Lerchenfelderstrasse 59/5
1070 Vienna
Austria
+43-6-7668-981-53
slecic8@gmail.com
slecic.github.io
slecic

Sonja Lecic

Curriculum Vitae

Education

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

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

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

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 aimed 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 aimed 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 *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 aimed 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).

.

Work Experience

2017 **Prof. Wolfgang Miller lab**, *Scholarship of Medical University of Vienna*, Vienna, Austria.
My project aimed to investigate *Wolbachia* infection status and over-replication of *Wolbachia* titer in parents vs. hybrids of the *Drosophila yakuba* species group. I set-up inter-species crosses to generate inter-species hybrids.

2017 **Prof. Christian Schlötterer lab**, *Scholarship of the Institute for Population Genetics, University of Veterinary Medicine*, Vienna, Austria.
My project aimed to test the performance of different mapping and variant calling algorithms. To do this, I simulated time-series genomic data of evolved *Drosophila melanogaster* populations.

2014–2017 **Prof. Academic Marko Andjelkovic lab**, *Techinician at the Institute for Biological Research Sinisa Stankovic*, Belgrade, Serbia.
The aim of the project was to investigate altitudinal pattern of chromosomal inversion variability in *Drosophila subobscura* populations.

2013–2014 **Prof. Srecko Curcic lab**, *Internship at the University of Belgrade, Insitute of Zoology*, Serbia.
The aim of the project was to investigate chemical composition of defensive secretions in ground beetle species.

Computer Skills

	Linux, iOS, Windows, Office (Word, Excel, PowerPoint), LaTeX
Programing languages	R, Python, Bash, Awk
UNIX tools	grep, sed, vim, nano, sort, ssh, cut, diff, cat, mv, rm
Genomics tools	FastQC, IGV, Picard Tools, ReadTools, SAMtools, RepeatMasker, bwa, bowtie2, Novoalign, GSNAP, freebayes, GATK, vcftools, bcftools, bedtools, PoPoolation2, SHAPEIT2, IMPUTE2, TCS software, BreakDancer, SRA toolkit, 4Peaks
Libraries	poolSeq, CIRCOS, ggplot2, heatmap2, dplyr, tiydr, stringr, data.table, BioConductor, RMarkdown, cn.MOPS , BioAwk, HTSeq, DEXseq
Simulation tools	MimicrEE2, poolSeq, Slim, ART
Statistics	Linear & non-linear models, generalized linear models, parametric & non-parametric testing
NGS data	Illumina short-reads, Pool-Seq, RNA-seq, Nanopore

Laboratory Skills

Molecular Biology	DNA & RNA extraction, PCR, Real-time PCR, Electrophoresis, Primers and Probe design, Sanger sequencing
Evolutionary Experiments	*Drosophila* experimental evolution, cage maintenance, genotyping, fitness assays (fitness components: fecundity, developmental time and egg-to-adult viability), insecticide bioassays, behavioral/locomotor activity experiments using DAM system, *Drosophila* brain/gut/gonad dissections
Cytogenetic techniques	FISH, GISH, chromosome preparation, chromosome staining

Talks

2019-May Scientific Advisory Board meeting (Prof. Andy Clark, Prof. Nick Barton, Prof. John Parsh and Dr. Virginie Courtier-Orgogozo) - Vienna, Austria; Title: Neuronal signaling homeostasis modulates temperature-dependent cost of *Ace* insecticide resistance alleles

2019-April Intitute of Population Genetics, First Year Evaluation - Vienna, Austria; Title: Neuronal signaling homeostasis modulates temperature-dependent cost of *Ace* insecticide resistance alleles

2019-Jan PopGroup52 - Oxford, UK; **Sonja Lecic**, Rodolphe Poupardin, Viola Nolte, Agnes Jónás, Christian Schlötterer. Measuring the fitness cost of insecticide resistance with Evolve and Resequence: A case study with *Ace* resistance in *Drosophila simulans*. Link to the Abstract Book

2018-Sep Vienna Graduate School of Population Genetics, Retreat - Altaussee, Austria; Title: Accuracy of computational haplotype phasing in evolved *Drosophila simulans* populations

Training & Workshops

2019-May **Molecular population genetics: making sence of sequence data**, *Vienna Graduate School of Population Genetics*, Vienna, Austria.

2018-Sep **Population Genetics Introductory Course**, *Vienna Graduate School of Population Genetics*, Vienna, Austria.

2018-May **Generalised Linear Models with R**, *University of Veterinary Medicine*, Vienna, Austria.

2018-April **Statistical Analysis with R**, *University of Veterinary Medicine*, Vienna, Austria.

2016-Sep **Programing in Evolutionary Biology (PEB)**, *Institite for Biological Research*, Belgrade, Serbia.

Teaching & Outreach

2019 **Experimental evolution: bringing theory and practice together**, *Vienna Graduate School of Population Genetics*, Vienna, Austria.
Part of the organization cometee and assistance with exercises

2019 **Special Statistics**, *University of Veterinary Medicine*, Vienna, Austria.
Assistance with statistical problems and exercises

2015-2017 **Population Genetics**, *University of Belgrade*, Serbia.
Assistance with population genetic problems and exercises

2015-Dec **Belgrade Science Festival**, *Science communicator*, Serbia.
Explaining scientific concepts to the general public

2015-Sep **European Researcher's Night**, *Science communicator*, Belgrade, Serbia.
Explaining scientific concepts to the general public

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
- Cartoon Drawing
- Music
- Reading

References

Ass. Prof. Ovidiu Paun
Department of Botany and Biodiversity Research
University of Vienna
Rennweg 14, A-1030 Vienna, Austria
Contact: ovidiu.paun@univie.ac.at

Prof. Magnus Nordborg, *Scientific Director*
Gregor Mendel Institute of Molecular Plant Biology
Austrian Academy of Sciences
Dr. Bohr-Gasse 3, 1030 Vienna, Austria
Contact: magnus.nordborg@gmi.oeaw.ac.at