

Beyond genetics, exploring the contribution of epigenetics to thermal adaptation in brown seaweeds

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Epigenetic modifications have the potential to buffer species and populations against rapid climate change. While efforts to examine these mechanisms in the marine realm have greatly increased during the past decade, epigenetic effects in seaweeds species are still in their infancy, with only one single-base methylome profile published so far. Nonetheless, these organisms are of great importance, both from an ecological perspective (e.g. as habitat engineers and primary producers) as well as from an industrial perspective (e.g. for the production of nutraceuticals and as food for human consumption).

Our project aims to address this important research gap by studying DNA methylation and its connection to gene expression levels in the different life cycle stages of the brown seaweed *Dictyota dichotoma*. Furthermore, we aim to link these molecular processes to observed differences in thermal performance, which represents a major challenge in the field of environmental epigenetics if we are to understand the full potential of species to adapt to changing conditions and the role of epigenetics herein.