Anti-viral innate immunity in cultured aquatic species

Proposal acronym:

AVINSI (*A*nti *V*iral *I*nfection *N*on-*S*pecific *I*mmunity)

Quality of Life and Management of Living Resources

Key Action 2 – Control of infectious Diseases

OBJECTIVES

The main objective of the present project is to provide knowledge of anti-viral innate immunity in cultured aquatic species in order to develop new approaches for the control of viral infections.

The programme has the following specific objectives :

(i) isolate and characterise at the biochemical level anti-viral substances from bivalves, crustaceans and fish ;

(ii) identify and characterise new genes induced by viral infections in fish, crustaceans and bivalves ;

(iii) identify and characterise inhibitor of apoptosis proteins (IAPs) and study their expression during viral infections in bivalves, crustaceans and fish ;

(iv) investigate the *in vitro* properties and anti-viral activities of selected molecules (candidate molecules for further application in aquaculture could be identified) ;

(v) investigate the *in vivo* anti-viral activities of selected molecules and their expression during viral infections (candidate molecules for further application in aquaculture could be identified).

- Workpackage list

WP1. Co-ordination and management
WP1 - T1: Scientific co-ordination and management
WP1 - T2: Administrative, financial and legal co-ordination

WP2. Experimental viral infections
WP2 - T1: Production of experimentally infected fish
WP2 - T1-1 Nodavirus infection
WP2 - T1-2 Viral Hemorrhagic Septicemia virus infection
WP2 - T1-3 Koi herpesvirus infection
WP2 - T2 White Spot Syndrome virus infection
WP2 - T3 Herpesvirus infection of Crassostrea gigas larvae

WP3. Biochemical characterisation of anti-viral molecules
WP3 - T1: Preparation of organ, tissue and cell extracts
WP3 - T2: Detection of anti-viral molecules produced or induced during viral infections
WP3 - T3: Purification and characterisation of anti-viral molecules
WP3 - T4: Large-scale purification of native molecules

WP4. Identification of virus-induced genes
WP4 - T1: Production of RNA from experimentally infected and control animals
WP4 - T2: Identification of virus-induced genes by SSH
WP4 - T3: Micro-array study of virus-induced modifications of the rbt transcriptome
WP4 - T4: Cloning of full cDNA sequences of virus-induced genes
WP4 - T5: Expression of candidate recombinant proteins

- Workpackage list

WP5. Molecular characterisation of cellular IAPs
WP5 - T1: Detail sequence comparison of oyster herpesvirus IAPs and other IAPs and design of primers
WP5 - T2: Detection of homologous IAP encoding genes in bivalve, crustacean and fish genomes

WP6. *In vitro* activities of anti-viral molecules
WP6 - T1: In vitro toxicity
WP6 - T2: Effects of anti-viral molecules on cellular activities
WP6 - T3: Anti-viral activity spectrum

WP7. *In vitro* anti-viral effects and expression of selected molecules
WP7 - T1: In vitro effects of selected molecules on oyster larvae
WP7 - T2: Protective capacity of the selected molecules against viral infections
WP7 - T2-1: Fish culture and challenge
WP7 - T2-2: Crustacean culture and challenge
WP7 - T2-3: Oyster larval culture and challenge
WP7 - T3: Localisation and expression regulation of effector encoding genes

WP8. Exploitation and development

- Management structure : graphical presentation of the project's components

Pert diagram per work packages (material transfer)