



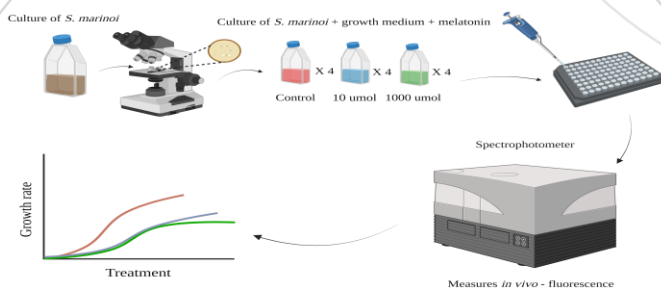
Introduction

Phytoplankton are single-celled organisms that are essential for the function of the marine food webs for example because they produce about half of all the oxygen on Earth [1]. In unfavourable environmental conditions, like low nutrient concentrations, some phytoplankton produce resting stages that can survive in the sediment for millennia [2]. Resurrection ecology studies resurrected resting stages to be able to study phenotypes that are older than the mean age of a human [3]. The resting stages also give an opportunity to study how they adapt to historical environmental changes [4].

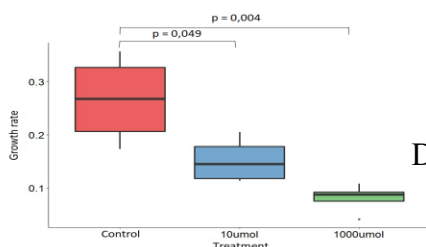
Growth

Does melatonin affect the growth of vegetative cells?

Methods



Results



Melatonin has a negative effect on growth

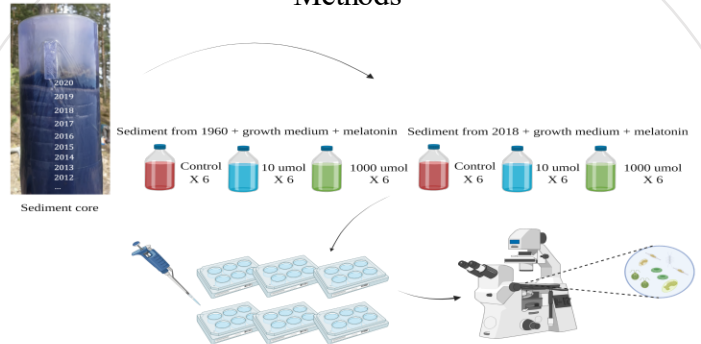
Conclusions

Melatonin can be used to make more resting stages but not for waking up resting stages or for increasing growth of vegetative cells.

Waking up

Does melatonin affect the awakening of resting stages?

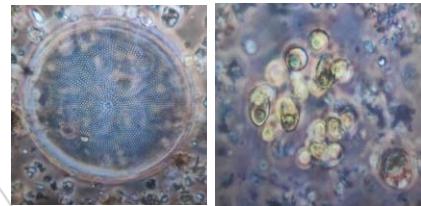
Methods



Examples of species that woke up

Coscinodiscus sp.

Chlamydomonas sp.



Melatonin has no effect on the awakening

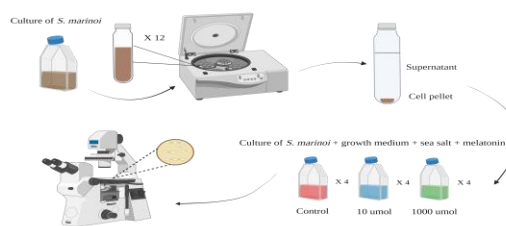
Objectives

Find better methods for awakening and dormancy of resting stages. Melatonin has been used and has been increasing the awakening of resting stages [5].

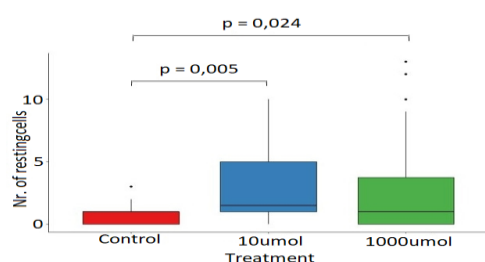
Dormancy

Does melatonin affect the dormancy of vegetative cells?

Methods



Results



Melatonin has a positive effect on dormancy

References

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- [4] Using the sediment archive of living dinoflagellate cysts and other protist resting stages to study temporal population dynamics. Author(s) M. Ellegaard, S. Ribeiro, N. Lundholm, T. J. Andersen, T. Berge, F. Ekelund, K. Härnström and A. Godhe DOI: <https://doi.org/10.1144/TMS5.14>
- [5] G. Delebecq, S. Schmidt, A. Ehrhold, M. Latimier and R. Siano. 2020. Revival of ancient marine dinoflagellates using molecular biostimulation. *J. Phycol.* *Phycological Society of America*: 1-13