PhD position available!!

Have you ever thought about what is lurking in the dark spaces of the world? Are you amazed by organism's ability to survive in the complete darkness of caves? And did you ever wonder why so many cave animals exhibit such a peculiar phenotype?

Great! We are looking for an ambitious and motivated PhD candidate to support our team with the **FWF project "Shedding light on the evolution of a blind cavefish"** on *Garra longipinnis*, a cyprinid freshwater fish species from Northern Oman that comprises a troglomorphic, i.e. cave-adapted, population without eyes and pigmentation from an underground cave as well as a surface population. Come join our team and help us elucidating the origin and the genetic basis of this striking phenotype.

The project will begin in November 2024, which would be the perfect start for your PhD. Salary will be according to the FWF personnel cost rates for doctoral candidates (approx. 2 700 € brutto per month, 30h per week).

Project Background

Garra longipinnis is a cyprinid fish endemic to Northern Oman. This species has both troglomorphic cave populations found in two nearby underground locations in the Hajar mountains and surface populations that inhabit several wadis in Northern Oman. Our previous research compared the genetic diversity of cave populations with their surface counterparts, revealing that the cave population of *G. longipinnis* is genetically isolated from surface populations. This isolation appears to be relatively recent, dating back between 0.8 to 0.1 million years ago, and the cave population has experienced genetic bottlenecks in the past. These findings establish *G. longipinnis* as an excellent model for studying cave fish evolution. In our current project, we aim to address the following questions:

1) Is genetic differentiation among cave and surface populations the result of adaptation to the cave environment or due to random fixation from genetic drift?

2) Are adaptive genetic changes the result of de-novo mutations or due to shifts in standing genetic variation?

3) Are troglomorphic characters the result of changes in protein structure of genes and/or due to regulatory changes modifying expression patterns?

To uncover the genomic basis of troglomorphic phenotypes, we will perform cutting edge analyses, that include de novo genome assemblies, population genomic analyses using comprehensive genome-wide data generated through Whole Genome Resequencing (WGR) and transcriptomics. We will compare large numbers of samples from both cave and surface populations of *G. longipinnis*, as well as from a population of a closely related surface species. You will be working in the DNA Lab as well as performing the bioinformatic analyses.

About the team:

You will be embedded in our "Garra working group" at the Natural History Museum Vienna (Central Research Laboratories) consisting of Luise Kruckenhauser (PI), Sandra Kirchner (Postdoc), Martin Kapun (Bioinformatician), Master students and the whole very nice team of the DNA Lab at the NHM.

As a PhD candidate you will be part of the Vienna Doctoral School of Evolution and Ecology (VDSEE; https://vds-ecology-evolution.univie.ac.at/) and associated with the Department of Evolutionary Biology (Faculty of Life Sciences, University Vienna).

Your profile should ideally be:

You should be very interested in organismic biology and be fascinated by the mechanisms of evolution!

- good IT skills and basic experience in bioinformatic analyses (shell scripting, Python or R)
- wet-lab experience in a molecular genetic lab
- statistical analyses
- ability to work structured, organized and independently
- good time management skills
- basic experience in academic writing
- being a team player

Your task will include:

You will present your research plan to the faculty and complete a dissertation agreement within 12 months. This will be reviewed and adapted on an annual basis.
You will work on your dissertation and towards its completion in time. We expect a large degree of independence paired with a high level of social awareness as the goal will only be achieved in a team.
You will fill some administrative tasks, contributing to the success of self-organization of the group for research, and administration.
You will continuously stay informed about the state of the art in your field.
You will contribute to outreach by publications, conference presentations and public activities.

How to apply:

- Curriculum vitae, highlighting your specific skills
- A letter of interest and an outline of your personal research interest
- List of scientific publications (if applicable)
- Confirmation of your Master's Degree
- Contact addresses of 1-2 referees

Applications accepted until October 31st, 2024 or until the position is filled

Please, send your application to Luise.Kruckenhauser@nhm-wien.ac.at

https://www.nhm-wien.ac.at/en/luise_kruckenhauser

Do not hesitate to contact us, if you have any questions.

We look forward to welcome new people in our team!