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DISSERTATION TITLE:	*Responses of Benthic Foraminifera to Organic Matter: Implications for the Reconstruction of Recent Past Environments*

Bentisk foraminiferene er encellede organismer som lever på havbunnen og får næring i form av organisk materiale som synker ned til bunnen. Denne studien gir ny kunnskap om noen arter av bentisk foraminiferene under ulike forhold av næringstilførsel og oksygentilgang. Organismene forteller oss noe om klima før (fossiler) og nå.

On and within the seafloor we find single celled, amoeba-like organisms called benthic foraminifera. These organisms build shells which are preserved in sediments and therefore leave an abundant fossil record in marine sediments worldwide, including in Norwegian fjords.
Where organisms can live on the seafloor mainly depends on the food and oxygen availability there. In the deep sea organic matter falling to the seafloor is a critical food source as photosynthesis cannot take place here due to lack of sunlight. However, decaying organic material consumes oxygen and so its arrival to the seafloor has the potential to create detrimental low oxygen conditions for the organisms living at the seafloor. This PhD work is a study of the relationship between benthic foraminifera and the arrival of organic matter to the sea floor. Knowledge which help us to make more accurate interpretations about recent past environments and improve our understanding of environmental changes today, and using fossils from the past.

Studies have been undertaken on living benthic foraminifera from the outer Oslofjord and in the laboratory. The work has resulted in development of new equipment and experiment designs. The first experiment primarily focused on the response of the benthic foraminifera when offered different kinds of plankton as potential food. A second experiment focused on the relationship that the benthic foraminifera have with the arrival of organic matter and the resultant oxygen conditions in the sediment. The results of the experiments gave information on the ecology of certain species of benthic foraminifera. The final part of the PhD work is concerned with a study in the Lysefjord and Høgsfjord on the Norwegian west coast. The study quantified organic matter in the sediment and determined its source and assessed the ecological status of the fjords along a fjord to coast gradient. This gave the opportunity to apply what had been learnt from the experiments and study further the ecology of benthic foraminifera.

The thesis contributes to our understanding of the response of benthic foraminifer to the arrival of organic matter at the seafloor. This information will help in understanding past conditions and marine environmental change.