Improving cow reproductive performance using genetic estimates of daughter fertility
### Daughter Fertility Australian Breeding Value (ABV)

<table>
<thead>
<tr>
<th>Code</th>
<th>A2 Status</th>
<th>NASIS ID</th>
<th>Pedigree</th>
<th>BP</th>
<th>BPI Rel%</th>
<th>HWI</th>
<th>HWI Rel%</th>
<th>TWI</th>
<th>TWI Rel%</th>
<th>ASI</th>
<th>Protein (Kg)</th>
<th>Fat (Kg)</th>
<th>Fat %</th>
<th>Rel %</th>
<th>Daughters</th>
<th>Herds</th>
<th>RIP %</th>
<th>Milking Speed</th>
<th>Temperament</th>
<th>Likeability</th>
<th>Overall Type</th>
<th>Mann System</th>
<th>Rel %</th>
<th>Cell Count / Rel %</th>
<th>Dir Fertility / Rel %</th>
<th>Calving Ease / Rel %</th>
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<td>WRANGLER</td>
<td>12FFH13</td>
<td>Man-O-Man x Shottle</td>
<td>304 69 213 64 285 69</td>
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<td>Roumare x Goldbullion</td>
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Objectives

• Part 1: ABV analysis
  – Explore the relationship between genetic estimate + phenotypic outcomes

• Part 2: Social research
  – Explore farmer attitudes, intentions and behaviours re: the selection of high daughter fertility ABV bulls
1. Materials and methods – ABV analysis

Retrospective cohort study

- **Herd**
  - 37 herds
  - Farm data

- **Cows**
  - 82,932 cows (1965 – 2017)
  - 31,083 Holstein-Friesian
  - 6327 Jersey

- **Lactations**
  - 214,406 calving records
  - 423,934 mating and preg test records
  - 902,015 herd test records
1. Materials and methods – ABV analysis

Daughter
Fertility ABV

- 3 week submission rate
- First service conception rate
- 6 week in-calf rate

genetic estimate, calculated from sire (0.5) + dam sire (0.25) daughter fertility ABV

Phenotypic measures of reproductive performance for each cow per mating period
- Survival analysis
- Regression model
2. Materials and methods – social research

- Elicitation study + questionnaire
3. Results – ABV analysis

• 3 week submission rate
<table>
<thead>
<tr>
<th>Summary of data collected so far</th>
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</table>
| **Salient beliefs** | Have improved overall herd fertility.  
Gain better culling flexibility.  
Gain more heifer replacements.  
Gain better cow longevity.  
Have better profitability and/or lower costs.  
Have less reproductive wastage and better AI efficiency.  
Have less frustration and/or headaches about particular cows not getting in calf.  
Feel like I'm improving my herd and breeding towards a better animal.  
Have restrictions on my bull choices.  
Have compromised progress in non-fertility traits such as type or production. |
| ‘If I select high daughter fertility ABV sires, I will…’ |

| **Salient referents** | Other commercial dairy farmers.  
Other stud breeding dairy farmers.  
My herd improvement centre.  
My local vet.  
Breed societies.  
My AI tech and/or breeding consultant.  
Dairy Australia.  
My semen seller/AI company.  
People who buy (or will buy) my stock. |
| ‘Groups or people with an opinion about selecting high daughter fertility ABV sires include…’ |

| **Perceived barriers** | Lack of confidence in daughter fertility ABV data.  
Lack of confidence in daughter fertility ABV reliability.  
Too much information to sort through.  
Price – high daughter fertility ABV sires are more expensive than other sires.  
Difficulty looking up a bull’s daughter fertility ABV.  
Lack of confidence that genetic selection for fertility will have a measurable impact on my herd. |
| ‘Things that make it hard for me to select high daughter fertility ABV sires include…’ |
Change in average Daughter Fertility ABVs in cows born over the last 43 years.
Acknowledgements

• Dairy Australia
• University of Melbourne
  – Associate professor Michael Pyman
  – Associate professor Peter Mansell
  – Dr David Beggs
  – Professor Mark Stevenson

• Rochester Veterinary Practice
  – Dr Alistair Murray
  – Dr Mitch Crawford

• Farmer participants