Research training/project work
Learning from the past: studying animal interactions with their environment from ancient dental calculus

Background: Ancient DNA analysis, using next generation sequencing to study ancient populations, is an exciting, rapidly growing field. An excellent and easily accessible source of ancient DNA is dental calculus. Dental calculus forms from the calcification of dental plaque, a bacterial biofilm that forms on mammalian teeth. It preserves this bacterial community, oral and respiratory pathogens and food debris. Dental calculus has already given insight into the diet and health of ancient human populations; however, it has not yet been used to study complex animal-environment interactions. We are interested in Nordic mammals such as reindeer and Scandinavian brown bear, and what dental calculus can tell us, for example, about the effect of climate change and human interactions on their diet and health.

Aim of the project: In this project you will <u>collect</u> dental calculus from museum specimens, apply <u>ancient DNA</u> techniques, prepare libraries for <u>next generation sequencing</u>, and analyse the data <u>bioinformatically</u>. The data will provide the first characterization of the oral microbiome in wild Nordic mammals from a temporal perspective. You can get involved in comparing diet, microbial community and pathogen carriage between reindeer from different geographic locations, and between bears from before and after a human-caused population bottleneck. Because you will be working in the ancient DNA lab, previous experience in a molecular biology wet lab will be an important asset.

Starting date: September or soon thereafter

Contact: This project is open for students with prior experience in a molecular biology wet lab wanting to perform <u>Research Training</u>, at the Department of Animal Ecology, EBC, Uppsala University. Please note that given the scope of the project, we can only accept students that aim for at least 30 hp. For more information please contact:

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