



**Ben-Gurion University of the Negev**  
**Jacob Blaustein Institutes for Desert Research**  
The Swiss Institute for Dryland Environmental and Energy Research  
**Mitrani Department of Desert Ecology**

Seminar

**Miguel Frada**

The Interuniversity

Institute for Marine Sciences in Eilat



Tuesday, March 26, 2019, 12:00

Seminar Room, Old Administration Building

Participants are invited to meet the seminar speaker at the MDDE meeting room immediately after the seminar (~ 13:00). Please bring your lunch; snacks will be provided.

## **Life Cycle Complexities of Phytoplankton in the Oceans**

The life cycle of an organism comprises all cellular phases and interconnecting mechanisms. Eukaryotic life cycles typically entail an alternation of haploid and diploid phases driven by sexual reproduction. Life cycles are generally fairly well documented in several species of animals, plants, macroalgae and a few model organisms and human parasites, but much less is known for unicellular species that constitute the vast majority of the eukaryotic diversity. This knowledge gap is exemplified in marine phytoplankton. Here I will focus on the coccolithophores, an important group of calcifying marine phytoplankton that have poorly understood haplo-diplontic life cycles with alternating phases expressing contrasting properties. I will first elaborate on the eco-physiological differentiation between life phases across the coccolithophore diversity and highlight general trends. Then, I will concentrate on *Emiliania huxleyi*, which is a prevalent cosmopolitan coccolithophore that forms large-scale blooms in the oceans that are terminated by viral infections. I will show how *E. huxleyi* can use its life cycle to escape viral infection and recent comparative transcriptome analyses that are enabling us to elucidate the degree of physiological and phenotypic differentiation between life phases and foster our understanding of mechanisms underlying life phase transition and viral resistance.