Title: How have immune genes evolved across the salmon family?

Keywords/Stikkord: immune genes, copy number variation, evolution, whole genome duplication

Thesis type/Oppgavetype: Master

Credits/Stp: 30, 45, 60

Language/Språk: English

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Description:
Immune gene diversity is important for immune function and evolution. Adaptability of immune response is increasingly important both for aquaculture and wild fishes in the face of predicted expanded pathogen repertoire and abundance with climate change. However, immune genes typically include clusters of duplicated genes where the functional equivalence with genes in other species can be unclear. These clusters are formed by gene copy number expansion and contraction and have typically been difficult to sequence and annotate accurately. Recently we have generated multiple long read genome assemblies across the salmon family, providing an opportunity to understand the evolution of these genes using comparative genomics. In this project we will use these genomes to analyse the evolution of immune genes to gain insight into the evolution of the salmon immune repertoire. Immune gene evolution is heavily impacted by the salmon whole genome duplication event, understanding how this has impacted evolution of immune genes is especially important. The student will use computational methods to compare sequence diversity and copy number variation within and between species and relate this to selection on different classes of immune genes.

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