



**Project acronym:** PATHO.ICE

**Project title:** Glacial melt reveals possibly viable pathogenic microbial communities

**Project leader:** Birgit Sattler, University of Innsbruck, Austria

**Discipline:** Earth Sciences & Environment: Ecosystems & Biodiversity

**Station(s):** CNR Arctic Station “Dirigibile Italia” (Svalbard/Italy)

This proposal aims to get insight into the potential of glacial ice to harbour possibly viable pathogenic microbes. Especially under the aspect of rapid glacial melt a considerable load of microbial communities is being released from their entombment in the ice some of which still being to revitalize. By being viable some of those pathogens might cause a threat for humans or fauna and flora. By investigating the taxa which are released and translocated by melt water streams or via air currents we aim to raise the public awareness on this additional issue of global warming. We cooperate with the Medical University in Innsbruck, Institute of Medical Hygiene, for laboratory capabilities regarding handling of pathogenic microbes and for an assessment of the sanitary threat for humans. Beside culture dependent methods to check for viability via growth on gar plates and subsequent measurement of adenosine triphosphate we will also work with next generation sequencing to address the detected strains. To evaluate possible interactions with environmental communities we will conduct laboratory experiments in mesocosms under in situ conditions. The field work will be conducted along the glacier Midtre Lovenbreen (Kongsfjord) due to its easy and safe access. Ice cores will be drilled with a hand driven Kovacs drill down to 6m depths and meltwaters (superficial drains and subglacial waters) will be collected in the field. Additionally, air samples will be collected to gain insight into airborne distribution of pathogenic microbes.