

# Development of Pigs with Higher Disease Resistance using an *In Vitro* Test

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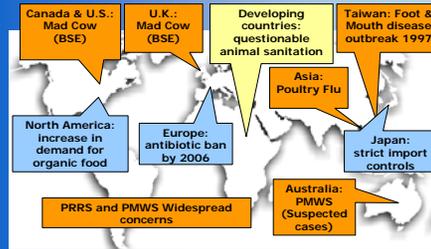
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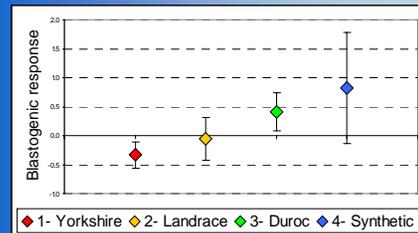


## Animal Health – Major Issues



Large unmet need to improve disease resistance in animals

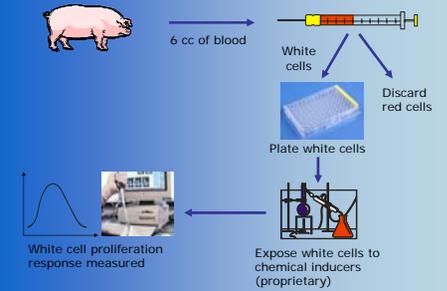
## Breed differences



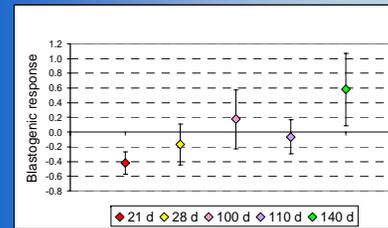
## In Vitro Swine Disease Resistance (SDR) Test

- Test for general immune capacity using a small blood sample
- Lymphocytes are exposed to specific mitogens
- The blastogenesis of the blood cell subsets is measured through a multihit assay
- The test assesses the numbers of cells and their functional ability
- Response to the selected mitogens is mapped on specific chromosomes using QTL analysis.

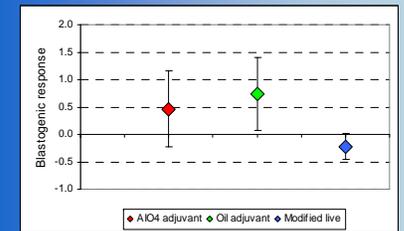
## SDR Test Protocol



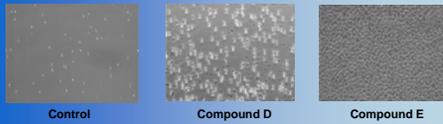
## Age differences



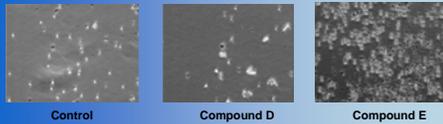
## Vaccine Response



## PIG – 182 (HEALTHY)



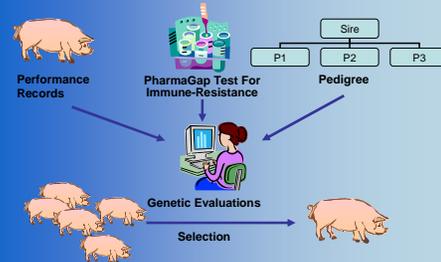
## PIG – 440 (SICK)



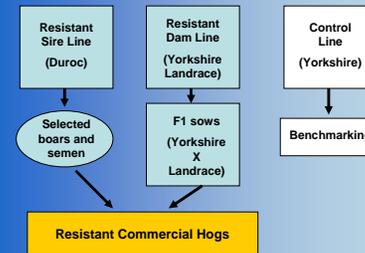
## On-going work

- Analysis of SDR results on 2 groups of pigs (150 from Québec, 200 from Prince Edward Island), including 3 breeds
- Estimation of genetic parameters
  - Heritability
  - Correlations with other traits of interest
- Development of genetic evaluation programs

## Selection Program



## Genetic Improvement



## Swine Disease Resistance (SDR) Test

- Non-invasive and simple
- Accurately reflects disease resistance status
- Reproducible
- Cost effective
- Useful for genetic and management decisions
- Useful for breeding, multiplication and production herds