



GENE-SWitCH

TRANSFORMING HEALTH & WELL-BEING THROUGH DIET

The GENE-SWitCH project, with its innovative focus on diets, has opened new avenues for enhancing health and well-being across species. We explore the project's remarkable contributions, that pertain to critical issues, in animal health, and sustainable food practices. Health and well-being are interlinked, and dietary interventions play an important role through their effect on the microbiota. In tackling this topic, GENE-SWitCH has addressed the broad goals of sustainable food practices and animal health and welfare.

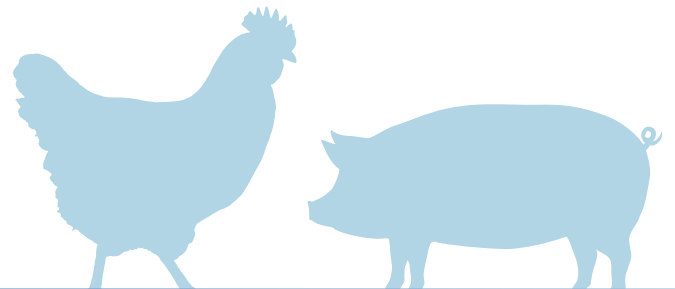
GENE-SWitCH CONTRIBUTIONS

1 IMPROVING ANIMAL HEALTH AND WELFARE

The GENE-SWitCH project has explored how increasing the fermentable fibre content of feed would be an affordable approach to enhance piglet health. Fermentation of non-digestible fibre by the microbiota in the colon leads to the production of beneficial short-chain fatty acids. The project has provided evidence that high-fibre maternal feed can positively affect the metabolism and immune system of the foetus and offspring, although only two organs have been studied to date, and further studies are required to confirm these important findings. This approach aligns with the project's overarching goal of enhancing animal health and welfare and sustainable food practices.

2 IMPLICATIONS FOR HUMAN HEALTH, ESPECIALLY METABOLIC DISEASES

The GENE-SWitCH project results provided new insights into the effects of high-fibre diets on liver and muscle metabolism and the immune system. This has positive health implications for the role of fibre in the maternal diets of pregnant women and in the human population in general. The results warrant further studies in humans. Testing and enhancing diets can pave the way for healthier societies.



APPLICATIONS AND POTENTIAL IMPACT

The project's results and recommendations pave the way for follow-up investigations to improve sustainable food production, animal welfare, and possibly human health. Importantly, dietary fibre is found in the indigestible parts of cereals, fruits, and vegetables. Several types of dietary fibres can be extracted from waste streams from cereal, fruit, and vegetable processing contributing to the circular economy and sustainable agriculture.



CONCLUSIONS AND NEXT STEPS

This pioneering work of GENE-SWitCH on the epigenetic effects of dietary fibre in sow feed is important for designing future “genome-enabled” strategies to improve the health of young farmed animals. It also has implications for human health strategies, although further studies are required to support our findings and translation to humans. In summary, **GENE-SWitCH's** collective efforts have revealed strategies to support health and well-being across species.



By prioritizing the research areas below and fostering collaboration between interdisciplinary research and businesses, Europe can accelerate the development of evidence-based dietary strategies to improve animal and human health, promote sustainable food practices, and contribute to a healthier and more resilient society.

1

Increasing knowledge on microbiota-diet interaction by conducting in-depth studies to unravel the mechanisms by which dietary fibre and other dietary components influence the gut microbiota and its impact on host and offspring health.

2

Promote research into the effects of dietary interventions on animal welfare, particularly for young animals. Explore additional organ systems and conduct comprehensive studies to confirm the initial findings on metabolic and immune system benefits.

3

Undertake collaborative research with the farming industry to assess the impact of fibre-enriched feed on animal health, growth performance, and product quality.

4

Exploring sustainable fibre sources by partnering with food processing companies to identify and extract valuable dietary fibres from waste streams, contributing to circular economy practices.

5

Use livestock as non-classical animal models to evaluate the effects of high-fibre diets on human health, particularly in preventing and managing metabolic diseases.

6

Promote interdisciplinary research that bridges the gap between animal health, human health, and sustainable food production. Encourage collaboration between researchers from various fields, including veterinary science, human nutrition, and sustainable agriculture.





GENE-SWITCH

**GENOMIC REVOLUTION:
TRANSFORMING HEALTH AND WELL-BEING
THROUGH INNOVATIVE DIETS**

**Join us for a more sustainable and resilient pig and poultry
production in Europe!**

