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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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Histamine, a key molecule on regulating gut immune function and fish disease protection.

Fish have developed complex means and key structures located along their bodies to orchestrate inflammatory reactions and support large societies of microorganisms. Collectively, such structures comprise the mucosa-associated lymphoid tissue which is represented, in fish by four different tissue complexes located at the gills, skin, nose and gut. Particularly, the

However, to exert a range of effects on physiologic and pathologic processes like inflammation, contraction of intestinal smooth muscle, gastric acid secretion or neurotransmission, histamine receptors are required. In this sense, some immune cells express histamine receptors in these species. Intestinal goblet cells, for example, increase the production of

study of gut-associated lymphoid tissue (GALT) deserves special attention by fish immunologists as well as the fish farming industry, as the gut must control a changing mix of microflora, pathogens, foreign antigens and nutrients throughout the fish life time.

The Immunity, Inflammation and Cancer Group, working at Murcia University in Spain, recently presented a fresh overview of mast cells (MCs) as critical players in immunological activities at GALT. A key mechanism behind MC detection of pathogens or other signals derived from the external environment has been found to involve the release of a panel of inflammatory mediators, including histamine. Histamine is produced mainly in MC granules of commercial fish species in the Perciformes class (i.e. seabream, sea bass or tilapia).

[Read the full article here](#)

polysaccharides upon recognition of histamine, and consequently augment the mucus hydrogel layer that acts as a shell to avoid pathogen attachment to the epithelial wall. Additional roles for the activity of histamine and mast cells in fish GALT are proposed in this paper.

The demonstrated role of MCs in orchestrating immune cells and the capacity of histamine in regulating the mucosal immune responses in fish are thus essential immune factors to be taken into account during a rational oral vaccine design for use in fish from the Perciformes class.



TargetFish Industry Workshops

Please anticipate another TargetFish Industry Workshop during the 18th International Conference of the European Association of Fish Pathologists (EAFP) in Belfast in September 2017 where the significance of TargetFish highlights and achievements for the aquatic animal health industry will be

discussed.

[Click here for more information](#)



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

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