Acronym: AMFEB; **Project:** PNRA18_00077.

Title: Antarctic Marine and Freshwater Eukaryotic Biodiversity as a promising source of bioactive substances.

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Participating Institutions: University of Tuscia, University of Camerino, University of Trieste, National Research Council of Italy.

Area: MZS.

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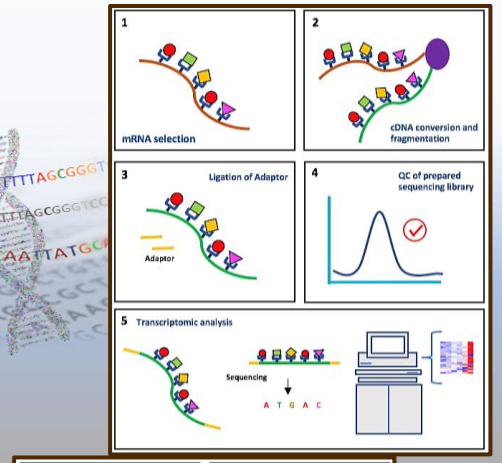
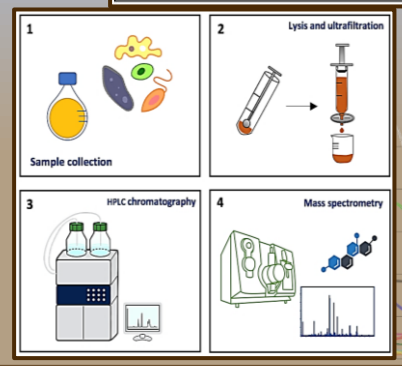
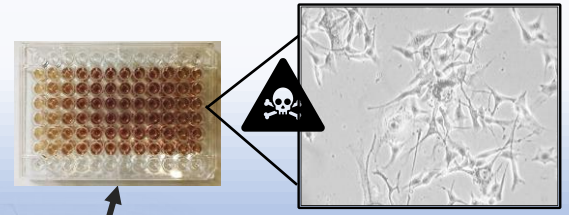
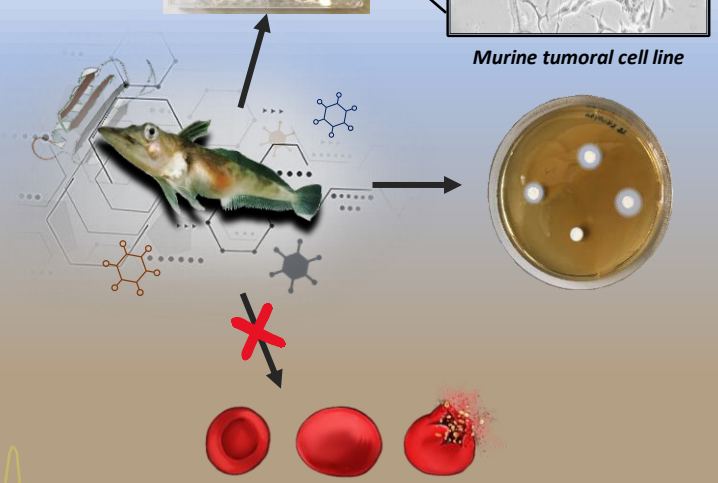






Murine tumoral cell line



The long history of evolution *in situ* that characterizes the Antarctic life has determined an astounding genetic and chemical biodiversity that represents a gold and yet largely unexplored mine for the discovery of bioactive natural products to be utilized as novel therapeutics and drugs in medicine.

Given this context, this project proposes to explore and use aquatic microeukaryotes (ciliates, dinoflagellates and rotifers) and macroeukaryotes (sponges, molluscs, echinoderms, tunicates and fishes), that can easily be sampled with no impact on local biodiversity from the surroundings of MZS, as source of natural products that have biotech potential for application to human health.

Target 1. Sampling of microeukaryotes from temporary melting lakes, and macroeukaryotes from the sea.
Target 2. Identification and characterization of bioactive peptides and secondary metabolites from microeukaryotes cultures, and via omic approaches.
Target 4. Setting extraction protocols from sponges and fish mucus.
Target 5. *In vitro* assays of synthetic peptides and bioactive fractions.

Biochemical fractions will be tested *in vitro* for their cytotoxic/cytostatic effects against a collection of human and rodent continuous tumour cell lines by vitality/proliferation assays and cell apoptosis/death analysis.

Synthetic peptides will be tested for their *in vitro* lytic activity against mammalian erythrocytes, and for their antibiotic activity against a panel of G-/G+ bacteria.