Mitigating methane emissions through breeding - where are we in Denmark?

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NAV workshop
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Introduction

Many projects and activities, related to

feeding, manure management to mitigate methane emissions, and many more

Focus of this presentation

projects and activities related to genetics

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ONIMIT

Project period
2022 - 2026

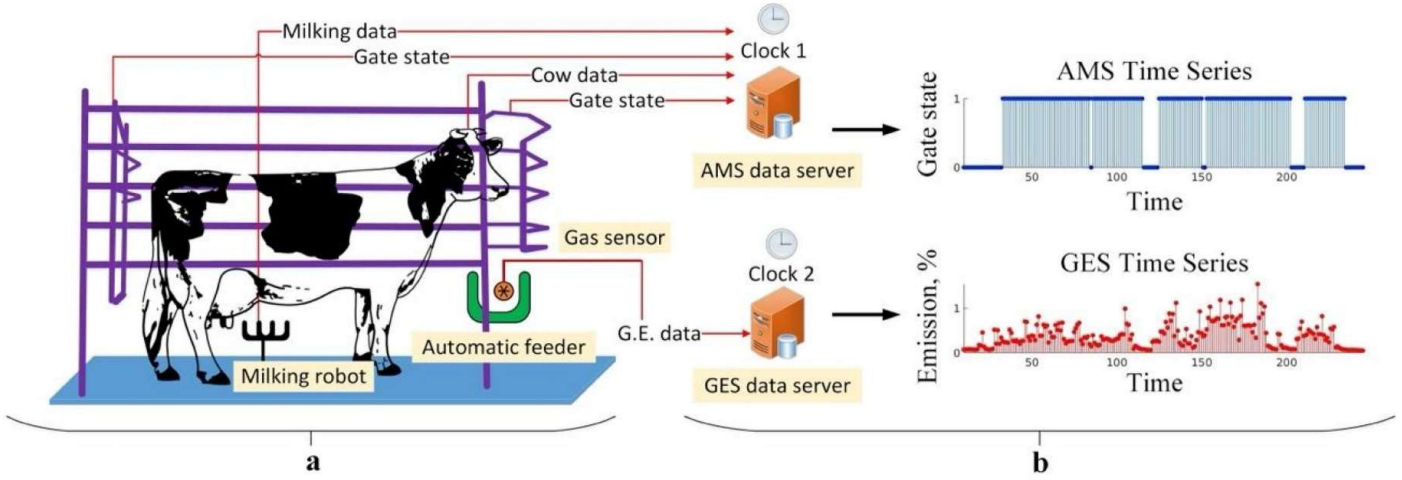
Main results so far

- Developed programs and pipelines to:

→Correct for background gas concentrations

→Generate corrected phenotypes

→Merge sniffer and AMS data



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ONIMIT

- Developed a model for genetic evaluation of methane concentration
- Data collection from 38 sniffers, so far installed in 40 farms (August 2025)

Basis for genetic evaluation

	HOL	JER	RDC	XXX	Total
Total number of cows	6,755	5,076	1,979	941	14,751
Total number of records	958,310	540,421	200,541	81,562	1,780,834

- Plan for 2026: 65 sniffers

10 from Danish Holstein + 10 from GMG Jersey + 5 from Jersey Support + 2 from GMG RDC

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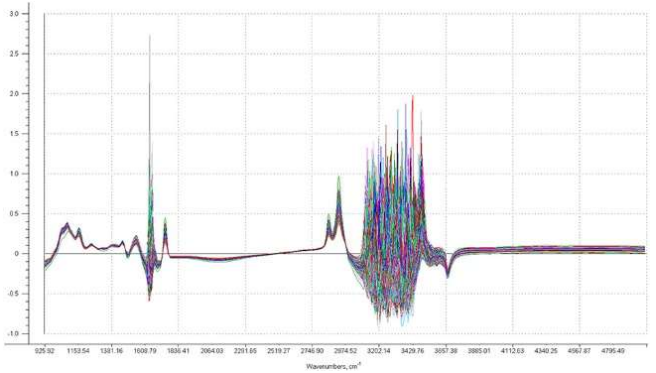
Project period
2024 - 2026

Main purpose

→Development of a model to define a methane proxy phenotype on the basis of mid-infrared spectrum (MIR) data



→Enables a methane phenotype for all dairy cows included in the Danish yield control

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Globale Methane Genetics (GMG)

Objective

Accelerating genetic progress to reduce methane in ruminants

Denmark involved in activities for Holstein, Jersey and RDC

Holstein: AU-QGG lead organization

Jersey: AU-QGG lead organization

RDC: Växa lead organization – therefore not part of this presentation

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Globale Methane Genetics (GMG)

Main activities - Holstein

- Establishing a testing facility for different sniffer types (quality assessment)
- International protocols and supporting tools for methane on commercial farms
  Recommendations in ICAR (International Committee for Animal Recording) guidelines
- Developing methods and software for automated data processing
  Standardized protocols for handling methane data across countries
- Combine methane phenotypes across countries to enhance genetic evaluations

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Globale Methane Genetics (GMG)

Main activities - Jersey

- Collection of methane data in Canada & Denmark
- Develop a pipeline for quality control and phenotype definition
- Upload data to GMG database *Jersey Methane Hub*

  Event data, pedigree, genotypes, calving info., etc.
- Collaborate with other **GMG** projects – e.g., microbiome

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GreenFeed data

https://www.google.com/url?sa=t&source=web&rct=j&url=https%3A%2F%2Fwww.c-lockinc.com%2Fresearchers%2Fproducts&ved=0CBYQjRxqFwoTCODAptqA_5EDFQAAAAAdAAAAABAI&opi=89978449

- Alternative measuring method, measures methane production in g/day
  - Sniffer: measures gas (e.g. methane) concentrations in ppm
  - Can be converted to gram per day, but involves some inference steps

  (Kjeldsen et al., 2024)

- In the Netherlands: both data combined in genetic evaluation
  - Methane production phenotype for all animals

- Currently methane data used for feeding trials
  - Investigating options for data sharing to support genetic analysis

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Other hot topics

- Methane index for crossbred slaughter calves
  - Enabled by results of the Future Beef Cross project, feed efficiency will follow in februar evaluation
- Bovaer
  - How to handle methane data from cows fed Bovaer in genetic evaluations?
- Combination of methane, feed efficiency and e.g. yield data
  - Trait development to anticipate unfavorable trait connections

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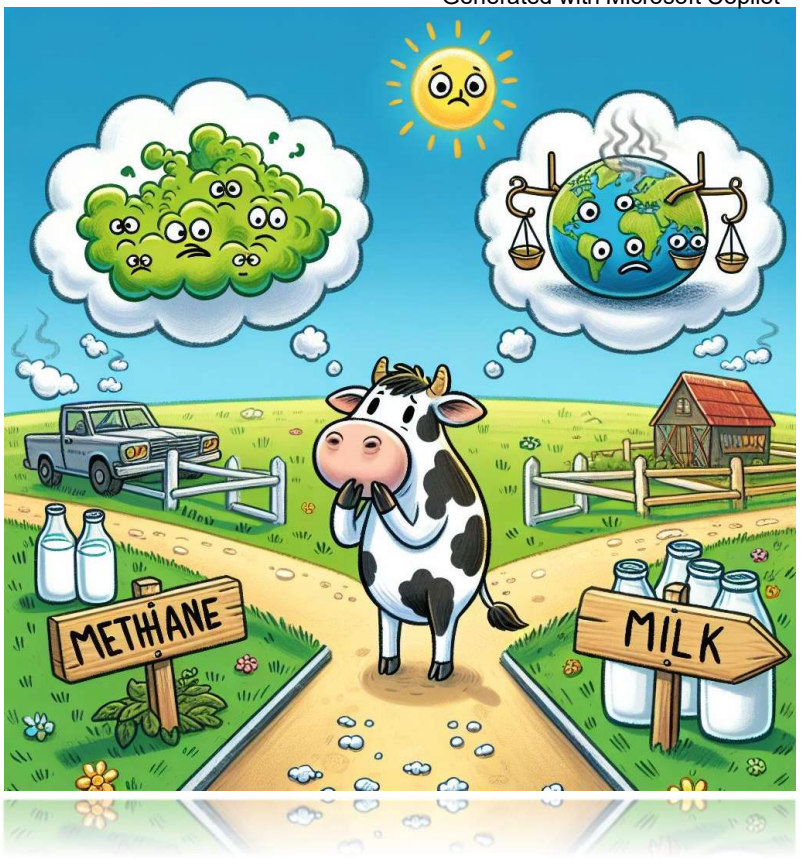

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Conclusion

- Many projects ongoing
- International collaboration important to avoid duplication of work, maximize benefits by sharing data and improve efficiency and accelerate progress

- Current international and Nordic collaborations are already making a difference

→NAV methane working group is a strong foundation for future success

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Questions?

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