

## PhD proposal

- **PhD Director/Supervisor** : Dominique HERVIO HEATH (LSEM/SG2M/RBE – Ifremer Brest)  
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- **Scientific advisor** : Lionel DEGREMONT (LGPM/SG2M/RBE - Ifremer La Tremblade)
- **Laboratoire/unité, département d'accueil** : Laboratoire Santé, Environnement et Microbiologie/SG2M/RBE
- **Doctoral school** : ED des Sciences de la Mer et du Littoral / UBO, Brest
- **Co-financing-funding** : 50% IFREMER (guaranteed) / 50% Région Bretagne (Spring 2018)
- **Employer** : IFREMER

### Title, abstract and keywords

#### **Virulence mechanisms of *Vibrio parahaemolyticus* a potentially pathogenic bacterium for humans.**

Naturally occurring vibrios in the marine and estuarine environment are sensitive to environmental changes and thus, constitute an emerging risk in both public health and animal health. *Vibrio parahaemolyticus*, the main cause of gastroenteritis associated with the consumption of raw or undercooked seafood, is regularly isolated in France in shellfish (oysters and mussels) and coastal waters. Hemolysins TDH and TRH, major virulence factors in *V. parahaemolyticus*, have been found in environmental strains isolated from French coastal waters. However, recent studies indicate that *V. parahaemolyticus* is pathogenic even in the absence of these hemolysins, suggesting the involvement of other factors in the virulence of this bacterium.

The objectives of this thesis will be 1) to identify virulence factors by a comparative genomic approach and to study the expression of the virulence of strains with different profiles using an *in vivo* approach - the ultimate goal being to identify factors that would make possible to distinguish " human pathogenic" and "non-pathogenic" isolates and 2) to evaluate the ability of *V. parahaemolyticus* to colonize and multiply in different batches of wild oysters and families of *Crassostrea gigas* selected for their resistance to oyster pathogens. This work will provide important insights into the increased or decreased susceptibility of selected oyster families to a human pathogen. They will also help to better understand these pathogens and thus, to better estimate the risk associated with their presence in the environment and especially when consuming shellfish.

**Keywords** : *Vibrio parahaemolyticus*, virulence factors, *in vivo* expression, comparative genomics, colonization, Pacific oyster, *Crassostrea gigas*.

#### **Profile sought :**

Master Degree in Microbiology, molecular biology and/or genomic and pathology. Good working knowledge of English.

#### **Relevant ongoing projects to which this PhD is attached :**

Projet Horizon 2020 VIVALDI (PreVenting and mltigating farmed biVALve Diseases – 2016-2020).