocation conflict and sexual selection affect colony life history in annual eusocial insects. *Evolution*, 73, 6. ([PDF](#))

Avila, P., Fromhage, L. (2015) No synergy needed: ecological constraints favor the evolution of eusociality. *The American Naturalist* 186, 1. ([PDF](#))

Avila, P., Rekker, A. (2011) An analysis of the stochastic super-exponential growth model. *American Institute of Physics Conference Proceedings* 1404, 273. ([PDF](#))

Avila, P., Rekker, A. (2010) A stochastic super-exponential growth model for population dynamics. *American Institute of Physics Conference Proceedings* 1301, 196. ([PDF](#))

PUBLICATIONS FOR THE GENERAL PUBLIC

Avila, P. (2024) How did families support our evolution? *IAST magazine*, 21, 14-16. ([PDF](#))

Avila, P., Bader L., Pretelli, I. (2024) Why do mothers need help from children? *IAST magazine*, 21, 16-18. ([PDF](#))

TEACHING EXPERIENCE

- 09.2022 – 12.2022** “Population dynamics and life-history evolution”
Lecturer, Université Toulouse Capitole 1 (economics students) and Université Toulouse III – Paul Sabatier (biology students).
Designed the course syllabus and lecture, exercise and examination materials.
Gave all the lecture and exercise sessions. Amount of teaching: 18 CM and 4 TD hours. Taught the course for one semester.
- 02.2021 - 05.2021** ”Botany”
Teaching assistant, University of Lausanne.
Graded and gave feedback to students for their assignments.
Amount of teaching: 10 CM hours. Taught the course for one semester.
- 02.2020 - 04.2022** ”Modelling of Population Dynamics”
Teaching assistant, University of Lausanne.
Supervised weekly exercises. Graded and gave feedback to students for their assignments.
Amount of teaching: 16 TD hours. Taught the course for two semesters.
- 09.2019 - 01.2022** ”Introduction to Scientific Writing”
Teaching assistant, University of Lausanne.
Gave detailed feedback to students for their writing assignments and graded their reports.
Amount of teaching: 20 TD hours. Taught the course for three semesters.
- 09.2017 – 01.2022** ”Ecology and evolution”
Teaching assistant, University of Lausanne.
I assisted with the design of the course and the exercises. Supervised weekly exercise sessions.
Amount of teaching: 18 TD hours. Taught the course for five semesters.
- 02.2017 - 05.2017** ”Behavior, Economics, and Evolution Lecture Series”
Teaching assistant, University of Lausanne.
Gave detailed feedback for students for their writing assignments and graded their reports.
Amount of teaching: 20 TD hours. Taught the course for one semester.
- 09.2014 - 12.2016** ”Introduction to evolutionary ecology modelling”
Teaching assistant, University of Jyväskylä.
Developed exercise contents. Gave a few lectures. Supervised weekly exercise sessions.
Amount of teaching: 4 CM hours, 16 TD hours. Taught the course for three semesters.
- 09.2014 - 12.2016** ”Population ecology modelling”
Teaching assistant, University of Jyväskylä.
Supervised weekly exercise sessions.
Amount of teaching: 16 TD hours. Taught the course for three semesters.

* CM (*Cours Magistraux*) - lecture hours; TD (*Travaux Dirigés*) - tutorial/practical session hours

SUPERVISION OF STUDENTS AND MENTORING EXPERIENCE

PhD Students:

- *Arttu Soukainen, PhD student* – “Expanding Life History Theory of Ageing,” expected completion August 2028.

Master’s Students:

- *Viktor Filipec, Master’s student (student from the Department of Mathematics and Statistics)* – “Disruptive Selection in Aged-Structured Populations,” expected completion July 2025.

REVIEWING SERVICE

Reviewer for *Biology Letters*, *Ecological modelling*, *Evolution*, *Genetics*, *Journal of Ecology*, *Journal of Evolutionary Biology*, *Journal of Theoretical Biology*, *The American Naturalist*, *PLOS Computational Biology*, and *Proceedings of the Royal Society B*, *Theoretical Population Biology*.

INSTITUTIONAL RESPONSIBILITIES

02.2025 – ...	Mentor for nine postdoctoral researchers at the Faculty of Biological and Environmental Science at University of Helsinki
01.2025 – ...	Organizer of the seminar series of the Organismal and Evolutionary Biology Research Programme at University of Helsinki
07.2023 – 08.2024	Leader of the research team “Family, Demography, and Health” (FDH) at IAST. FDM team is a multidisciplinary group of researchers from biology, anthropology, economics, psychology, and mathematics focusing on understanding human life-history from an evolutionary perspective (around 10-15 members). FDH team collaborates on several multidisciplinary research projects, we organize scientific meetings twice a month, we are planning to organize a conference at IAST on human life history evolution.
07.2022 – 11.2023	Representative of the research fellows at IAST
09.2019 – 09.2021	Founder and organising member of TheBioNet (thebionet.ch): community of researchers working on diverse topics in mathematical and theoretical biology in Western Switzerland. I organized in person and online seminars (usually attended by ~100 people) every two weeks.

ACTIVE MEMBERSHIPS IN SCIENTIFIC SOCIETIES

Active member of the European Society for Evolutionary Biology (ESEB) and Nordic Society Oikos (Finland).

INVITED TALKS

“Indispensable germline and disposable soma”. Math-Bio-Health seminar. Toulouse Institute of Mathematics. Toulouse University III: Paul Sabatier. Toulouse, France. December 2023.

“Indispensable germline and disposable soma” University of Helsinki, Invited departmental seminar. November 2023.

“Evolution of Menopause” University of Turku, Invited departmental seminar. November 2023.

“Joint evolution of life history and deleterious mutation rate”. Scottish Ecological Ageing Research Group (SEARG) conference. Glasgow, Scotland. June 2023.

“Phenotypic plasticity in life history evolution”. University of Montpellier, Mathematics and data sciences for life sciences seminar series. Montpellier, France. May 2022.

“Joint evolution of life history and deleterious mutation rate”. [LEG seminar series](#). Online only. June 2022.

“Joint evolution of life history and deleterious mutation rate”. ICTP-SAIFR Complex Systems and Statistical Mechanics webinar series. (Zoom) São Paulo, Brazil. May 2022.

“Joint evolution of life history and deleterious mutation rate” University of Tartu, Invited departmental seminar. April 2022.

“On life-history and mutation rate co-evolution”. University of Fribourg, Invited departmental seminar. Fribourg, Switzerland. February 2022.

“Hamilton’s rule meets the Hamiltonian and state-feedback effects: gradual evolution of phenotypically plastic traits” Theoretical Biology Network in Western Switzerland (TheBioNet) seminar series. Online only. March 2021.

ORGANISATION OF CONFERENCES

06.2025 "12th annual workshop on Economics and Biology” themed “Sex Differences in Human Life History Evolution" at Toulouse School of Economics in Toulouse, France. The main organizer of the conference.

- 07.2024** Mathematical Methods in Ecology and Evolution 2024 (MMEE2024) in Vienna, Austria. Main organizer of the mini-symposium on "Expanding Theoretical Perspectives on Senescence".
- 10.2022** 3rd annual meeting of the French Society of Evolutionary Human Sciences (FREEHS) in Toulouse, France. Co-organizer of the conference together with Zach Garfield.
- 09.2019** European Society for Evolutionary Biology congress (ESEB) 2019 in Turku, Finland. Main organiser of the symposium on "Life-history evolution: bridging theory and data".

GRANTS AND AWARDS

- 2024** **Academy Research Fellowship 2024** (Total project cost 1 182 711 EUR; 827 898 EUR (70% of total project cost) from the Research Council of Finland and 354 813 EUR (30% of total project cost) from the University of Helsinki) for the project "Advancing the understanding of evolutionary theories of ageing: coevolution of life history and mutation rate."
- 2023** **IAST Multidisciplinary grant** (28 590 EUR) for the project "Cooperative Breeding and Children as Helpers: An Interdisciplinary, Cross-Cultural Approach", shared together with Lauren Bader and Marie Bourjade (developmental psychologists), Hanuel Jang and Ilaria Pretelli (evolutionary anthropologists), and Sarah Myer (demographer).
- 2011** Albert Pullerits Young Statistician's Grant, Estonia. Prize to recognise young people who help to promote statistics as an important branch of science.

CAREER BREAKS

- 09.2011-12.2012** Maternity leave
- 2020 (two months)** Furlough due to escalated childcare needs amidst the COVID-19 pandemic. Notably, my contract at University of Lausanne in Switzerland was correspondingly extended to accommodate this period.