**Can epigenetics sustain productivity in farmed aquatic animals in the face of climate change?**

According to the UN´s Intergovernmental Panel on Climate Change, climate change is predicted to cause a global temperature rise of 1.8−4.0°C by the end of the century. Particularly, in Sweden and other Scandinavian countries, the rise is projected to be even more pronounced, reaching 3−5 °C by the 2080s. This rising temperature, driven by climate change, poses a serious threat to the growth, welfare, and survival of both (farmed) aquatic and terrestrial animals, with aquatic organisms especially more likely to be affected due to their cold-blooded nature and reliance on environmental conditions for temperature regulation and oxygen exchange. Consequently, extreme weather events are anticipated to disrupt biodiversity and reduce productivity in aquatic ecosystems. Epigenetics, a mechanism enabling the transmission of parental environmental influences to subsequent generations without altering the DNA sequence, has garnered increasing interest within the aquaculture community. Recent studies have linked epigenetic modifications in aquaculture species with the development of commercially valuable traits such as disease resistance, stress tolerance, and growth. Furthermore, these modifications offer potential insights into optimizing feed formulations and farming practices to mitigate the adverse impacts of climate change. Over the past decade, my research has focused on exploring natural strategies to modulate the epigenome of farmed aquatic animals, aiming to enhance their resilience to environmental stressors. Furthermore, I also sought to gain insight into the epigenetic mechanisms underlying stress responses in aquatic species, with the goal of translating this knowledge into practical solutions for sustainable aquaculture. In my lecture, I will discuss the potential of harnessing epigenetics to improve productivity in farming systems, ultimately contributing to food security amidst the challenges posed by climate change.