



PhD Position in Computational Phylogenetics

I invite applications for one doctoral position in computational-phylogenetics in my research group at the GeoBio-Center of the Ludwig-Maximilians-Universität (LMU), München. The position is part of my ERC Starting Grant "MacDrive". This is a research-only PhD position funded for 3 years (no classes and teaching required but possible). The starting date is flexible between 1st September 2022 and 1st September 2023. This position focuses in computational research but I strongly encourage applicants with a biological background too.

The Project MacDrive aims to test which factors drive diversification rates, e.g., species-specific factors such as body size, habitat and diet, versus external factors such as the environment. To answer this question, we will estimate several species-level phylogenies with extant species and fossil species. Additionally, we will develop new statistical methods to estimate these time-calibrated phylogenies with fossil taxa based on both molecular and morphological data, as well as new statistical methods for diversification rate estimation. The methods will be integrated into our software RevBayes (<https://github.com/revbayes/revbayes>).

In this part of the project MacDrive, you will be responsible for developing and testing new approaches to estimate phylogenies for extant and fossil species from morphological data. Methods for estimating phylogenies from molecular data are currently much more mature and tested than methods for morphological data. Specifically, in this project we need to develop better models and methods for correlated morphological character and morphological clock models. Your work is focused on computational phylogenetics with an emphasize on testing and modifying existing models in RevBayes. Your methods will be used to estimate several time-calibrated phylogenies for which we are generating the data in my group. These phylogenies will ultimately be used to perform macroevolutionary analyses to test for drivers of diversification rates.

Applicants should have a Master's degree, completed or completion imminent, in evolutionary biology, bioinformatics, computation biology or a related field. The key skills required are basic programming skills (for example R or C++), basic experience in performing a statistical analysis and good communication skills (oral and written English). Basic knowledge in phylogenetics is beneficial but not required. Training in these skills will be provided depending on need. No knowledge of German is required but some basic knowledge will be helpful outside of work. Enthusiasm, determination and the capacity to work independently are essential. The candidate is highly encouraged to develop their own research ideas complementing the current research direction.

My group is broadly working on theory and computational methods for Bayesian inference of phylogeny (<https://hoehnlab.github.io>). Our research directions include phylogeny inference, divergence time estimation, diversification rate estimation and model testing. All of our methods are implemented in the open-source program RevBayes (<http://www.RevBayes.com>) which is the successor software of the popular program MrBayes. The successful applicant will be part of our vibrant RevBayes group. There will be opportunities for the successful applicant to work with and visit the research groups of my collaborators in Europe and the USA. Furthermore, I

expect the candidate to become actively involved in our RevBayes workshops as a lecture or teaching assistant.

My group is located at the GeoBio-Center of the LMU Munich, one of Germany's and Europe's top Universities (#32 world-wide; #8 in Europe; #1 in Germany; <https://www.timeshighereducation.com/world-university-rankings/lmu-munich>). The GeoBio-Center is located at the Königsplatz which is in walking distance to the historic city center (Marienplatz) and English Garden (city park with 3.75 km² area). The GeoBio-Center is highly interdisciplinary and consists of researchers from different departments including paleontology, molecular and evolutionary biology, zoology and botany.

The position will be compensated according to the standard LMU salary scheme for doctoral students (approx. 3050€ monthly gross salary; approx. 1850€ monthly net salary). The salary includes benefits such as health care, 30 days of vacation per year, pension, unemployment insurance, child support (if applicable) and parental leave.

LMU Munich is an equal opportunity employer. The University continues to be very successful in increasing the number of female faculty members and strongly encourages applications from female candidates. LMU Munich intends to enhance the diversity of its faculty members. Furthermore, disabled candidates with essentially equal qualifications will be given preference.

Any questions should be directed to Sebastian Höhna (hoehna@lmu.de). Applications, including a letter of motivation and research idea (1 page), current CV and names and contact details of two referees should be sent to Sebastian Höhna by the deadline of 31 July 2022.