MATERNAL LEGACY

MOLECULAR PORTRAIT OF A GOOD QUALITY FISH EGG

Understanding and controlling the quality of an oocyte is an important socioeconomic issue with significant implications for rearing fish and for human medicine.

Understanding the mechanisms that make an egg capable of supporting early-stage development of the embryo prior to gene expression is a fundamental question for biology that applies to all animals.

MATERNAL LEGACY intends to answer this question by using one particular species – the zebrafish (*Danio rerio*) – to model vertebrate development. It will be studied to understand the developmental competence of an egg in these teleost, striped-finned fish used in aquaculture, and thereby understand the molecular determinism of oocyte quality.

The aim of the research will be to correlate the potential development of an egg with the abundance of RNA (ribonucleic acid). These biological molecules are transferred by the mother through the egg and enable early development of the embryo. The molecular portrait of what constitutes a developmentally competent egg will also help identify maternal RNAs whose abundance can be seen to vary between good and poor-quality eggs. These mRNAs will be studied in greater detail during the second stage of the project.

The project also intends to assess the relevance of maternal RNAs previously identified in zebrafish and in fish of interest to fish farming, such as rainbow trout, bass and perch, which present different conditions for reproduction.

The research is ultimately seeking to establish generic molecular markers for the developmental competence of an egg. This will have important applications in farming, particularly for selection programmes.

Partners

Research centers

Laboratoire de Physiologie et Génomique des Poissons, INRA LPGP, Rennes [Project Developer]
BioCampus Montpellier - Montpellier
GenomiX CNRS MGX, Montpellier
Ifremer, Palavas-les-Flots
Institut National de la recherche Agronomique INRA BIA SIGENAE, Castanet-Tolosan
Unité de Recherche Animal et Fonctionnalité des Produits Animaux, URAFPA, Vandœuvre-lès-Nancy

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