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## New Strategic Research Agenda: pig breeding

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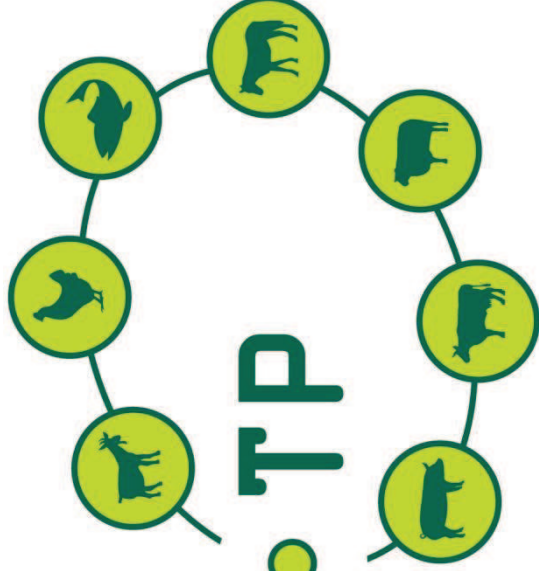
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**FABRE • TP**



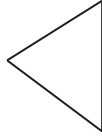
**STRATEGIC RESEARCH  
AGENDA**

**UPDATE 2011**

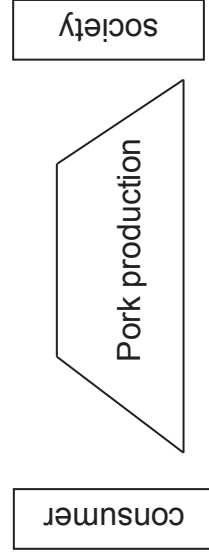
**PIGS**

# INTRODUCTION

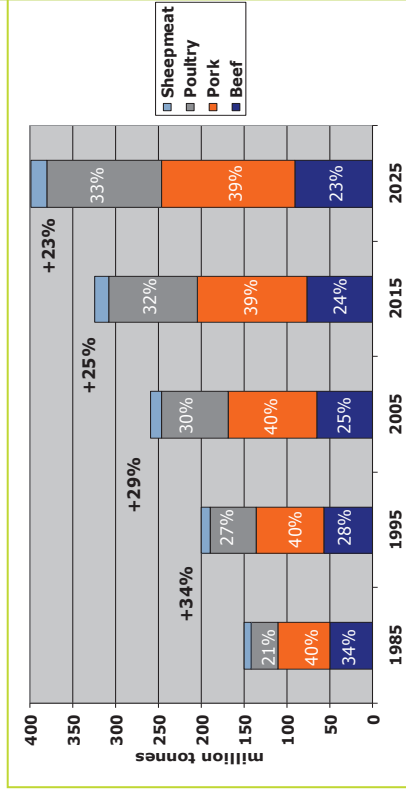
- 40% of meat is pork
- Consumption will increase
- Competition with food and fuel
- Further reduction of costprice



Reproduction technologies

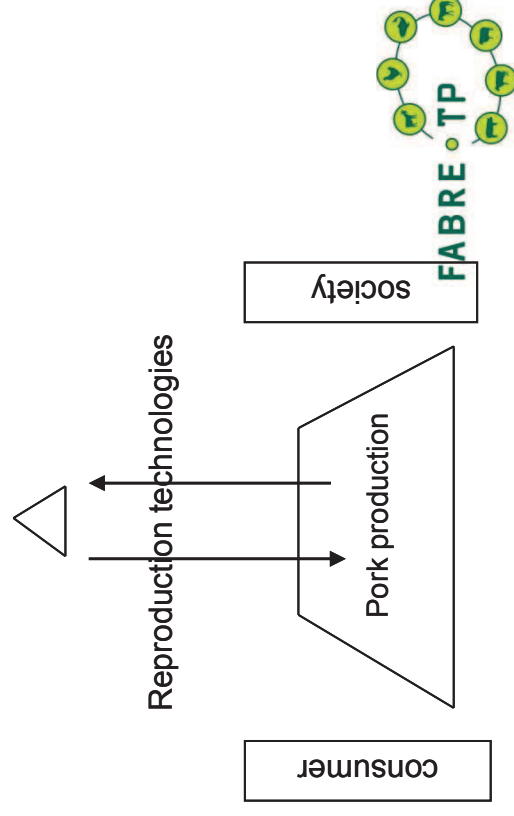


- Health: consumer
- Health: society
- Animal welfare
- Climate change



# CHALLENGES, KNOWLEDGE GAPS AND OPPORTUNITIES

- Changing production environment:
  - Feeding
  - Housing
  - Health
- Imperfect understanding of:
  - Feed digestion
  - Genotype-environment interaction
  - Human and animal health
- Opportunities
  - GENOMICS
  - Small flexible high health nucleus populations
  - Further improvement of (feed) efficiency



# Examples of new or improved tools

- Traceability
- Large scale data recording in commercial populations for selection and for use in advanced modeling tools
- Frozen semen
- High health semen
- New traits in animal behavior and health
- Adaptation to new byproducts
- Genomic Selection
- Improved embryo transfer
- Stem cell lines, cloning, gene transfer and, possibly, genetically modified pigs



## PROBLEM OF STASIS

- Europe: many countries
- Breeding programs within countries
- Worldwide trade of meat
- Mainly SME's
- Cost and knowledge intense across species gen- and other -omics developments
- Need for European precompetitive cooperation
  - Between countries
  - Between disciplines
  - Between species
  - Between “humans and species”



Consumers and citizens; society

Requirements & constraints

Breeding goal

Traits & phenotypes

individuals

Animal Resources  
Lines  
Populations

Selection programs  
Genomics  
Genes

Animal Resources  
Lines  
Populations

Reproduction technologies: make more of what we want, efficiently

Pets ANIMAL PRODUCTION medical side



Consumers and citizens

# RESEARCH PRIORITIES – SHORT TERM

## Breeding goal

- Define future production environment
- Including welfare indicators
- Including environment sensitivity (where will production go to)

## Technology

- Implementation of genomic technologies!

## Traits

- Cooperation between feeding and genetics in terms of by-products and gut health
- One world one health: cooperation between human medicine, veterinarians and geneticists
- Mothering ability, better sows, longer living which prepare piglets for optimum finishing phase





# RESEARCH PRIORITIES – LONG TERM

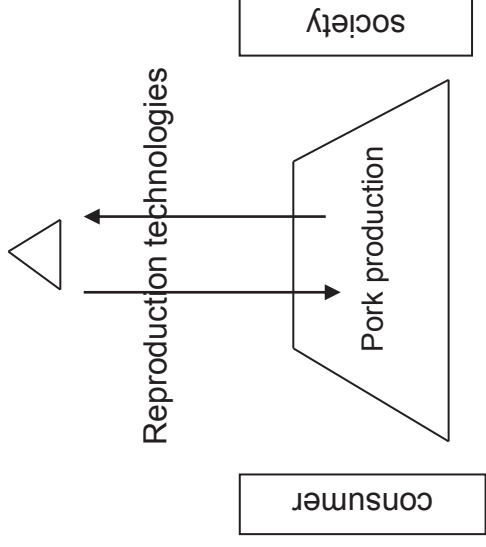
Exploiting gene – environment interaction

Identification of complex regulatory networks and epigenomic mechanisms at the whole-genome level;

- Need for fully annotated pig genome
- Need for accessible individual genetic identity card
- Offers optimum individual treatment in feeding and animal health
- Offers ‘PUP’, predictable uniform pork



# Conclusion



Genetic selection can strongly help to maintain and strengthen a sustainable pork production.

Europe has a head start in open communication with consumers and society,



# PIGS EXPERT GROUP

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- Miguel Higuera
- Egbert Knol

