



Aarhus University
Bioinformatics Research Center (BiRC)
Masters Thesis

Evolutionary Pressures In Marine Sediment Microbes

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Abstract

Bacteria, as with all living organisms, face pressure to fit their environment and experience selection as a result. The strength and focus of this selection can vary depending on changes in their environment. Here I will study changes in selection in different bacterial lineages as they move from an energy rich environment to an energy deprived environment represented by a young mixed/bioturbated sediment layer and an older non-bioturbated sediment layer from two sampling sites in the Aarhus Bay. This represents a continuation of work that has been previously done in the bay but between lower and more energy deprived depths. I assess selection by using the ratio of synonymous and nonsynonymous polymorphic sites (pN/pS). I find that the overall amount of selection is similar between the two layers. This is true when looking both at the average across individual genomes and also functional categories of genes. By focussing on one species of bacteria and also looking more broadly across lineages, I find that the mean pN/pS is actually increased in the energy deprived layer. Across functional categories of genes, there is a small but possibly significant change in the distribution of selection which could represent a starting point for future research.

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