Mendelian Sampling Test
Review of Country Results

Interbull Workshop
August 25\textsuperscript{th}-26\textsuperscript{th} Dubrovnik, Croatia
Short Overview of Past Actions

- **2012** Test software developed for Interbull service users (Tyrisevä et al, 2012)
- **Nantes 2013** - Ok to proceed with a pilot study
- **Berlin 2014** – First pilot run results
  - 26% of combinations failed the test
  - Countries investigation revealed faulty data being used
  - Software Adjustments
- **September 2017**: Software applied to all breeds for production traits
- **January 2018**: Software applied to all breeds/all traits
  - Software Adjustments
Aim:
Detect heterogeneity in genetic variance

By:
- Calculating within-year genetic variances and assessing existence of a trend by a weighted linear regression of within-year variances.
- Calculating empirical 95% C.I. for the trend by bootstrapping 1000 samples
- Detect years with possible outliers
• **For the trend:**
  - ± 2% avg estimated genetic variance
  - 95% C.I. including zero

• **For the outliers:**
  - 95% C.I. including the average genetic variance

- MS Test requested from all countries introducing changes or validating for the 2 years’ rule (22 in total, any breed/any trait)

- MS Test received from 18 (+3) countries for different breeds/traits:
  - **PROD + UDDER**: test requested for both sexes
  - **OTHER TRAITS**: test requested for males only
• Software minimum requirements:
  ✓ MS reliability > 0.1
    Warning! After MS reliability check, number of records under 10 in a year class: 2013
    Please check is it possible to change a time window or exclude the outermost year(s).
  ✓ Minimum animals/birth year class
    Warning! In each birth year class the number of animals with observations must be at least 50% of the average
class size in the testing period.
    An average number of animals per year is: 183.2
    In year 2010 n = 78
    In year 2011 n = 76
    In year 2012 n = 42
    In year 2013 n = 12
    Please check is it possible to change a time window or exclude the outermost year(s).

• Heterosis not accounted for
  ➢ Test should be applied within breeds
  ✓ Decrease number of eligible data for some countries
# Overview of Data Received per Breed

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Is there any inference we can make by looking at the genetic trend?
Milk Genetic Trends - HOL

![Graph showing genetic trends for different genetic groups over time. The graph indicates a failure point in the data for certain years.]
Protein Genetic Trends - HOL

Graph showing genetic trends from 1988 to 2012 for different categories labeled COU1 to COU9. The graph includes a vertical red line indicating a 'Fail' event.
Fertility Interval Traits (CC2) - HOL
A total of 360 MS tests received

- 289 (79%) successfully passed the test
- 30* (8%) failed the test

* After discarding of results with:
  - Presence of years’ outliers
  - Software’s warnings on not enough records for some years’ classes

Looking forward to hear about countries experiences and ITC final recommendation
Acknowledgements

✓ LUKE  ✓ ITC  ✓ WG  ✓ All users!