



Call for students (Agricultural Sciences, Life Sciences)

Project study: AI-assisted prediction of the impact of genetic factors on undesired behavior in livestock

Project study (3 CP)

We are currently seeking students for a one-time group project study funded by the Faculty of Agricultural Sciences for the integration of artificial intelligence (AI) in teaching.

Timeline

Weekly meetings of 90 minutes during the winter semester 2025/2026. A day and time will be decided together during the first meeting.

Background

Feather pecking represents a serious problem in poultry farming, particularly in laying hens. Feather loss and injuries significantly impair animal welfare and lead to increased energy requirements, resulting in lower resource efficiency. Feather pecking is a complex, multifactorial behavioral trait with a genetic component. Genetic studies revealed over 700 mutations associated with feather pecking behavior that affect the amino acid sequence of proteins.

In this module, students will utilise AI-assisted methods to predict whether these mutations could have functional effects on the animals, influencing their behaviour. Using the AlphaFold application developed by DeepMind (Google), which utilises AI to predict protein folding based on known structures, the first step will be to determine whether the mutations affect the protein's structures.

Since proteins perform a large part of their physiological functions through interactions with other molecules (e.g., proteins, DNA, RNA, lipids), the next step will be to determine whether the interaction with known binding partners is impaired. For this purpose, the interaction prediction implemented in AlphaFold 3 will be used.

Using ChatGPT Pro, predictions will then be made as to whether the findings obtained are neurophysiologically relevant. In this part of the project, the AI will be trained to predict the effects of the mutations based on existing knowledge.

Registration (seats are limited)

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