



GVA-THINKINAZUL WP2 - REPRODUCTION AND GENETICS (REPROGEN)

UNDERSTANDING WP2

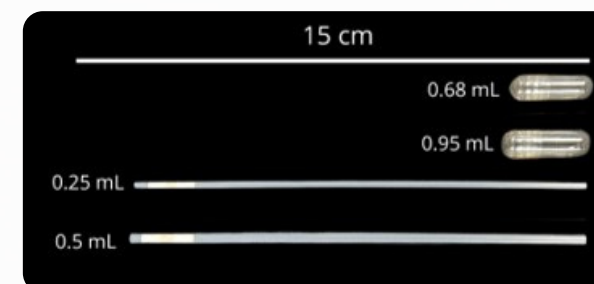
The WP2 (REPROGEN) aims to better understand the effects of environmental variations associated with climate change on fish and mollusc species of interest for Mediterranean aquaculture. It evaluates aspects related to their reproductive physiology, genetics, gamete preservation, larval development and growth, including the influence of diets, as well as the development of biotechnological tools or traits associated with greater resilience of individuals of different species to these environmental changes.

PROTOCOLS TO SELECT RESILIENT MALES AND CRYOPRESERVE ITS GENETICS

Useful to determine the resilience of the sperm from every male to changes in pH and temperature (separately or in combination) associated to climate change. The protocols have been validated with sperm of European eel, gilthead sea bream, European sea bass and Senegalese sole.



Species-specific protocols to cryopreserve sperm of European eel, gilthead sea bream, European sea bass and Senegalese sole have been updated. Different extenders, cryoprotectants and vials have been tested. Potential use in future genetic improvement programmes of these species.



IMPROVEMENTS IN BROODSTOCK FEED FORMULATIONS – ASSESSMENT OF MATURATION ON FILLET QUALITY

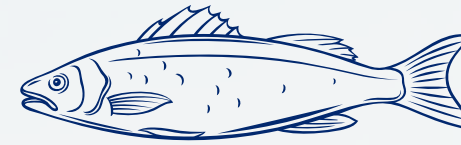
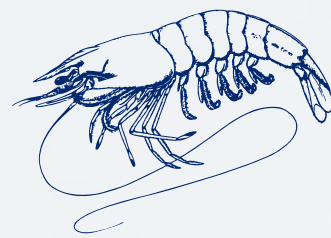
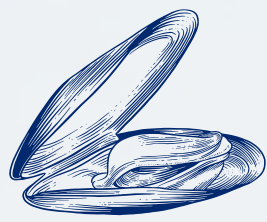


The amino acid and fatty acid composition of broodstock diets in European sea bass influences reproductive performance and offspring quality. Consequently, the industry is particularly interested in re-evaluating taurine requirements and the optimal balance of EPA/DHA/ARA in broodstock diets. The fatty acid profile of fillets from farmed fish reflects the dietary composition, regardless of the stage of sexual maturation.

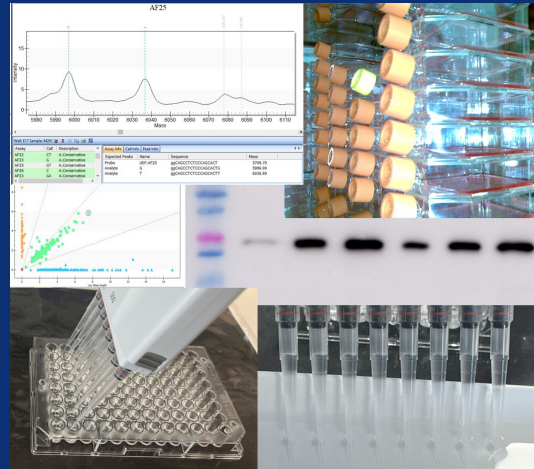


<https://cvalenciana.thinkinazul.es/>





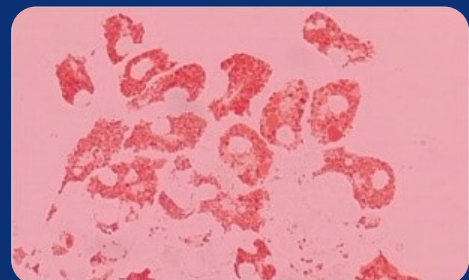
SPECIES-SPECIFIC BIOTECHNOLOGICAL TOOLS FOR AQUATIC ORGANISMS OF INTEREST IN AQUACULTURE



Biotechnological tools for aquatic species in aquaculture and conservation include homologous immunoassays to assess reproductive status or sex from blood samples, gene therapy techniques to induce gametogenesis by delivering circulating proteins, *in vitro* bioassays to detect estrogenic endocrine disrupting compounds affecting marine fish, and SNP-based genotyping arrays to predict early maturation in European sea bass, aiding genetic selection and reproductive management.

STATUS OF WEDGE CLAM AND STRIPED VENUS CLAM POPULATIONS IN A CONTEXT OF OVEREXPLOITATION

Natural populations of wedge clam and striped Venus clam have experienced a significant collapse as a result of historical overexploitation, leading to the closure of fisheries for these species.



Validation of the use of the LMS (Lysosomal Membrane Stability) biomarker as a marker of cellular stress allows for the assessment of the health and well-being of natural populations of these bivalves, and consequently, improved management of fishing grounds.

BIVALVE FISHERIES AND AQUACULTURE

Protocol for culture of striped Venus clam (*Chamelea gallina*): broodstock conditioning, spawning induction, and larval rearing. These techniques allow for the establishment of a program to supplement natural beds with hatchery seed for the recovery of collapsed fisheries in the Spanish Mediterranean regions or elsewhere.



Techniques for monitoring populations of bivalve molluscs of interest in fisheries and shellfish farming, both in the benthic phase (censuses using standardized methodology) and in the planktonic phase (using DNA barcoding of larvae collected from plankton). These techniques assist in establishing catch quotas for species such as the striped Venus clam and the wedge clam, and in identifying the best time for deployment of seed collectors in farmed species, such as the mussel.

