Sonja Lecic | Curriculum Vitae

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Education

University of Veterinary Medicine / Vienna Graduate School of Population Genetics **Austria**
Ph.D. in Population Genetics *2018–present*

University of Belgrade **Serbia**
Master in Entomology *2010–2012*

University of Belgrade **Serbia**
Bachelor in Biology *2006–2010*

Projects

Main Project: *From whole genome pool sequencing to haplotype-based inference of selection signatures during thermal adaptation of Drosophila simulans evolved populations*

Supervisors: Prof. Christian Schlötterer, Ass. Prof. Ovidiu Paun, and Ass. Prof. Robert Kofler

Description: Project aims to measure the cost of *Ace* insecticide resistance alleles in insecticide-free environments. Using a combination of experimental evolution in the hot and cold laboratory environment, haplotype sequencing, Pool-Seq, RNA-seq this project aims to demonstrate that the cost of insecticide resistance differs in hot and cold conditions and proposes that neuronal signaling has environment-specific requirements modulated by *Ace* expression levels and frequency of resistance alleles.

Side-Project/Additional Interests: *Accuracy of computational haplotype phasing in evolved Drosophila simulans populations*

Description: While whole-genome sequencing of pools of individuals (Pool-Seq) effectively provides highly accurate genome-wide allele frequency estimates, it provides only limited information about linkage between SNPs. In reality, SNPs are arranged in sequences that form haplotypes where the order of SNPs in each of the homologous chromosomes contains valuable information on the relationship between variants. This project aims to use experimental and statistical phasing to explore and identify the factors that influence the accuracy of haplotype phasing in evolved *Drosophila simulans* populations in order to improve the accuracy of haplotype phase estimation.

Masters Thesis

Title: *Secretion of defensive pigydial glands in ground beetles (Coleoptera, Carabidae):overview and role*

Supervisors: Prof. Srecko Curcic

Description: This thesis investigated chemical composition of defensive secretions in ground beetle species

Publications

Lecic, S. *et al.* Defensive secretions in three ground-beetle species (insecta: Coleoptera: Carabidae). *Annales Zoologici Fennici* **51**, 285–300 (2014).

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Skills

Applied:

- Laboratory: *Drosophila* experimental evolution, cage maintenance, DNA and RNA extractions, primer design, RT-PCR, Sanger sequencing, fitness assays (fitness components: fecundity, developmental time and egg-to-adult viability), phenotyping, behavioral/locomotor activity experiments using DAM system, brain/gut/gonad dissections, FISH/GISH, chromosome preparation and staining.
- Genomics: Time-series data, Pool-seq, variant calling, haplotype phasing, structural variation detection, transcriptomics, bacterial genomics
- Programing
  - Advanced: R, Bash, Awk, Circos, LaTeX
  - Intermediate: Python

Theoretical:

- Statistics: Randomized experiment design, Linear and non-linear models, generalized linear models, parametric and non-parametric testing
- Population genetics: Forward time series simulations, neutral theory, fluctuating selection, recurrent mutations, insecticide resitance and fitness cost, cytoplasmic incompatibility dynamics, GWAS

Communication Skills

2019-May: Oral Presentation at the Scientific Advisory Board meeting (prof. Andy Clark, prof. Nick Barton, prof. John Parsh and prof. Virginie Courtier-Orgogozo) - Vienna, Austria

2019-Jan: Oral Presentation at PopGroup52 - Oxford, UK

2015-Sep: Science communicator at Science festival - Belgrade, Serbia

2015-Dec: Science communicator at European Researcher's Night Belgrade, Serbia

Teaching

Vienna Graduate School of Population Genetics **Austria**
Experimental evolution: bringing theory and practice together *2019*
Organization cometee and prepared exercises for students

University of Belgrade **Serbia**
Population Genetics *2016*
Assistance with population genetic problems and exercises.

Courses and workshops

2019-May: Molecular population genetics - Vienna, Austria

2018-Sep: Population Genetics - Vienna, Austria

2016-Sep: Programing in Evolutionary Biology (PEB) - Belgrade, Serbia

Experience

Academic

Medical University of Vienna **Austria**
Prof. Wolfgang Miller lab *2017*
Scholarship of the Medical University of Vienna

The aim of the project was to investigate *Wolbachia* infection status and over-replication of *Wolbachia* titer in parents vs. hybrids by setting-up inter-species crosses of *Drosophila yakuba* species group to generate inter-species hybrids.

University of Veterinary Medicine Vienna **Austria**
Prof. Christian Schlötterer lab *2017*
Scholarship of the Institute for Population Genetics

Aim of the project was to test the performance of different mapping and variant calling algorithms using *Drosophila melanogaster* simulated genomic time series data. In addition, I have also run two parallel evolve and re-sequence experimental *Drosophila simulans* cages at cycling hot temperature regime designed for QTL detection.

Institute for Biological Research Sinisa Stankovic **Serbia**
Prof. Academic Marko Andjelkovic lab *2014–2017*
Research trainee

Aim of the project was to investigate altitudinal pattern of chromosomal inversion variability in *Drosophila subobscura* populations.

University of Belgrade **Serbia**
Prof. Srecko Curcic lab *2013–2014*
Internship

Aim of the project was to investigate chemical composition of defensive secretions in ground beetle species.

Languages

English: Fluent *Daily usage*

Serbian: Mothertongue *Mother's language*

Russian: Intermediate *Learned at school*

French: Basic *Basic words and phrases*

German: Basic *Basic words and phrases*

Interests

- Amateur Astronomy
- Painting
- Traveling
- Music
- Reading
- Tennis