



Newsletter December 2022

Welcome to the 27th edition of the PopGen ALUMNI newsletter!

Follow us on Social Media

<https://twitter.com/PopGenViennaPhD>

<https://www.youtube.com/channel/UCAdGx2zyQNYvti9Cr1muhUg>

Join our Tuesday webinars:

<https://www.popgen-vienna.at/news/seminars/>

Sign up for our final event (email to Julia):

Deadline: 31.01.2023

May 15-17 2023 at Parkhotel Hirschwang (Reichenau a.d. Rax)

Do you know of suitable candidates for PopGen Vienna?

Our call for PhD students 2023 is open – please help us spread the word!

Application deadline: 15.02.2023

Flyer for download on the website:

https://www.popgen-vienna.at/media/popgenviennaflyertopics_7.pdf

<https://www.popgen-vienna.at/application/procedure/>

Recent events and news

December 2022: Outreach

Barbara Wallner is featured in a series of Ö1 radio broadcasts from 12-16 December (*Vom Leben der Natur*, daily at 08:55): "Wie das Pferd zum Menschen kam". <https://oe1.orf.at/vomlebendernatur>

December 2022: Experimental Evolution course

Students of the Vienna Graduate School of Population Genetics organised the practical course "*Experimental evolution: Bringing theory and practice together*" from December 5 to 9, 2022 at the Vetmeduni Vienna. Our students coordinated the entire course, invited speakers, screened applications

from around the world and planned, taught and tutored all practical sessions for the participants to train on real data. <https://www.popgen-vienna.at/training/experimental-evolution-course/>

December 2022: Christmas event

We had a cosy, fun time painting mugs and plates for colleagues, and enjoyed pizza for our Xmas party. We celebrate a successful year, slowly emerging from the pandemic restrictions and ending with important positive grant decisions for PopGen members.



December 2022: SFB Grant and FWF DK phasing-out

Congratulations to our associated faculty member **Neda Barghi** and colleagues! The Austrian Science Fund FWF approved the Special Research Programme (SFB) "*Polygenic adaptation: from single selected loci to the infinitesimal model*", lead by Neda Barghi. During a 4-year period, funds of 3,9 million Euro will enable the SFB members to conduct excellent research in the field of population genetics. The SFB is a joint collaboration of **Neda Barghi** (speaker), **Robert Kofler** and **Christian Schlötterer** (Vetmeduni), vice speaker **Joachim Hermisson** and **Himani Sachdeva** (Univ. of Vienna), **Magnus Nordborg** and **Kelly Swarts** (GMI), and **Nick Barton** (ISTA).

Even more fantastic grant news: The FWF approved a 1.5-year phasing-out time of the DK Population Genetics led by **Christian Schlötterer**.

November 2022: PhD defense

Congratulations to **Rahul Pisupati** (Nordborg group) on his successful PhD thesis defense "*Genetics of epigenetics in *Arabidopsis thaliana**".



November 2022: ERC Starting Grant

Congratulations to our associated faculty member **Kelly Swarts**! Kelly received a prestigious ERC Starting Grant for developing tree ring genomics to understand the genetic basis of and predict forest response to climate change. Read more here: <https://www.oeaw.ac.at/gmi/detail/news/erc-starting-grant-for-kelly-swarts>

October 2022: PhD retreat

This year's retreat led 22 PhD students and faculty to the beautiful surroundings of Altaussee. The autumn weather was mild and sunny at the foot of the stunning Loser mountain. We enjoyed talks with plenty of discussion opportunities, an afternoon exploring the mountain trails and the nearby lake, and two evenings with traditional food, good company and a night walk.



August 2022: visiting scientists

Prof. Stefan Kramer and PhD student Julia Siekiera, M.Sc. (Institute of Computer Science of Johannes Gutenberg University Mainz) visited PopGen Vienna from August 3rd to August 5th to collaborate with the group of Christian Schlötterer. Julia Siekiera gave a talk on the joint work about deep learning in population genetics.

June 2022: PopGen faculty and students in Santa Barbara

Speaker **Christian Schlötterer**, PhD students **Dagny Runarsdottir** (group Schlötterer), **Ben Wölfl** (group Hermisson) and former faculty member **Angela Hancock** were hosted by the Kavli Institute for Theoretical Physics (KITP). KITP as part of the University of California, Santa Barbara, is one of the most renowned institutes for theoretical physics and related fields. Christian Schlötterer was invited to co-coordinate the KITP workshop “Towards an Integrative View of Adaptation: Bridging Population and Quantitative Genetics” (June 13 - July 15, 2022).

Alumni portraits

We feature a brief report about one of PopGen's graduate and faculty alumni in the Newsletter. This time, PopGen Vienna graduate alumnus **Christos Vlachos** (former PhD student at Kofler group) gives us some insight into his work environment at the *KU Leuven (BE)*:

“Hello, I am Christos, I'm from Greece and an alumnus of the Vienna Graduate School of Population Genetics. I joined the PopGen community in October 2016 where I did my PhD in bioinformatics under the supervision of Dr. Robert Kofler. My PhD defense was held online due to COVID restriction in August 2020, and still up to this day I am looking for an opportunity to come back for a proper goodbye. After completing my PhD, I had to fulfill mandatory military service in Greece from September 2020 until June 2021. As of October 2021, I have moved to Belgium and specifically to Leuven.

Since then, I have been a member of the Lab of Reproductive Genomics at KU Leuven. Our lab's expertise is the development and application of novel single-cell multi omic technologies. Application of such methods allow capturing genetic information from multiple layers (eg DNA and RNA) from a single cell. Subsequent analytical integration of such modalities allows

investigation of gene expression patterns, regulatory elements, chromatin accessibility, epigenetic modification as well as identification of novel cell types and sub-types.

In the lab I have the role of the main bioinformatician of a big collaborative project, named ASAP (Aligning Science Across Parkinson's). Our aim is to identify the role of the gut in Parkinson's Disease (PD). We are leveraging the 10X Genomics technology to perform Multiome (gene expression + chromatin accessibility) experiments on gut tissue of age- and gender-matched PD and control samples. Our goal is to identify expression (e-) and chromatin accessibility (ca-) quantitative trait loci (QTL). To this aim, we will complement the single-cell information with long-read whole genome sequencing of the same samples. This will allow us to decipher genetic variability at PD risk loci. Overlapping this information with cell-type specific gene expression and region of open chromatin will allow us to reveal PD-related cell types as well as elucidate how genetic variation at PD loci govern etiopathogenesis of PD. Further, I am also interested in understanding the role of somatic copy number aberration in PD through analysis of direct and in-direct gene dosage effects."



The picture was taken during this year's lab retreat at Spa, and shows us trying to play archery tag!

Out of sight, out of mind?

Experiences of our students abroad

Many of our students choose to spend three to six months abroad during their study time. **Burçin Yıldırım** (advisor Claus Vogl) was hosted at the Uppsala University (SE) for 6 months, hosted by Martin Lascoux.

"A few years after I started my PhD studies, I had the opportunity to benefit from the scientific exchange that Popgen Vienna offers. From May to October 2022, I was a guest researcher in the lab of Professor Martin Lascoux at Uppsala University in Sweden. I worked on a project which also involved a collaboration with Thomas Batallion at Aarhus University in Denmark. Thanks to this, I was able to observe the scientific environments in both countries. The project included aspects both from population genetics and quantitative

genetics. Thus not only I expanded my current knowledge but also learned a great deal about new ones.

The Evolutionary Biology Center of Uppsala University hosts many scientists specialized in various fields in the area. During my stay, it was a great pleasure to have these people around and I very much enjoyed interactions on science during seminars and discussions on other stuff at lunch breaks. Experiencing a different academic environment in a different country definitely offered an expansion to my vision, as well as my scientific network.

Apart from a scientifically and personally fulfilling work environment, I got to experience the best times in Sweden, summer and early autumn. Although Uppsala is a small city, especially after living in Vienna, you have a chance of being in the nature reserves literally by a couple of minutes walking. I also feel extremely lucky that I travelled to the most northern part of Sweden, for a hiking trip in a famous trail called “Kungsleden (King’s Path)”. Everything and everyday in here was memorable, despite the challenges, but being able to watch the reindeers silently might be something I will always remember!

I am thankful that I used my chance to attend this scientific exchange and I recommend it to all students without hesitation! “



Mushroom picking and Midsommar with fellow PopGen Vienna PhD student Elif Bozlak who also spent her research time abroad in Sweden (next newsletter).



Abisko (Northern Sweden) and the landscape around Uppsala.

Upcoming seminars

Our Tuesday seminars will partly go back to in-person but we'll keep streaming, so you can join us from all over the world!

Sign up here to receive reminders and links for Winter term webinars:

<https://forms.gle/B2XWA3djhNd89xjZ9>

Have a good run-up to the end of the year, happy holidays!

Publications of our students so far in 2022

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<https://www.biorxiv.org/content/10.1101/2022.05.28.493825v1>

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<https://academic.oup.com/g3journal/article/12/6/jkac081/6565321>

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<https://www.mdpi.com/2073-4425/13/2/229/htm>

See all publications [here](#)