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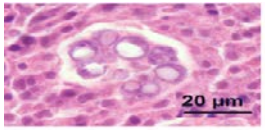
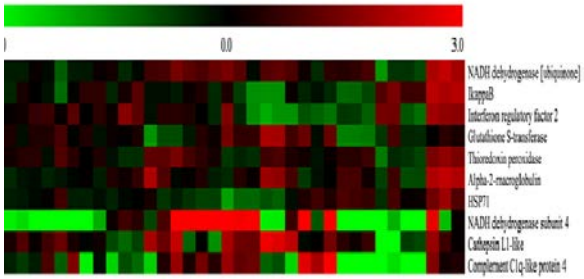
Orientation: Sustainable Use of Marine Resources
Specialization Area: Aquaculture
Research Area: 2.13 Pathology and immunology of culture organisms





PhD project: **Modulation of gene expression in Manila Clam (*Ruditapes philippinarum*) and in molluscan parasite (*Perkinsus olseni*) through host-parasite in vivo and in vitro interaction**

Supervisors: Dr. Paulino Martínez Portela (University of Santiago de Compostela)
Dr. Belén Gómez Pardo (University of Santiago de Compostela)

Summary: The Manila clam *Ruditapes philippinarum* is one of the major contributors to the global bivalve production, but its production is at risk from the molluscan disease perkinsosis caused by protistan parasite *Perkinsus olseni*. Understanding the molecular mechanisms underlying *R. philippinarum-P. olseni* interaction is a pre-requisite for controlling this disease, and thus the present study was carried out with the aims of characterising gene expression of *R. philippinarum* haemocytes after wild and experimental infections (*in vivo* and *in vitro*) with different infectious forms (trophozoites, TP; zoospores, ZS and extra-cellular product, ECP) of this parasite, and of *P. olseni* trophozoites challenged with Manila clam plasma. Using 100-bp paired-end RNA-seqs produced on Illumina HiSeq 2000 and subsequent assembly by Trinity+CAP3 strategy, *R. philippinarum* haemocyte and *P. olseni* trophozoite *de novo* transcriptomes were re-constructed. Based on the *de novo* transcriptomes, we developed oligo-microarrays for gene expression analysis of the haemocytes after *P. olseni* challenges, and gene expression analysis of the *P. olseni* trophozoites challenged with Manila clam plasma. Genes related to lipid metabolism, anti-oxidation, apoptosis, proteolysis, and iron-sulfer (Fe-S) cluster assembly processes might play substantial roles in perkinsosis. The present study provides useful information of transcriptional expression of the host-immune and parasite-infectious cells at the host-parasite interaction, addressing some advancement toward controlling perkinsosis in molluscs of socio-economic importance.