Phylogenomics and Physiology of Oomycete Pathogens Infecting Macroalgae and Diatoms Towards Biocontrol and Biosecurity

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Résumé

In 2022, red algal cultivation accounted for approximately 80% of the global seaweed production value
according to the FAO FishStat database (1). This multibillion-dollar industry (1) is also affected by various
pathogens (2,3). This research project focuses on the oomycete pathogens which are understudied (4).
This project will increase our understanding of the physiology and phylogenetic relationships of
Olpidiopsis-like oomycetes of red algae to enable the mitigation of risks to cultivated and wild
populations (3). We aim to characterize and increase an existing collection of Olpidiopsis-like oomycetes
of red algae by increasing our understanding of the diversity and phylogenetic relationships between
these pathogenic oomycetes of brown, red, and green macroalgae as well as diatoms. We will also
analyze the virulence strategies of different oomycete pathogens of red algae. The acquired knowledge
will be applied to improve diagnostic tools in red algal pathology and to increase biosecurity in the algal
cultivation sector. (Acknowledgements: This PhD is funded by a Marie Sklodowska-Curie grant from the
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Mots-Clés: oomycetes, algal pathogens, phylogenetics, biosecurity, biocontrol

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