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# METHAGENE

Large scale methane measurements  
on individual ruminants for genetic evaluations

## ABOUT METHAGENE

### METHAGENE is a unique network:

- ▶ **Bringing together European experts** working on strategies to quantify and mitigate methane emissions from ruminants and growing unique synergies.
- ▶ **Integrating a range of disciplines** to cover all methane-determining factors; animal nutritionists, animal breeders, environmental engineers, animal physiologists, rumen microbiologists, bio-informaticians, system biologists, statisticians, gas analysis experts.
- ▶ **Stimulating research, education and exchange** of knowledge and experience
- ▶ **Training of Early Stage Researchers** at training schools across Europe and on Short-Term Scientific Missions (STSMs)

METHAGENE started on December 10<sup>th</sup>, 2013 and will run until December 9<sup>th</sup>, 2017.



[www.methagene.eu](http://www.methagene.eu)



[www.cost.eu](http://www.cost.eu)

## INTRODUCTION

Reducing methane emissions of ruminants is a **hot topic**.

In the EU, the livestock sector accounts for about 13% of total greenhouse gas emissions.

Of the various greenhouse gases produced by ruminants, enteric methane (CH<sub>4</sub>) is the most important contributor, with a global warming potential 25 times that of carbon dioxide (CO<sub>2</sub>). Despite extensive research on solutions to reduce enteric methane emissions, there is little or no concerted EU-wide effort to **develop usable tools for genetic reduction of methane**.

METHAGENE offers a platform for this effort.

## JOIN METHAGENE!

- ▶ Are you planning to buy equipment and start measuring methane?
- ▶ Are you working on in vitro studies on methane?
- ▶ Are you approaching the study of enteric methane from a completely different perspective?

If you are new in this field, if you actively want to share your knowledge, and if you want to learn from others, **we would like to help you and also learn from you. Come on, and join our network soon!**

### What?

- Compiling all possible factors associated with variation in methane production
  - Animal factors
  - Nutritional factors
  - Rumen microbial factors
- Establishing standardised definitions for methane measurements

### Why?

- Input for the best experimental design
- Develop guidelines when collecting methane emission data

## Working Group 1 Methane determining factors

## Working Group 2 Measuring techniques and strategies

### What?

- Establishment of protocols for:
  - calibration
  - comparison
  - harmonisation
  - mergingof large-scale individual methane measurements
- Use of different techniques and measuring strategies

### Why?

- Being able to compare measurements of different studies
- Being able to combine data from different studies and enlarge the power of analyses

### What?

- Compiling, testing and developing low-cost indicators of methane output
  - Milk
    - Yield + Composition
    - MIR spectra data
  - Feed intake
  - Animal anatomy
    - Rumen size
    - Body size
  - And other indicators

### Why?

- Reducing costs of measurements
- Enlarging dataset with individual data

## Working Group 3 Proxies for methane

## Working Group 4 Benefits for producers

### What?

- Recommendations and suggestions for approaches to include methane into breeding goals
- Indications of the societal, environmental and economic value of methane output

### Why?

- Animal breeding is a mitigation strategy that is cost-effective, permanent, and cumulative
- Methane emissions are related to energy loss of feed intake (2-12%)
- Reducing methane whilst maintaining production has direct economic benefits