intelligence identified several potential vaccine candidates and three of these were recombinantly expressed using *E. coli* and insect cells. Following a vaccine trial one protein (a so-called neurohypophysial n-terminal domain protein, #10) was found to induce moderate protection against I. multifiliis in rainbow trout (*Oncorhynchus mykiss*). To develop a highly protective heterologous vaccine we aim to combine #10 with a protective epitope from the already known homologous protective antigen Iag52b, which is a GPI-anchored cysteine rich surface protein. To be able to produce #10 at low costs, recombinant expression has been conducted in an eukaryotic host. Purified Iag52b does not induce immunity in fish without the use of adjuvants, thus the most potentially protective epitope of Iag52 was selected in silico and coupled to a viruslike particle. This coupling enables the epitope to be presented in a virus-like conformation, which theoretically should be immunogenic to the fish. Results are discussed.

keywords: Recombinant vaccine, Ichthyophthirius multifiliis, protective epitope, vaccine candidates, virus-like particle

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P-046.

Transcriptomic profiles of post-smolt Atlantic salmon challenged with *Piscirickettsia salmonis* reveal a strategy to evade the adaptive immune response and modify cell-autonomous immunity

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Abstract
Piscirickettsiosis is the main bacterial disease affecting the Chilean salmon farming industry and is responsible for high economic losses. The development of effective strategies to control piscirickettsiosis has been limited in part by insufficient knowledge of the host response. The aim of this study was to use RNA sequencing to describe the transcriptional profiles of the responses of post-smolt Atlantic salmon infected with LF-89-like or EM-90-like *Piscirickettsia salmonis*. Enrichment and pathway analyses of the differentially expressed genes revealed several central signatures following infection, including positive regulation of DC-SIGN and TLR5 signalling, which converged at the NF-kB level to modulate the pro- inflammatory cytokine response, particularly in the PS-EM-90-infected fish. *P. salmonis* induced an IFN-inducible response (e.g., IRF-1 and GBP-1) but inhibited the humoral and cell-mediated immune responses. *P. salmonis* induced significant cytoskeletal reorganization but decreased lysosomal protease activity and caused the degradation of proteins associated with cellular stress. Infection with these isolates also delayed protein transport, antigen processing, vesicle trafficking and autophagy. Both P. salmonis isolates promoted cell survival and proliferation and inhibited apoptosis. Both groups of Trojan fish used similar pathways to modulate the immune response at 5 dpi, but the transcriptomic profiles in the head kidneys of the cohabitant fish infected with PS-LF-89 and PS-MS-90 were relatively different at day 35 post-infection of the Trojan fish, probably due to the different degree of pathogenicity of each isolate. Our study showed the most important biological mechanisms used by P. salmonis, regardless of the isolate, to evade the immune response, maintain the viability of host cells and increase intracellular replication and persistence at the infection site. These results improve the understanding of the mechanisms by which interacts with its host and may serve as a basis for the develop- ment of effective strategies for the control of piscirickettsiosis.

keywords: RNA-seq, Piscirickettsiosis, *Piscirickettsia salmonis*, LF-89, EM-90.

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P-047.

Pivotal role of immunoglobulin IgT in rainbow trout skin after bacterial infected with *Flavobacterium columnare*

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Abstract
In contrast to mammalian skin, teleost skin has been considered as mucosal surface which serves as the first line of defense against invading pathogens. Moreover, teleost skin contains skin-associated lymphoid tissue (SALT) that elicits gut-like immune responses against parasitic infection. However, little is known so far about the B cells and immunoglobulins (Igs) responds to bacterial infection in the skin mucosal immune system of teleost. We hypothesized that, microbial exposure can elicit a dedicated mucosal Igs response and locally specific immune responses would be generated within its mucosa. To address our hypothesis, we construct an infected model with rainbow trout (*Oncorhynchus mykiss*), which was experimentally exposed to *Flavobacterium columnare*. H & E staining of trout skin shows the morphological changes and qRT-PCR indicates the increased mRNA expression levels of immune-related genes, which were further studied by RNA-Seq analysis, in trout skin after infected with *Flavobacterium columnare*. Moreover, strikingly increased IgT concentration and strong pathogen-specific IgT responses were detected in the cutaneous mucus, and the accumulation of IgT+ B cells were also noted in the skin epidermis of experimental group. Critically, IgT responses against the pathogen were mainly limited to the skin whereas IgM responses were almost exclusively detected in the serum. Moreover, local IgT+ B cells proliferation and pathogen-specific IgT generation were found in the trout skin, providing new evidence for the local mucosal immune responses in trout skin. Overall, our findings indicate that, following bacteria exposure, IgT and IgT+ B cells play the prevailing role in skin mucosal immunity. To our knowledge, our results provide the first example of locally induced immunoglobulin in the skin of rainbow trout after *Flavobacterium columnare* infection.

keywords: Skin, B cells, Immunoglobulins, *Flavobacterium columnare*, Rainbow trout (*Oncorhynchus mykiss*)

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P-048.

Early immune response in Atlantic salmon vaccinated with inactivated whole-cell bacterin of *Piscirickettsia salmonis* and pathogenic isolates

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Abstract
Piscirickettsiosis (SRS) is the main bacterial disease affecting the Chilean salmon farming industry. The aim of this study was to describe and comparatively quantify the immune response of Atlantic salmon intraperitoneally infected with LF-89 and EM-90 *Piscirickettsia salmonis* and vaccinated with inactivated whole-cell bacterin of P. salmonis. A positive correlation of the overexpression of IFNγ, IL-2, IL-10, IL-12ß, MHC-II and CD4 was seen in the PS-LF-89- and PS-EM-90-infected fish, but the proinflammatory response in the PS-EM- 90-infected fish was more exacerbated. The fish infected with PS-LF-89 showed an anti- inflammatory response, whereas this finding was not observed in the PS-EM-90-infected fish. Conversely, a positive correlation of the downregulation of IFNγ, IL-2, IL-12ß, MHC-I and CD8 was seen in the vaccinated fish. Fish