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Orientation: Sustainable use of marine resources
Specialization Area: Aquaculture
Research Line: 2.13 Pathology and immunology of cultured organisms

PhD project: Study of parasite-host interaction in gill glochidiosis of Atlantic salmon

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Summary: Glochidiosis is a pathology which affects parasitized fish by the freshwater mussel or naiads larvae, known as glochidium. The glochidia of the freshwater mussel *Margaritifera margaritifera* (L.) parasitically the gills of Atlantic salmon (*Salmo salar* (L.)) and they metamorphose to adult mussels. This stage is part of a complex and vital life cycle that is essential for the maintenance of these species, which are critically endangered.

One of the conservation measures are based in the freshwater mussel culture, in which the immunitary system of the host fish plays an important role. Therefore, is necessary to increase the knowledge about this subject. Concurrently, gill is receiving a great importance in the last years because is an extremely important organ for fish health and represents the interconexion between its diffuse lymphoid tissue with the rest of the immunitary system.

The main aim of this Project is to study the gill glochidiosis in Atlantic salmon throughout a multidisciplinary approach that allows us to improve freshwater mussel survival and, by the other hand, to create an animal model for studying the gill pathogeny and the immunitary response. This study will offer a new point of view and applicable methodology throughout the combination of novel histological, immunological and genic expression techniques to glochidiosis and even to other important gill diseases in aquaculture.

Experiments consist on the study of the gill response and the immunitary system during the different infestations and reinfestations with glochidia. For this reason, it is going to be monitored experimental conditions, to be executed a necropsy and/or sample fish tissues, and followed by histological, electron microscopy and immunological studies.

Due to multidisciplinary activities, they are going to be performed with collaboration and coordination of other departments and investigation groups. Furthermore, results are going to be presented gradually in congresses and publications in scientific journals of interest. At the same time of the thesis development, the PhD student will be trained in the mollusk and fish pathology field, centered on the more interesting species for aquaculture and allowing to the specialization to the new Diplomature in Aquatic Animal Health.

