García Fernández, Pablo
University: University of Vigo
Nationality: Spanish

Orientation: Sustainable Use of Marine Resources
Specialization Area: Aquaculture
Research Area: 2.15 Genetics and Genomics applied to aquaculture

PhD project: Study of immune response and survival capability during the first developmental stages of *Octopus vulgaris* paralarvae. Impact of different culture conditions and identification of potential biomarkers

Supervisors: Dr. Camino Gestal Mateo (Marine Research Institute-CSIC)

Summary: The common octopus (*Octopus vulgaris*) has ideal characteristics for introduction as a new aquaculture species. The main problem for their aquaculture is the high mortality of the paralarvae which cause an insurmountable bottle-neck for the consecution of the complete life cycle in captivity. The research around this problem has focused on designing different types of diets. Nevertheless, nowadays no different approaches to resolve this problem have been performed. There is a lack of genetic studies in this species, particularly in the paralarvae stage, and similarly no studies on functional and molecular immune response capability have been performed before. In this thesis project we will conduct the first approach to this problem from the genetic point of view. This approach is made possible by the use of high throughput sequencing (RNA-seq) in order to assembly a de novo transcriptome that allow us to study in detail the physiological status of the paralarvae. The comparison of the transcriptomic profiles of the different paralarvae reared under different conditions make possible to identify genes differentially expressed between them. Following the results obtained from the transcriptome, a screening will be made to identify a set of significant genes during development and genes involved in immune response capability. The effect of epigenetic mechanisms by DNA methylation in the regulation of the expression of these genes will also be studied by MSAP. Finally, with all the data available we will select a set of genes as potential biomarkers of welfare in paralarvae.