



TargetFish Newsflash 8

TargetFish brings together leading European research groups that are experts on the fish immune system and enterprises from the Biotech and Veterinary sectors that aim to commercialize fish vaccines for European fish farming. By developing a targeted vaccination strategy, TargetFish will prevent important fish diseases in European aquaculture industry.

This highlight is part of monthly progress updates by the TargetFish consortium.

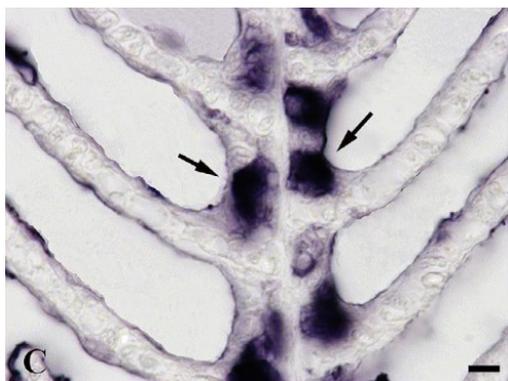
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T lymphocytes in the gills of sea bass

The gills of fish are, in terms of exposed surface, enormous, and serve to maintain homeostasis by the uptake of nutrients and other substances. The epithelium of the gills is only a thin mucosal tissue and is in direct contact with the aquatic environment. The gills thus need to form an active barrier against the entry of pathogens. To this end the gills contain interbranchial lymphoid tissue (ILT), also named gill-associated lymphoid tissue (GIALT), which can be targeted for mucosal vaccination by, for example, immersion routes of administration.

Researchers from the laboratory of Animal Biotechnology at the University of Tuscia in Viterbo (Italy), have studied the presence of T cells in the GIALT of sea bass (Dev. Comp. Immunol, 2014, 47: 309-318). RNA transcription analysis of gills

from healthy sea bass hinted at the presence of Toll-like receptors, important for innate immunity and the presence of T cell receptors, co-receptors, and/or immunoglobulins (antibodies), important for acquired immunity. The transcriptome dataset further provided evidence for the presence of many T cell-related gene sequences, suggesting that the entire panel of T cell subsets as known from mammals, could be present in the gills of sea bass.



The percentage of T cells in the gills was studied with a specific monoclonal antibody and ranged from 10-20%. When sorted to pure cell populations, analysed for gene expression and checked for the capacity to proliferate in vitro, the sorted cell populations indeed proved to be T lymphocytes. This means that the gills of sea bass are a mucosal tissue containing a large and diverse set of T cell subpopulations.

These data contribute to a better understanding of how mucosal immunity is working in the gills of fish (sea bass) with the important, practical outcome of now being able to assess the protective effect of using mucosal routes of vaccination, in a tissue of enormous importance for its barrier function against pathogens; the gills.

TargetFish 2nd Industry Workshop

The 2nd TargetFish Industry Workshop held during the 17th International Conference of the European Association of Fish Pathologists (EAFP)

In Gran Canaria, Las Palmas in September 2015 was a great success.



Two years onwards from the 1st TargetFish Industry Workshop in Tampere, Finland, we could highlight the achievement of a number of significant discoveries. Among the achievements discussed in Gran Canaria were the development of automated vaccination machines for small sized turbot or sea bass, but also progress on the development of prototype vaccines against Flavobacteriosis of salmonids and Nodavirus infections of sea bass. The significance of these developments for the aquatic animal health industry and how they may be taken forward into commercial applications were discussed with representatives from both, Academia and Industry.

For more information, please please visit www.targetfish.eu or contact the consortium via targetfish.cbi@wur.nl

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