Multi-disciplinary approaches for improving sustainable livestock production

Stakeholder session
Session 56: Research needs, opportunities, and difficulties
Session 67: User application needs

Stakeholder session

EAAP annual meeting
Dubrovnik, Croatia
Thursday August 30\textsuperscript{th}, 2018

Jaap van Milgen
Marie-Hélène Pinard – van der Laan
Program

• Morning
  • Introduction
  • 1 invited presentation
  • 4 short presentations
  • Coffee break (10h15)
  • 2 presentations
  • Panel discussion: Opportunities and difficulties in multidisciplinary and multi-actor research

• Afternoon
  • 3 invited presentations
  • 1 short presentation
  • Coffee break (15h45)
  • 4 short presentations
  • Panel discussion: User needs and applications

• 8 Posters
Isabelle Schwartz-Cornil, coordinator

Marie-Hélène Pinard-van der Laan, deputy coordinator

14 institutes (19 labs), 5 SME, 1 forum, 1 tech-transfer, 1 big pharma
12 countries
Objectives

Generate effective, safe, affordable vaccination strategies towards the control of endemic pathogens responsible for economic losses in livestock

Integrated approaches against representative pathogens

* Bovine Respiratory Syncytial Virus (BRSV)
  * Mycoplasma bovis

* Porcine Respiratory and Reproductive Syndrome Virus (PRRSV)
  * Mycoplasma hyopneumoniae

* Eimeria species
  * Clostridium perfringens
...a multidisciplinary approach of livestock infectious diseases control

SAPPHIR
Strengthening Animal Production and Health through the Immune Response

VACCINE DESIGN

Socio-economic context analysis of infectious diseases & control measures

Geneticists
Biotechnologists
Microbiologists
Immunologists
Pathologists
Big Pharma
SME

Transformation of research to market

Sociologists
Economists
Big Pharma/SME

Stakeholders
Biologists
Mathematicians
...for Innovative Integrated Health Management Strategies!

Combined measures integrating:

- genetics and biomarkers-assisted breeding
- schemes based on response to vaccines and pathogens, treatments

Environment - Pathogen - Host

Disease

Production System

- management of biosafety, housing and nutrition

Socio-economic information on existing prevention & control measures (vaccines, treatments, genetics)
Feed-a-Gene

Adapting the feed, the animal and the feeding techniques to improve the efficiency and sustainability of monogastric livestock production systems.

The Feed-a-Gene Project has received funding from the European Union’s H2020 Programme under grant agreement no 633531.
Objectives of the Feed-a-Gene project

Feed:
- Develop new local feed resources that are not/less in competition with food
- Improve the nutritional value of feed resources

Gene:
- Use of novel traits indicative for feed efficiency and robustness that can be used as selection criteria
- “Do better with feeds that may be worse”

Traits, models, and feeding techniques:
- Appreciate variation among animals
- Develop precision feeding techniques
- Evaluate the overall sustainability
Adapting the feed, the animal and the feeding techniques to improve the efficiency and sustainability of monogastric livestock production systems.

It is all about variation

**Observe** variation in feeds, animals, and the environment

**Predict** using data-driven models and quantify interactions and variation

**Understand** the underlying mechanisms of variation

**Control** through livestock management
The complexity of livestock production calls for a multidisciplinary approach.
Even things that look simple can be complex
The complexity of livestock production calls for a multidisciplinary approach.