

Geomicrobiological and Geochemical Colloquium seminar series

October 10th 2023 – 3 PM



Giant eukaryotic viral signatures on the Greenland Ice Sheet

Dr. Laura Perini
Aarhus University, Denmark

In person: A71 seminar room 513/515

Abstract

Blooms of pigmented glacial snow and ice algae on the Greenland ice sheet are responsible for a significant decrease in snow and ice surface albedo, which results in a faster rate of melting. Currently, there is little information about the biotic controls of glacial algal blooms. Giant viruses are known to infect eukaryotic cells in marine and freshwater environments, providing a biological control on the algal population in those ecosystems. In this study, we investigate for the first time giant viruses and their host connections on the Greenland ice sheet. Giant virus marker genes were found in environmental glacial samples from 19 metagenomes, 18 transcriptomes, 1 metavirome, and, in addition 5 genomes of cultured snow algae. Metagenomic data from red snow contained evidence of Viral Metagenome Assembled Genomes from the orders Imitervirales, Asfuvirales and Algavirales. This study reveals the unprecedented presence of a diverse community of giant viruses in a variety of glacial habitats.

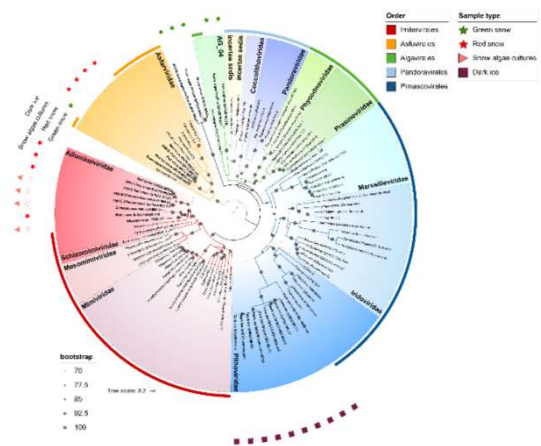


Figure 1: Maximum-likelihood phylogenetic tree of the NCLDV marker gene DNA polymerase (PolB) showing that NCLDV signatures recovered from the environmental samples (in bold) clustered with or in vicinity of known viral families.