

# Zimai Li

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## Education

01/2021 - Present                      **PhD student**  
   *Max Planck Institute for Chemical Ecology, Jena, Germany*  
   *ETH Zürich, Department of Environmental System Science (Lab move on 08.2021)*

09/2018 - 10/2020                      **Erasmus Mundus Master Programme in Evolutionary Biology (MEME)**  
   *Ludwig Maximilian University of Munich, Germany*  
   *University of Groningen, The Netherlands*  
   European Union Funded Master, Organised by 5 European and 1 United States leading Universities in Evolutionary Biology, received double degree

09/2013 - 06/2017                      **Bachelor of Biomedical Engineering**  
   *Southeast University, Nanjing China*

## Research Projects

10/2022 - Present                      **Behavioural immunity in clonal raider ants**  
   *Max Planck Institute for Chemical Ecology, Jena, Germany*  
   • Using **automated movement tracking (anTraX)** and **pose analysis (Deep Lab Cut)** to study the sanitary behaviour in pair-wise social interactions in clonal raider ants

01/2021 - Present                      **PhD thesis: Immune Division of Labour in Ants**  
   *Max Planck Institute for Chemical Ecology, Jena, Germany*  
   • Investigate the link between individual behavioural roles, social network position and immune activity in clonal raider ant colonies, using automated video tracking and transcriptomic data  
   • Estimate the effect of the distribution of immune activity as a collective defence strategy using mathematical models

03/2020 - 10/2020                      **Master thesis II: Female mate choice and inbreeding avoidance in a group-living carnivore, the spotted hyena (*Crocuta crocuta*)**  
   *Leibniz Institute for Zoo and Wildlife Research Berlin, Germany*  
   • Estimated mating pattern and mate choice from paternity data of the long term monitored Ngorongoro spotted hyena population  
   • **Linear modeling** on the correlation between mating pattern and inbreeding avoidance, mate availability, investment in sexual activities, and social dominance

09/2019 - 02/2020                      **Master thesis I: Egg and nestling variation in the thorn-tailed rayadito (*Aphrastura spinicauda*)**  
   *University of Groningen, The Netherlands & University of Chile, Chile*  
   • Monitored breeding activities of the thorn-tailed rayadito in Pucón, Chile (Full-time fieldwork in for 3 months)  
   • Revealed the egg size and nestling growth variation between two latitudinal distinctive populations

- 04/2019 - 07/2019      **Population structure and genetic diversity of the meadow grasshopper (*Chorthippus parallelus*)**  
*Ludwig Maximilian University of Munich, Germany*
- Estimated gene flow between populations using TreeMix and Fst analysis
  - Revealed the population structure of the two *C. parallelus* subspecies using PCA and Admixture analysis
- 11/2016 - 07/2017      **Bachelor thesis: Genomics and computational ecology methods revealing climate adaption in *Drosophila***  
*BGI-Shenzhen, China*
- Assembled and Annotated the genomes of 47 species from *Drosophilidae*
  - Constructed the phylogenetic relationships between the studied species
  - Discovered gene families expansion/contraction and candidate positive selected genes among different clades

## Development Experience

- 03/2020 - Present      **R package for the storage and management of Ngorongoro spotted hyena dataset**  
*Leibniz Institute for Zoo and Wildlife Research Berlin, Germany*
- Wrote R functions and pipeline scripts for data storage, extraction and analysis of the long-term Ngorongoro hyena project database
- 06/2017 - 08/2018      **Data filtering pipeline for the analysis of symbiont microbes from human and animal whole genome sequencing data**  
*BGI-Shenzhen, China*

## Key Skills

- Animal Behavior      Animal handling (wild birds), automated video tracking, data analysis
- Evolutionary Genetics      Population genomics, comparative genomics, metagenomics
- Programming Language      R, Matlab, Julia (most frequently used), and Perl & C++ (once fluent)

## Funding and Awards

- 2020      LMU Lehre stipend
- 2019      Marco Polo Grant for exchange study, PROSA LMU stipend, Groningen University Fund for Excellence, Erasmus + Grant for exchange study
- 2017      Chien-Shiung Wu BME Scholarship
- 2015      National Scholarship

## Presentations

- 2022      Animal Behaviour Society Conference (San Jose, Costa Rica)
- 2021      DZG 27th Graduate Meeting Evolutionary Biology (Bielefeld, Germany)
- 2021      Aging in social insects symposium (Ingelheim, Germany)

## Publication

Li, F., Rane, R.V., Luria, V., Xiong, Z., Chen, J., **Li, Z.**, Catullo, R.A., Griffin, P.C., Schiffer, M., Pearce, S. and Lee, S.F., 2021. Phylogenomic analyses of the genus *Drosophila* reveals genomic signals of climate adaptation. *Molecular ecology resources*.