

LUÍS M. SILVA

Disease Ecology and Evolution

Postdoctoral Fellow, University of British Columbia

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RESEARCH PROFILE

I study how hosts shape transmission environments and how this determines infection outcomes and the evolution of pathogen traits. My work focuses on transmission as a multi-step process linking within-host dynamics to epidemiology.

RESEARCH EXPERIENCE

Postdoctoral Fellow (CERC) 2024–present
University of British Columbia, Canada
Advisor: Kayla C. King

Postdoctoral Fellow (SNF) 2021–2024
Université de Neuchâtel, Switzerland
Advisor: Jacob C. Koella

TEACHING EXPERIENCE

Lecturer, Methods in Evolution 2021–2024
MSc course at Université de Neuchâtel (CH): Design and delivery of lectures on evolutionary methods and data analysis.

Teach. Assistant, Evolutionary Ecology & Statistics for Biologists 2021–2023
BSc courses at Université de Neuchâtel (CH): Evolutionary ecology theory and introductory statistics for biologists.

EDUCATION

Dr. rer. nat. in Biology 2018–2021
Freie Universität Berlin, Germany
Thesis: *Pathogen infection dynamics and the evolution of host resistance and tolerance*
Supervisor: Sophie A. O. Armitage

MSc in Evolutionary and Developmental Biology 2015–2017
University of Lisbon, Portugal / University of Münster, Germany
Thesis: *The role of Down syndrome cell adhesion molecule 1 in bacterial microbiota of Tribolium castaneum*
Supervisor: Joachim Kurtz

BSc in Biology 2013–2015
University of Lisbon, Portugal
Thesis: *The influence of acoustic sounds in the reproductive behaviour of the sand goby*
Supervisor: Paulo Fonseca

AWARDS & FUNDING

2023 6,730 CHF granted to **Silva LM** by the Basler Stiftung für Biologische Forschung.

2010 First Prize, National High School Science Competition (in collaboration with the University of Aveiro, Portugal)

PUBLICATIONS

Peer-reviewed 16

Silva LM, Vinopal D, Choi VC, Travers-Cook, TJ & King KC. (2026) Transmission heterogeneity emerges from uncoupled parasite shedding and spreading. *Current Biology*.

Travers-Cook TJ, **Silva LM**, Li J, Higgins C, Cornet C, Zeferino TG, Nath A,

RESEARCH THEMES

- Transmission as a multi-step process
- Disease tolerance mechanisms
- Virulence evolution
- Host-generated environments
- Stage-specific selection

MODEL SYSTEMS

Hosts

- *Aedes*
- *Anopheles*
- *Caenorhabditis*
- *Drosophila*
- *Tribolium*

Parasites

- Apicomplexa
- Bacteria
- Fungi
- Microsporidia

APPROACHES

- Experimental evolution
- Host–parasite assays
- Quantitative genetics
- Behavioural quantification
- Functional OMICs
- Mathematical modelling

ACADEMIC SERVICE

Editorial Roles

- Academic Editor, PLOS Pathogens
- Editorial Board, Innate Immunity
- Editorial Board, International Journal of Immunopathology and Pharmacology

Grant Reviewer

Invited grant reviewer for the French National Research Agency (ANR)

Peer Reviewer

25 peer-reviews across 16 journals, including Proceedings of the National Academy of Sciences, Proceedings of the Royal Society B, PLOS Pathogens, ISME Communications, and Evolution

Thesis Jury

External examiner

- 2025 Wang C. Honours thesis, supervised by Schluter D.

Gonzalez-Gonzalez E, Beck J & Owens A (2026). Promoting academic agency to empower early-career researchers. *Trends Open*.

Silva LM (2026). Host transcriptional signatures associated with disease tolerance and environmental persistence in a mosquito–microsporidian system. *Communications Biology*.

Silva LM*, Belli A* & Koella JC (2026). Testing the redox theory of aging under parasitism. *npj Aging*.

Li J, Will I, **Silva LM**, Travers-Cook T, Blackwood PE & King KC (2026). Integrating the microbiome into infection ecology and evolution in wild animals. *Molecular Ecology*.

Zeferino TG*, **Silva LM*** & Koella JC (2025). Energetic shifts reflect survival likelihood in *Anopheles gambiae*. *Communications Biology*.

Silva LM & King KC (2025). Ecology and evolution of virulence. *Current Biology*.

Silva LM (2025). Scientific mobility in microbiology - 7. *Trends in Microbiology*.

Silva LM & Koella JC (2025). Virulence evolution: thinking outside of the host. *Evolutionary Applications* (Editor’s Highlight).

Silva LM, Vallat A & Koella JC (2025). Mechanisms of host exploitation by a microsporidian parasite. *Proceedings of the Royal Society B*.

Silva LM & Koella JC (2025). Complex interactions in the life cycle of a simple parasite shape the evolution of virulence. *PLOS Pathogens*.

Zeferino, TG* & **Silva LM*** (2025). Dextrazoxane as a viable microsporidia control agent in *Anopheles gambiae*. *Acta Tropica*.

Silva LM et al. (2025). Vavraia culicis. *Trends in Parasitology*.

Silva LM, King KC & Koella JC (2025). Dissecting transmission to understand parasite evolution. *PLOS Pathogens*.

Silva LM, Acerbi G, Amann, M & Koella JC (2024). Exposure to *Pseudomonas spp* increases *Anopheles gambiae*. *Scientific Reports*.

Hidalgo BA*, **Silva LM***, Franz M*, Regoes RR & Armitage SAO (2022). Decomposing virulence to understand bacterial clearance in persistent infections. *Nature Communications* (Editor’s Highlight).

Under review or invited

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Silva LM, Blazanin M, Li J, Travers-Cook TJ, Higgins C, Will I, Johnson S, Vinopal D, Whittle M & King KC. Virulence: the evolution of harm across the infection cycle. *Invited by Nature Reviews Biodiversity*.

Silva LM & Zeferino, TG. Composite virulence: useful metric or conceptual trap? *Invited by Trends in Parasitology. pre-print*.

* joint first co-authorship

CONFERENCES & TALKS

Invited talks

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2026 University of Veterinary Medicine, Vienna, Austria. (*upcoming*)

2026 University of Edinburgh, Edinburgh, UK.

2026 University of Lausanne, Lausanne, Switzerland.

2026 Porto Cultural Week, Porto, Portugal.

2025 University of Münster, Münster, Germany.

Organized symposia

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2026 Li J, **Silva LM** & Travers-Cook TJ. Microbial symbiosis: disturbance, adaptation, and the parasitism-mutualism continuum. Annual Conference of the Canadian Society for Ecology and Evolution, Toronto, Canada

Professional Societies

Committee Member

- Society for Open, Reliable, and Transparent Ecology and Evolutionary biology (SORTEE)

Active Member

- Worm Mentor-Match
- DisabledInSTEM

Member:

- European Society for Evolutionary Biology (ESEB)
- Society for the Study of Evolution (SSE)
- International Society for Evolution, Medicine and Public Health (ISEMPH)
- Canadian Society for Ecology and Evolution (CSEE)
- Portuguese Association for Evolutionary Biology (APBE)
- Thermal Ecology Alliance (TEA)

Outreach & EDI

Founding Member

- Sci do Armário, Portuguese association for EDI

Contributing Member

- Education and Outreach Committee, SORTEE

Other Activities

- Co-developed EDI library initiative, NSERC & UBC
- Speaker at Porto Cultural Week 2026

LANGUAGES

Portuguese	Native
English	Fluent
Spanish	Intermediate
German	Basic
French	Basic

2026 Evolution x Ecology Conference, Cornwall, UK.

2026 Annual Conference of the Canadian Society for Ecology and Evolution, Toronto, Canada.

2025 University of British Columbia Microbiology & Immunology Symposium, Vancouver, Canada

2025 University of British Columbia Postdoc Research Day, Vancouver, Canada.

2024 Evolution Conference, Montreal, Canada.

2022 Ecological Immunology Workshop, Blossin, Germany.

2022 Biology 22 Conference, Basel, Switzerland.

2019 3rd Eco-Evo PhD Meeting, Bayreuth, Germany.

2018 AG Kurtz, AG Fricke & AG Armitage Workshop, Klingemühle, Germany

2026 International Society for Evolutionary Medicine and Public Health, Kiel, Germany.

2025 European Society for Evolutionary Biology Conference, Barcelona, Spain.

2021 Ecology and Evolution of Infectious Diseases Conference, Montpellier, France.

2019 Experimental Evolution Workshop, Münster, Germany.

2018 2nd Eco-Evo PhD Meeting, Prague, Czech Republic.

2022 European Society for Evolutionary Biology Conference, Prague, Czech Republic.

2020 Ecological Immunology Workshop, Berlin, Germany.

2020 Insects: Infections and Immunity Workshop, Berlin, Germany.

2013 Cryptic genetic variation Workshop, Münster, Germany.

2013 Stem cells of invertebrates Workshop, Münster, Germany.

2012 Forensic Medicine Course with Prof. Pinto da Costa, Porto, Portugal.

SUPERVISION & MENTORSHIP

2023. Acerbi G (Postgraduate). University of Neuchâtel, Switzerland. Now a PhD student with Justyna Wolinska and Luc De Meester (IGB Berlin, Germany).

2023. Ammann M (Postgraduate). University of Neuchâtel, Switzerland. Now a PhD student with Redouan Bshary (University of Neuchâtel, Switzerland).

2026. Guan ES. University of British Columbia, Canada.

2026. Wu B. University of British Columbia, Canada.

2025. Choi V. University of British Columbia, Canada.

2019. Hublitz K. Freie Universität Berlin, Germany.

2019. Zachau F. Freie Universität Berlin, Germany.

2019. Sommer S. Freie Universität Berlin, Germany. Now a PhD student with Giovanna Barba (Institut Pasteur, France).