

UMR 5244 Université de Montpellier-CNRS-IFREMER- Université de Perpignan via Domitia
Interactions Hôtes-Pathogènes-Environnements (IHPE)
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Proposition d'un projet de stage de master 2

Training title : Characterization of the mechanisms underlying beneficial properties of *Halomonas* LTB66, a bacteria isolated from the natural microbiota of oysters

Place :

- Laboratoire Interactions Hôtes-Pathogènes-Environnements (IHPE), UMR5244
Université de Perpignan Via Domitia (<http://ihpe.univ-perp.fr/>)

Key words : Marine microbiology, Antimicrobial activities, Bioactive compounds, Probiotics, *Crassostrea gigas*, Aquaculture

Training period : January/February 2025 to June/July 2025 (6 months)

Context :

The holobiont concept has received significant attention in the field of aquaculture, with mounting evidence emphasizing the pivotal role of microorganisms associated with hosts in species fitness. Based on this concept, our research aims to capitalize the beneficial properties of bacteria isolated from the natural microbiota of oysters to combat infectious diseases that devastate oyster farms. To this end, we have characterized the beneficial properties of a strain, isolated from wild oysters, belonging to the genus *Halomonas*, designated as LTB66. We demonstrated the antibacterial activity *in vitro* and capability of this strain to protect oysters *in vivo* against the Pacific Oyster Mortality Syndrome (POMS). We propose a master's project that aims at further elucidating the mechanisms underlying the beneficial properties of LTB66 in oysters.

Task description :

Numerous avenues of investigation can be pursued, including: (1) Comprehensive spectral analysis of LTB66's activity, (2) Experimental infection assay to trace the sequence of events leading to a better protection of the bacterial strain during a POMS event including protection against dysbiosis and septicemia, and (3) genome exploration of this bacterium to identify the genes potentially responsible for its beneficial properties.

Desired skills :

Skills in microbiology (bacterial culture, antimicrobial activity testing) and/or bacterial genomic are desired. An interest in the valorization of bioactive natural compounds will be an asset for integration into this multidisciplinary project.



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