

- Title of proposed PhD: METROID Metabolic adaptation in marine bivalves and impact of environmental changes.

- Director: Pr. Vianney Pichereau, Professor at UBO in Biochemistry (vianney.pichereau@univ-brest.fr)

- Co-director: Dr. Charlotte Corporeau, Researcher at Ifremer in Biochemistry (charlotte.corporeau@ifremer.fr)

- Ecole doctorale de rattachement : Ecole Doctorale des sciences de la Mer IUEM-UBO

- Laboratory : UMR 6539 LEMAR Laboratoire des Sciences de l'Environnement Marin, Equipe 1 : ns to global changes in marine organisms : integrative approaches.

- Resume :

The genome as well as abundant transcriptomic data have been recently acquired in the Pacific oyster *Crassostrea gigas*. Using these data, we showed that the signals that control metabolism are very well conserved between the oyster and vertebrates (Thesis Ifremer Y. Epelboin, 2012-2015). However, despite a high homology, the oyster, as other mollusks such as scallop, is able to adapt its metabolism to wide variations of its environment, depending on the tides and the seasons, unlike vertebrates. Oysters can adapt to long-term food deprivation (beyond 6 months), to a major hypoxic stress, and it can change its energetic metabolism when infected by the virus OsHV-1. Oysters are thus an ideal model to study metabolic adaptation. In vertebrates, cancer cells are able to adapt their metabolism to such wide variations in their microenvironment (acidification, salt changes) that are lethal to normal cells. This is commonly called "shift" or metabolic "transformation" of the cancer cell. In this thesis, we propose to study the metabolic adaptation of bivalve mollusks, with the aims to (i) better understand how mollusks adapt to environmental stresses, and to (ii) establish oyster as a model to study the control of metabolism in cancer cells.