

# Animal Research Programme – Genetic Improvement of Animals

RMIS No: 6159

## Title

Developing Genetic Tools to Mitigate the Environmental Impact of Dairy Systems

## Abstract

The EU25 produce approximately 132 million tonnes of milk from 24.3 million cows on 1.76 million farm holdings. Ruminant animals account for up to 20% of the world methane production with the EU25 dairy population producing approximately 3.2 million tonnes of methane (CH<sub>4</sub>) per year. Many EU countries have specific and binding commitments relating to the reduction of GHG emissions, and all sectors of the economy are coming under increasing scrutiny in relation to their share in the overall emissions target. Little work has been done on the role of dairy cow genetics in dairy system emissions, particularly considering the role of genetics in the whole farming system, including feeding strategy and management policies (e.g., energy balance, housing periods, fertilisation and manure management). GREENHOUSEMILK will help us understand the role of energy efficiency and partitioning in the overall GHG output of dairy systems and develop innovative tools to help farmers' select "environmentally friendly" bulls to suit their system and how to manage those bulls' daughters in an appropriate manner. It will harness statistical and genetic tools to elucidate the genetics of emissions in dairy cattle and develop innovative and integrative tools that address the environmental impact of dairy farming, thus underpinning a high priority policy area. GREENHOUSEMILK will build on data, resources and expertise being developed in the FP7 KBBE-2007-1 funded project RobustMilk. Utilising the resources and skills from RobustMilk to address other questions is highly beneficial and synergistic and will add to the outcomes of both projects. GREENHOUSEMILK will examine: 1. causes of variation in CHG emissions in dairy cows, 2. genomic tools to help select for reduced CHG emissions, 3. integrating animal CHG emissions into farm systems models and, 4. developing selection indices that include environmental impact.

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