Could the filament be the weak point of salmon louse?

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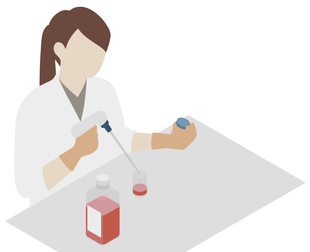
Role of salmon louse *Lepeophtheirus salmonis* and *Caligus elongatus* frontal filament-associated proteins in immune modulation and parasite attachment

Background and motivation

Molecular biologist interested in investigating host-parasite/pathogen interactions.

Previous research on interactions between:
- Breeding chicken and parasitic red mite (ecology),
- The plant *Arabidopsis thaliana* and the bacterium *Ralstonia solanacearum* (molecular biology).

Motivation to join the SEAS program: gain knowledge in marine biology and develop new skills in molecular biology.



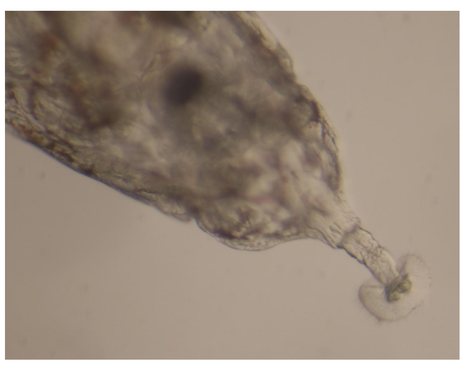
Adult salmon lice

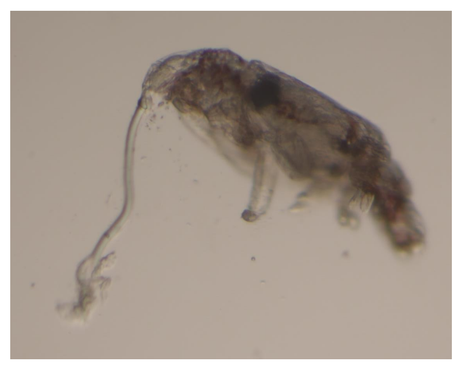
Project description

To find alternatives for the use of chemical and mechanical treatments, new methods must be developed to protect wild and farmed salmon from salmon lice infestations such as the development of vaccines. The frontal filament is essential for the salmon louse to stay attached to the fish during its early-parasitic stages and very little is known about its composition and formation. This project aims at **investigating the nature and the role of proteins associated with the frontal filament in the host-louse interaction**.

Main questions

- How is the filament of sea lice formed?
- What is the filament of sea lice made of?
- Do filament proteins modulate fish immune responses?





Salmon louse (left) and *Caligus elongatus* (right) filaments

Marine sustainability

Find alternatives for the use of chemical and mechanical treatments against sea lice in aquaculture.

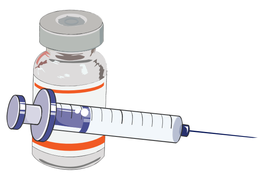
Protect farmed salmons from sea lice infestations.

Aims

Gene expression patterns(RNA-seq)

Protein composition (Proteomics)

Salmon louse and *Caligus elongatus* filaments



Vaccine development

Protein functions and modulation of host gene expression

Activities

- Conference of the International Society of Developmental and Comparative Immunology, 2023, Wageningen

Supervisory team

Aina-Cathrine Øvergård (BIO)
Christiane Eichner (BIO)

References

Salmon louse picture taken by C. Eichner and L. Hamre
Bioicons: Servier, DBCLS
Adult salmon louse from the SLRC center

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