

PeptidEx EU project QLRT-2001-00838

Development of a pathogen epitope prediction program, and evaluating its usefulness in designing fish vaccines

Background

Presently, no vaccines are available that successfully protect against viral infections in fish. Peptide based vaccination is an approach that has been proven successful in warm-blooded vertebrates in particular relating to viral pathogens. In this project we will generate sufficient knowledge to evaluate this technology in a cold-blooded vertebrate. The peptide-binding specificity for MhcSasa class I alleles will be established providing the basis for peptide-binding assays, a pathogen-epitope prediction programme, and a prototype viral peptide vaccine. Byproducts generated throughout the project will be immunological reagents and cellular model-systems adapted to fish.

Objectives

The objective of the project is to develop a pathogen epitope prediction programme and to design a viral pathogen peptide - vaccine. This will be accomplished by determining the interaction of the Atlantic salmon Major Histocompatibility Complex (MHC) class I molecule with peptides derived from viral pathogens.

Expected results and achievements:

The project will provide a broader understanding of the interactions between the immune system and viral pathogens. The approach of using peptide vaccines targeted at the animals immunological content will be tested and evaluated as an approach for the future.

Potential applications

The project will develop reagents for use in immunological research in Atlantic salmon. A pathogen epitope prediction programme will enable easier detection of viral peptides exploitable for vaccine production. Additionally, a viral peptide vaccine will be developed and tested. If successful, it represents a new approach to developing vaccines against viral agents in fish and may be further developed into a commercial product available to the public.

Keywords:

viral infections, fish, peptide vaccines, MHC, immunological reagents.

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