

# Cellular and tissue-level biomarkers in mussels (*Mytilus edulis*) sampled in two different study areas in the Northern Atlantic

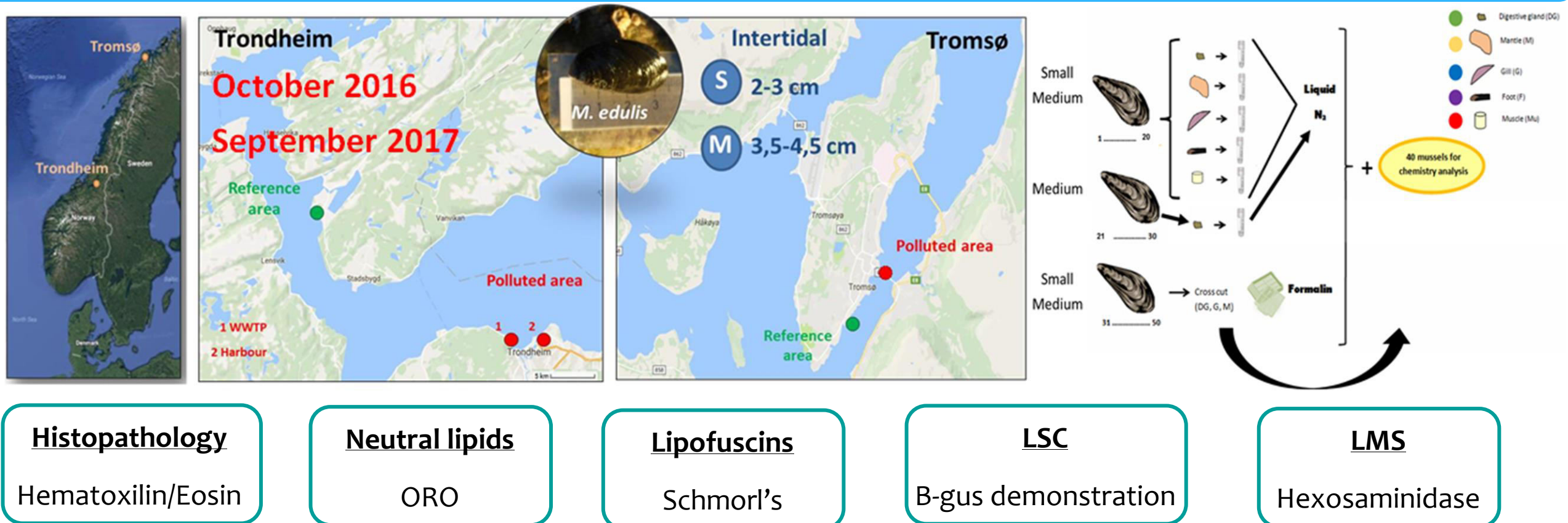
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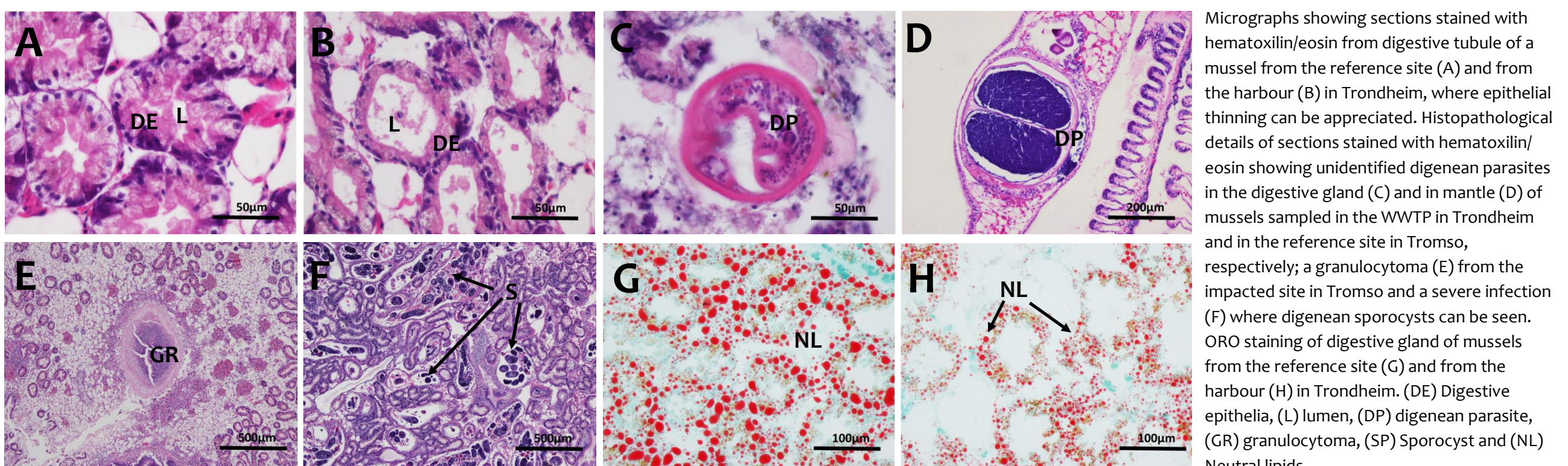
## Introduction and main objectives

The biomarker approach has been widely used in mussel monitoring programs for several years. However, up to now it has not been commonly used in high latitude study areas. In order to establish reference values and test the assessment effectiveness of the selected cellular and tissue-level biomarkers in the Northern Atlantic Ocean, mussels from two sites with different levels of environmental impact from different localities in Norway have been sampled and studied.

## Materials and methods



## Results and conclusion



Results show that the selected battery of biomarkers is effective to assess and compare the health status of different populations of mussels exposed to different ecological conditions and impact. However, it has been proven that environmental factors such as seasonality and latitude change the condition of the animals directly for parameters like the gamete developmental cycle and parasitic burden among others, thus affecting indirectly the response measured in the selected biomarkers. Thus, to be able to perform an effective evaluation of the health condition of mussel populations the research of baseline biomarker values and physiological and ecological parameters must be carried out.