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DISSERTATION TITLE:	***Symbiosis in the hidden world of protists*** *Diversity, interactions and novelty in the marine environment*

Symbiosis – the coexistence between two or more organisms – has been crucial for the development of life on Earth, and for how ecosystems function. As for many other fields in biology the majority of our knowledge stems from large and conspicuous organisms such as animals and plants, whereas we know far less about interactions in the microscopic world. In my PhD thesis I have examined the diversity of microscopic protists that live in symbiotic relationships with other eukaryotes.

Protists are (mainly) single celled eukaryotes which are present in all habitats examined. Some protists are well known such as the parasitic *Plasmodium* that infects mosquitos and causes malaria in humans, and *Toxoplasma* causing the disease toxoplasmosis that can lead to birth defects. Yet, most protists involved in symbiotic relationships are less famous and until now there has been no attempts to obtain a comprehensive overview of the total diversity of these protists.

Recent methods using genetic material (DNA) to examine diversity has uncovered that there is an enormous number of different protists. Lately, there has been an increased research focus not only on which protists are present in different environments, but also their functional roles and interactions – what are they all doing, and who are they doing it with? Are these interactions win-win situations for the partners involved (mutualism), or are they obviously negative for one or several of the partners (parasitism)?
One of the main aims in my thesis has been to examine symbiosis in different marine environments and in different host organisms. Through examinations of understudied habitats such as marine sediments, and by examining host organisms such as fish and seaweeds (brown algae), I have revealed that there is a large and so far unknown diversity of protists interacting with other eukaryotes.

I have also investigated what we know about interactions in general, and have explored which protists are known to interact with other eukaryotes. This unveiled that protists play a crucial role as symbionts, and that they through their interactions with all main groups of eukaryotes interconnect the tree of life.