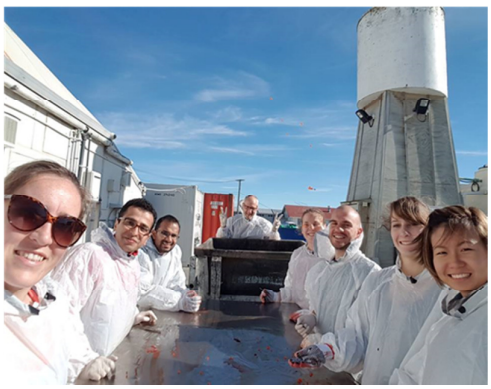
SCIENTIFIC REPORT	
Reference	Short Term Scientific Mission COST Action FA1304
Beneficiary	Pauline Jéhannet Wageningen University & Research pauline.jehannet@wur.nl
Host Researcher	Dr. Mark Lokman University of Otago, New-Zealand mark.lokman@otago.ac.nz
Period	From 01/05/2017 to 03/07/2017
STSM Reference Code	COST-STSM-FA1304-37236
STSM Title	Gaining insights about the initiation of vitellogenesis by comparing the early vitellogenic shortfin eel (*Anguilla australis*) to the previtellogenic European eel (*A. anguilla*)

1. Summary

New-Zealand shortfin eels and European eels undertake a reproductive migration of ~4,000 km and 6,000 km, respectively. Eels prevented from their migration remain immature due to a dopaminergic inhibition and lack of gonadotropins. Because shortfin eels have to swim a lesser distance to the spawning grounds they already initiated vitellogenesis at the start of oceanic migration while European eels are still in the previtellogenic state. Vitellogenesis in European eels cannot be stimulated by natural triggering. To circumvent the dual blockage, eels reared in captivity are injected with pituitary extracts containing gonadotropins to induce sexual maturation. However, reproduction in captivity has been largely unsuccessful because vitellogenesis is probably induced precociously and inappropriately. This study aims to gain insights about the natural initiation of vitellogenesis by comparing the status at the start of oceanic migration of the previtellogenic European eel to the early vitellogenic New Zealand shortfin eel. Then, both species will be subjected to a simulated migration to investigate the effects on sexual maturation. This STSM covered the investigation of the maturation status of female yellow and silver shortfin eels. Silver and yellow shortfin females were collected for morphometric measurements, blood plasma analysis and tissue analysis. Eye, hepatosomatic and gonadosomatic indices, and 11-ketotestosterone were found to be significantly higher in silver than in yellow eels. Concerning the gene expression in the pituitary, expression of follicle stimulating hormone β, gonadotropin releasing hormone receptors, dopamine D2 receptors and growth hormone were determined in yellow and silver females. In the liver, expression of the estrogen receptor 1 was quantified. In the gonads, expression of follicle stimulating hormone receptor, the androgen receptor-α, the androgen receptor-β, aromatase and the vitellogenin receptor was quantified. Method and analyses will be repeated for female European eel in October to make a cross-specific comparison possible.



Thanks to this STSM, I experienced an amazing time at the University of Otago by being surrounded with great people and by learning molecular techniques. Besides this project, I got also the opportunity to be part of some fieldworks such as salmon pituitary extraction and longfins sampling. Thank you Mark's team!