COPEPODS OR ROTIFERS? EVALUATING THE USE OF DIFFERENT FEEDING PROTOCOLS FOR LARVAE OF ATLANTIC BLUEFIN TUNA (Thunnus thynnus. L)

Dr. Monica *Betancor* *University of Stirling* **Dr. Aurelio Ortega** *Instituto Español de Oceanografía* **Dr. Fernando de la Gándara** *Instituto Español de Oceanografía* **Prof. Douglas Tocher**
(1) **Prof. Gabriel Mourente** *Universidad de Cadiz* **Dr. Jose Luis Varela** *Departamento de Biología, Facultad de Ciencias del Mar y Ambientales, Universidad de Cádiz, 11510 Puerto Real, Cádiz, Spain*

There are still many issues that require to be solved in larval rearing of Atlantic bluefin tuna (Thunnus thynnus; ABT) to prevent "mass-mortality" during this developmental stage. Initial data related to the feeding sequence of ABT larvae suggested that mortality observed during the first stages of life could be due partly to nutritional deficiencies. Previous studies demonstrated that copepods appeared to be a superior live prey compared to rotifers during the first two weeks of life. Our overarching aim was to evaluate different feeding strategies during first feeding of ABT larvae from a performance, compositional and molecular perspective. In order to do so, two groups of ABT larvae were fed with either copepod (Acartia tonsa; C) nauplii or rotifers (Brachionus rotundiformis; R) enriched with Algamac 3050® from mouth opening to 13 days after hatching (dah). After this, the group C-larvae was fed either Artemia enriched with Algamac 3050® (CA), Acartia nauplii and copepodites (CC) or sea bream (Sparus aurata) yolk-sac larvae (CY), while the R group passed on to being fed on Artermia enriched with Algamac 3050® (RA) up to 18 dah. After 13 dah, larvae fed C grew more than those fed R although there were no differences in survival. ABT larvae fed R accumulated highest eicosapentaenoate (EPA) but lowest docosahexaenoate (DHA) and total n-3 long-chain polyunsaturated fatty acids (LC-PUFA) than C-fed larvae, reflecting dietary contents. Indeed, there was no activation in the expression of the enzymes involved in LC-PUFA biosynthesis. However, the different live prey elicited regulation of transcription factor, digestive enzyme, lipid metabolism and oxidative stress genes. At 18 dah larvae fed CY and CA were the largest size with larvae fed RA displaying the lowest growth with no differences in survival among the dietary treatments. The highest DHA contents were found in ABT larvae fed CC and CY, whereas the lowest contents were found in RA-fed larvae. Indeed, RA-fed larvae showed the highest level of the intermediate product n-3 docosapentaenoate, which could be reflecting up-regulation in the biosynthetic pathway although this was not supported by gene expression data.