MSc. thesis project: Abiotic vs. biotic drivers of methane oxidation and associated methanotrophs.

Background/motivation:
Methanotrophs are characterized by their ability to use methane as the sole carbon and energy source. As such, methanotrophs represent a highly specialized microbial guild. Both abiotic (e.g., soil physico-chemical parameters) and biotic (i.e., community composition and abundances) factors are known to drive methane oxidation and the methanotrophs in soils. Numerous amendment studies infer the importance of microbial community composition or inherent soil characteristics to functioning. These studies rely heavily on statistical analyses to associate shifts in functioning to community composition or measured soil variables, and lacks direct evidence. Often, the abiotic and biotic determinants of functioning are confounded, obscuring the relative importance of either factors. Rarely, do these factors explicitly tested simultaneously. Consequently, the relative importance of abiotic and biotic factors modulating methane oxidation remains unclear.

Objectives:
The objective of this project is to disentangle, and provide direct evidence determining the relative importance of abiotic and biotic factors modulating methane oxidation in complex microbial communities. To address the research objective, activity measurements will be performed in incubation experiments. Molecular techniques will be applied to qualify and quantify the response of the methanotrophs.

If you are interested in the work for your MSc. thesis, please contact: mailto:adrian.ho@ifmb.uni-hannover.de