

EADGENE European Animal Disease Genomics Network of Excellence for Animal Health and Food Safety

Animal Disease Genomics: Opportunities and Applications
 10th - 11th June 2008, Edinburgh, UK

Animal Trait Ontology within EADGENE

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What is Trait Ontology?

- An ontology is a classification methodology that defines a **common vocabulary** in a **structured way** for useful information sharing.
- **Traits may be described in several different ways** due to differences in methods of detection or measurement, scope of description and/or customs.
- In order to compare and use information within and across species, we have to make a "standard" way of trait description. To solve this problem, "**Trait Ontology**" is introduced to classify and organize the traits.

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Traits

- \$ profit/sow place/year,
- PWSY, ...
- Litter size, piglet survival, farrowing interval, ...
- Ovulation rate, robustness, disease resistance
- Level of hormones, enzymes,
- Pathways, gene expression, gene function, ...
- Polymorphisms, ...

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Ontologies across species
 Incl. mouse, rat, human
Biological information

Step 1: ATO Industry terms

Step 2: Create the link

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Global ATO project

Other

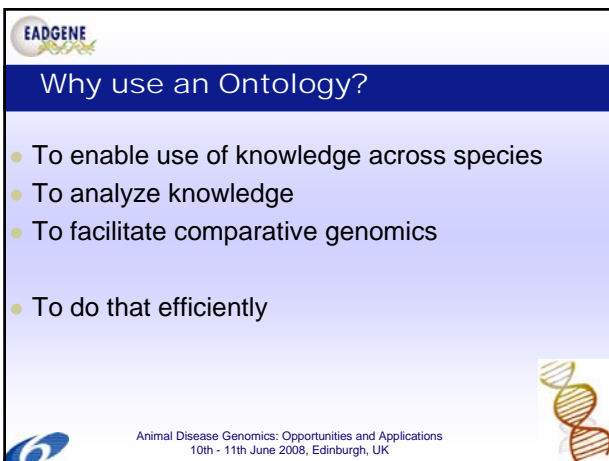
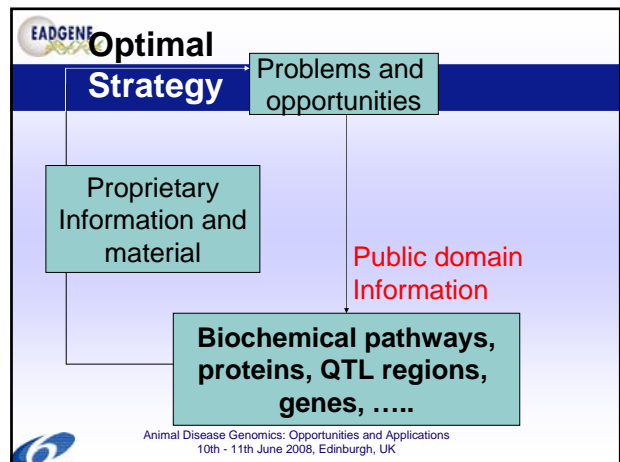
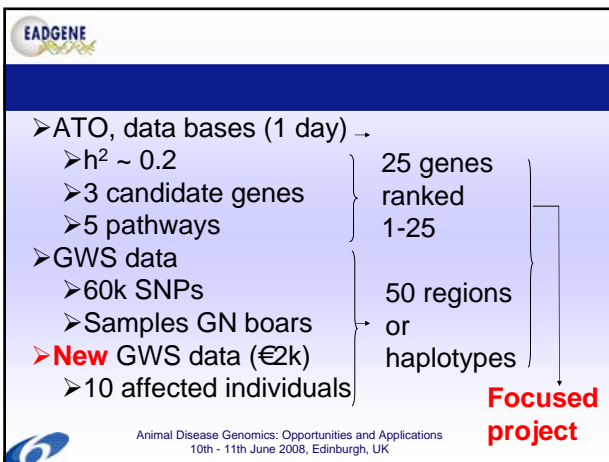
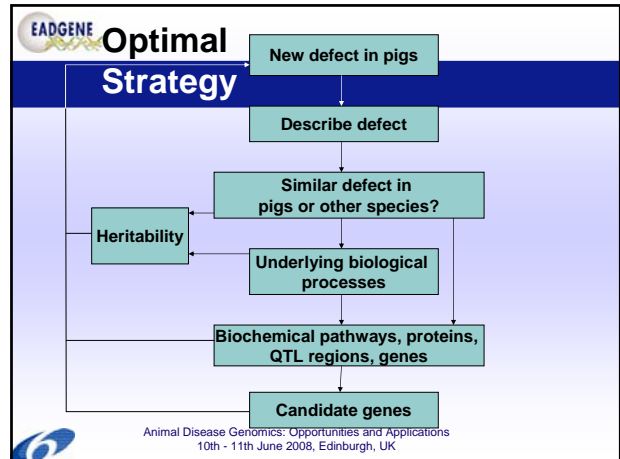
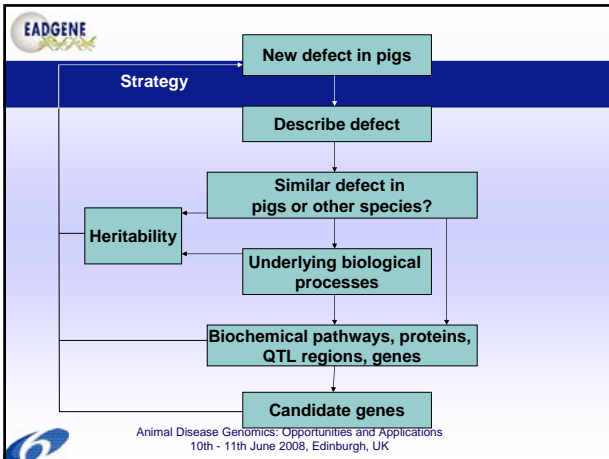
James Reecy	Hein van der Steen	???
NRSP-8 Animal Trait Ontology Project	ATO project coordinator EADGENE	???

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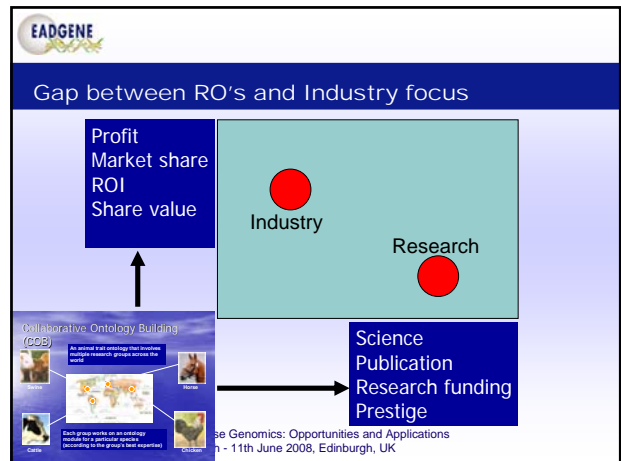
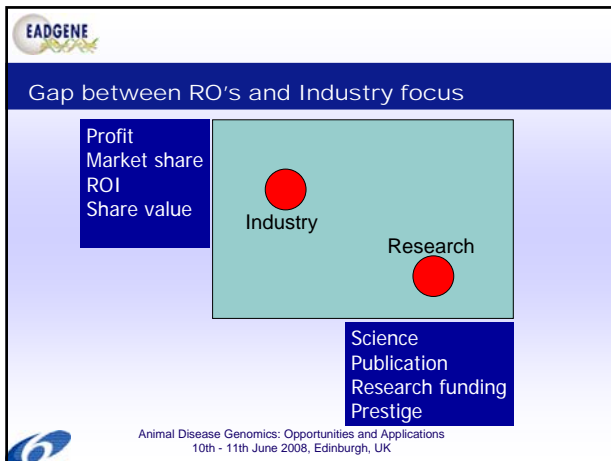
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Information in the public domain

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Animal Trait Ontology within EADGENE
 Hein van der Steen, StoneBridge Breeding Ltd, UK



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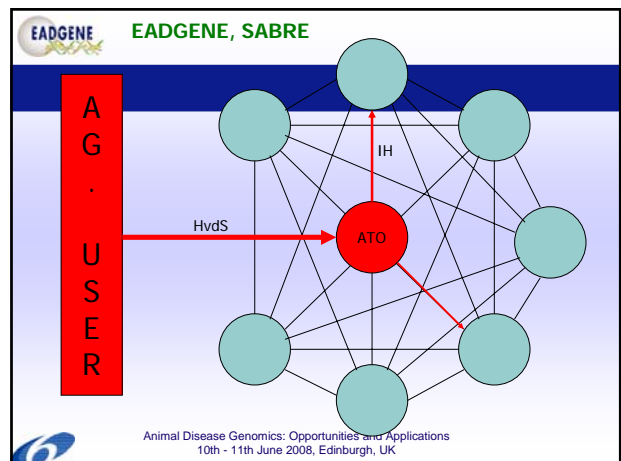
Risk

Nobody is motivated enough,
 overlap, waste of resources
 no use, no added value

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- EADGENE**
- EADGENE Ontology Project
- Industry driven (and also useful for research)
 - Field: Host-pathogen interactions and immunology
 - Dictionary, thesaurus, definitions, for farm animal production traits
 - Link information across species (comparative genomics) and within and between trait levels (biology of host species)
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- EADGENE**
- Approach
- Collect the traits being used by the industry
 - Start with species groups Cattle, Pigs, Poultry
 - Prepare for Sheep, Horses, Salmonides and Shrimp
 - Aim for 4-8 people per species group from different organizations from different regions.
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Issues

- Distinction between **definition of terms** and **description of traits**
 - Definition of puberty, first oestrus
 - Traits:
 - age at first oestrus
 - intensity of first oestrus (visual signs)
- Traits as recorded per individual or calculated for a group
 - Animal does or does not produce a litter 110-120 days after insemination (0/1 trait)
 - Farrowing rate. % of animals calculated for a defined group of animals
- Potential overlap NRSP, EADGENE, SABRE,
 - Coordinate to make sure it will all fit together
 - How will the 'end product' look like?

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Next

Use **experience** in cattle, pigs, poultry for other species

- Define species neutral format for collection of information
- Use that as a starting point for specific species

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Main issues (workshop Thursday)

- What is our 'end product'?
- How to get there?
- How will it be used to create **value**?

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Example

	Cattle	Pigs	Poultry	Human	Mouse	Rat
Trait							
Related traits							
Pathways							

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Example

	Cattle	Pigs	Poultry	Human	Mouse	Rat	
Wearing weight in pigs		↑						
Related traits		← ATO →						
Pathways								

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Example

	Cattle	Pigs	Poultry	Human	Mouse	Rat
WW in pigs		↑					
Growth		↑					
Milk production		↑					
Fat% in milk		↑					
Pathways		← ATO →					

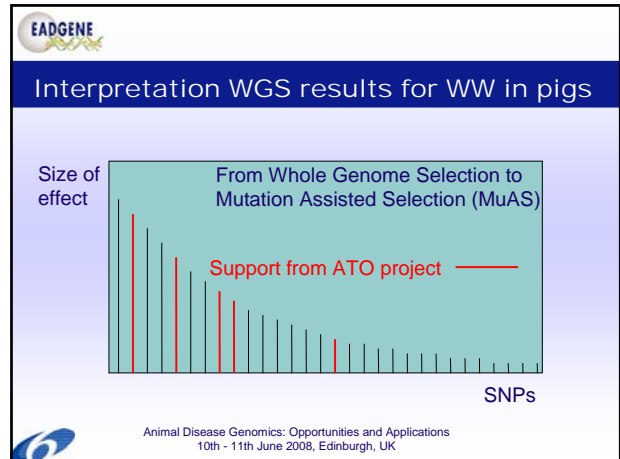
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Example

Candidate genes	Cattle	Pigs	Poultry	Human	Mouse	Rat
WW in pigs	x	x				x	
Growth	x	x	x		x	x	x
Milk production	x	x				x	
Fat% in milk	x				x	x	x
Pathway A					x	xxx	xx
Pathway B		x			xx	xx	xx
Pathway C					x	xx	xx

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HELP !

If interested to contribute

- In general
- For specific group of traits

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Hooray

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