

Degree project / Exjobb

*“Chromosome changes and recombination rate evolution
in butterflies”*

45 or 60 hp / ETCS



Background. If you are interested in the effects of molecular mechanisms and population genetic processes on genome evolution in natural populations, this project might be perfect for you. Recombination is a determinant of the efficiency of natural selection and the maintenance of genetic diversity. However, detailed recombination data from natural populations have been notoriously difficult to get. In addition, virtually nothing is known about the recombination rate in holocentric organisms (organisms that lack centromeres). Here we propose to develop high-density linkage maps for two wood white (*Leptidea sinapis*) populations with extremely different chromosome numbers. The linkage maps will be used to assess i) how the recombination rate varies across the genome, ii) if the recombination rate is affected by chromosome rearrangements, and, iii) if recombination events are associated with specific genomic features. To answer this, we have generated both a high-contiguity genome assembly and RADseq data for large pedigrees for each respective population. The data are available for analysis. Please, contact Niclas Backström (see below) for further details.

Specific aim of project: Characterize the global recombination landscape and investigate how chromosome changes and genomic features affect the recombination rate in wood white butterflies (*Leptidea sinapis*).

Time: Students can start any time of the year.

Contact: Niclas Backström; niclas.backstrom@ebc.uu.se