

STSM Scientific Report

The purpose of the STSM was: 1) Set up a protocol for testis explant cultures *in vitro* in European eel; 2) Study of steroid effect on pituitary transcriptome *in vitro* in European eel.

1) With Dr. G. Maugars, we designed two protocols to be tested for testis explant cultures *in vitro* in European eel, based on protocols by Miura et al. in the Japanese eel and by Schulz, Weltzien et al. in the zebrafish. Further work will aim at establishing and validating this method.

2) Recent work performed by the applicant led to the characterization of three gonadotropin-releasing hormone receptors (GnRH-R) in the European eel and to the demonstration of a differential regulation of their expression *in vivo* during experimental maturation (Peñaranda et al; 2013). In order to investigate the role of steroids in the regulation of GnRH-R, *in vitro* experiments on primary culture of eel pituitary cells, were performed at the host laboratory. A preliminary experiment indicated a positive effect of testosterone (T) on the expression of GnRH-R2 (Lafont, Rousseau et al.), considered as the “reproductive receptor” by Peñaranda et al (2013). With Dr K. Rousseau, we evaluated the dose-response and specificity of the steroid effects. Cells were treated *in vitro* for 9 days with different concentrations of estradiol (E2), cortisol, 11-Ketotestosterone or T. Ongoing qPCR analyses suggest that both E2 and T are able to dose-dependently up-regulate the expression of GnRH-R2. An additional culture experiment was also performed to evaluate the potential synergistic/ antagonistic effects of the steroids.

Both institutions, MNHN and UPV, were partners in the European project PRO-EEL, and will collaborate in a Spanish Government-funded project: *La anguila europea como modelo para estudiar la temperatura como modulador de la maduración sexual en teleosteos. Potencial aplicación en acuicultura*. This stay contributed to reinforce our collaboration.

Confirmation by the host institution of the successful execution of the STSM

Dr. Sylvie Dufour, Director of Laboratory BOREA/ Muséum National d'Histoire Naturelle certifies that Dr. David Sánchez Peñaranda visited us as a guest researcher from 1st July to 31th July, 2014, thanks to a grant awarded by Short Term Scientific Mission, COST Action FA1205.



Signed: Sylvie Dufour



Signed: David S. Peñaranda