PROJECT DESCRIPTION – Master's Thesis at the Center for Quantitative genetics and Genomic (https://qgg.au.dk/)

Project title	Variance component estimation and comparison of models for breeding value estimation of cattle
Main subject area	Cattle breeding
Supervisor and Position E-mail	Egill Gautason, PhD student egill@au.dk
Co-Supervisor(s), Position(s) E-mail	Goutam Sahana, Senior Researcher goutam.sahana@qgg.au.dk
Project start	To be decided in agreement with the supervisor.
Physical location of project and students work	Center for Quantitative genetics and Genomics, AU Foulum, DK-8830 Tjele
Project description	
Project goal and background	The correlation of true and estimated breeding value (accuracy) of estimated breeding values is determined partly by the model used. The accuracy of a model is directly related to the realized genetic gain. By using cross-validation, different models can be compared to find the model with the highest accuracy. The aim of the project is to estimate variance components and compare different models for breeding value estimation of yield traits for cattle using cross-validation.
Specific research topic(s)	1. Estimation of variance components for different models. 2. Computation of breeding values. 3. Comparison of model accuracies using cross-validation.
Methods	Filtering and subsetting data of real data, variance component estimation, breeding value estimation, linear mixed models, cross-validation.
Additional information	30-45-60 ECTS thesis as appropriate. The MSc student is invited to co-author a scientific publication.