

### Topic/Title

Betydningen av samspillet mellom omega-3 fettsyrer og Zinc på regenerering og sårhelingsmekanismer i laks

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Implications for the interactions between omega-3 fatty acids and Zinc on wound healing mechanisms in Atlantic salmon

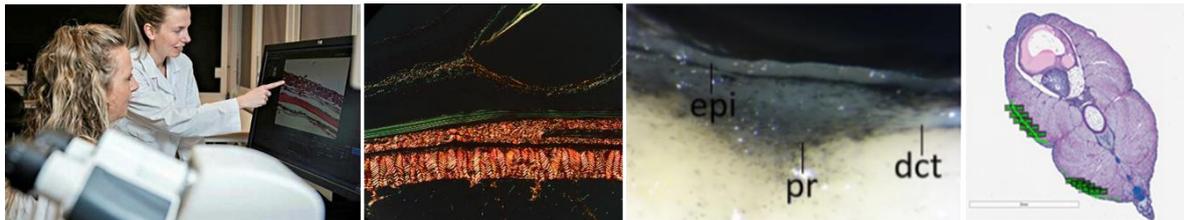


Fig. 1: Dr. Elisabeth Ytteborg and Dr. Lene Sveen, connective tissue in the skin of Atlantic salmon (polarized light, piro Sirius red, Healing skin of Atlantic salmon unstained sample (epidermis, pigment response, dense connective tissue), histological transverse section of juvenile Atlantic salmon.

### Summary

**Background:** Successful healing of skin wounds is crucial for any organism. Wound development may be caused by mechanical trauma, ulcer-inducing diseases or underlying pathologies triggered by for example nutrition insufficiency or other dermatological diseases. If wounds arise, wound care with focus on factors that may enhance, or delay skin regenerative processes are of interest. Nutritional manipulation may be an incentive which may enhance the healing process.

**The topic of this thesis:** Investigating the effect of interactions between omega-3 fatty acids and Zinc on wound healing mechanisms and fin regeneration in Atlantic salmon.

**Type of work:** The student will be involved in laboratory work, primarily focusing on histopathological evaluation of healing wounds, regeneration mechanisms and transcriptional responses. Techniques include processing and sectioning of tissue, variety of staining and microscope techniques, and isolation of RNA for transcriptional analysis. The student will learn basic laboratory techniques and acquire knowledge in the area of nutrition and the regenerative mechanism of skin.

### Relevant literature:

1. Gerd Marit Berge, E. Y., Tone-Kari Østbye, Henrik Sundh, Ida Rud, Lene Sveen, Grete, Bæverfjord, C. K., Aleksei Krasnov, Jonas Øgaard, Kristina Sundell, Mona Pedersen, Bente & Ruyter, H. O. B. 2019. Ernæringens betydning for skinn-, tarm- og gjellehelse hos laks. Nofima.
2. Sveen, L., Karlsen, C. & Ytteborg, E. 2020. Mechanical Induced Wounds In Fish – a review on models and healing mechanisms. Reviews in aquaculture, 12.
3. Sveen, L. R., Timmerhaus, G., Krasnov, A., Takle, H., Handeland, S. & Ytteborg, E. 2019. Wound healing in post-smolt Atlantic salmon (*Salmo salar* L.). Scientific reports, 9, 3565.

### Subject area

Nutrition, biology, health, animal welfare, histology, RNA, transcription



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**Please contact**

[lene.sveen@nofima.no](mailto:lene.sveen@nofima.no)

[elisabeth.ytteborg@nofima.no](mailto:elisabeth.ytteborg@nofima.no)