

# Genetic parameters of average milk flow recorded electronically from milking parlours and automatic milking systems in Estonian Holstein dairy cows

*Denis Pretto<sup>1</sup>, Alo Tänavots<sup>1,2</sup>, Heli Kiiman<sup>1,2</sup>, Elli Pärna<sup>1,2</sup>,  
Haldja Viinalass<sup>1,2</sup> and Tanel Kaart<sup>1,2</sup>*

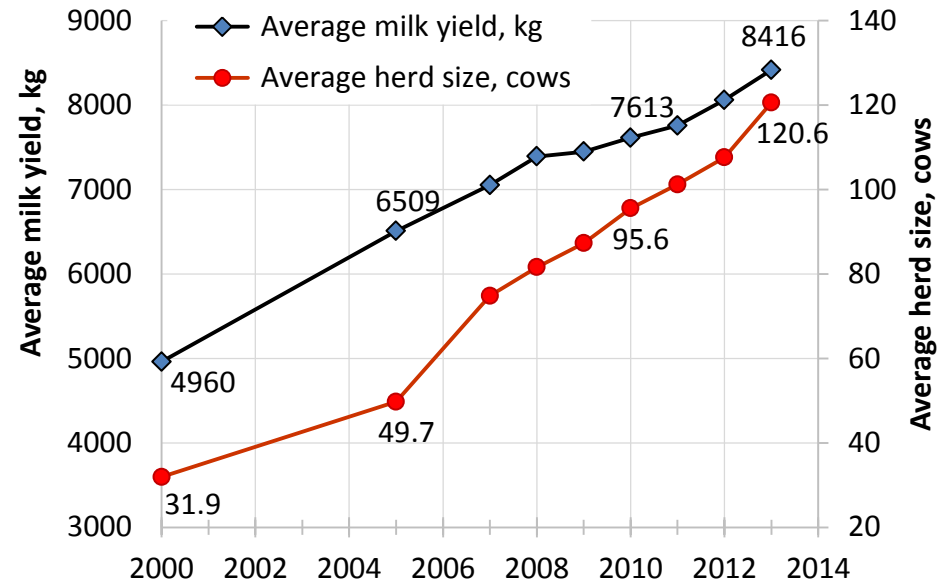
<sup>1</sup>Institute of Veterinary Medicine and Animal Sciences, Estonian University of Life Science

<sup>2</sup>Bio-Competence Centre of Healthy Dairy Products (BioCC) LLC

✉ [denis.pretto@emu.ee](mailto:denis.pretto@emu.ee)

# Introduction

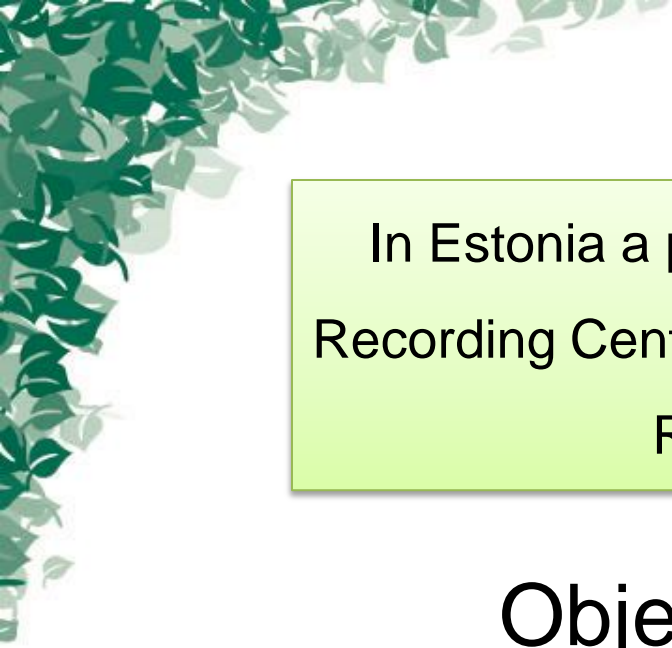
- Selection against slow milking cows have economic importance for modern dairy systems:
  - Save time and energy
  - Efficient use of equipments
  - decrease milking stress, etc.
- Modern milking systems is rapidly increasing:
  - in Estonia more than 35% of cows are milked in modern milking parlours (**MP**)
    - automatic cow identification
    - measurement of production
    - milking time
  - 174 automatic milking systems (**AMS**) are installed (Jan-2014)
    - about 12% of cows



# Introduction



- Several methods for Milking Speed recording are available:
  - subjectively assessed **by farmers**
  - recorded with a **stop-watch** (e.g. Simmental and Brown Swiss cows in Germany and Austria)
  - recorded with **electronic milk meters** (e.g. Italian Brown Swiss)
- In modern milking systems several traits are available:
  - **Average Milk Flow Rate**
  - Peak Flow Rate
  - box time, etc.
- Average Milk Flow Rate (kg/min) is considered one of the best trait:
  - can be available for both AMS and MP
  - high heritability (0.42-0.54)
  - high repeatability within the same lactations (0.63-0.77)
  - high genetic correlation across lactations (0.93-0.99) (Carlström et al. (2014))



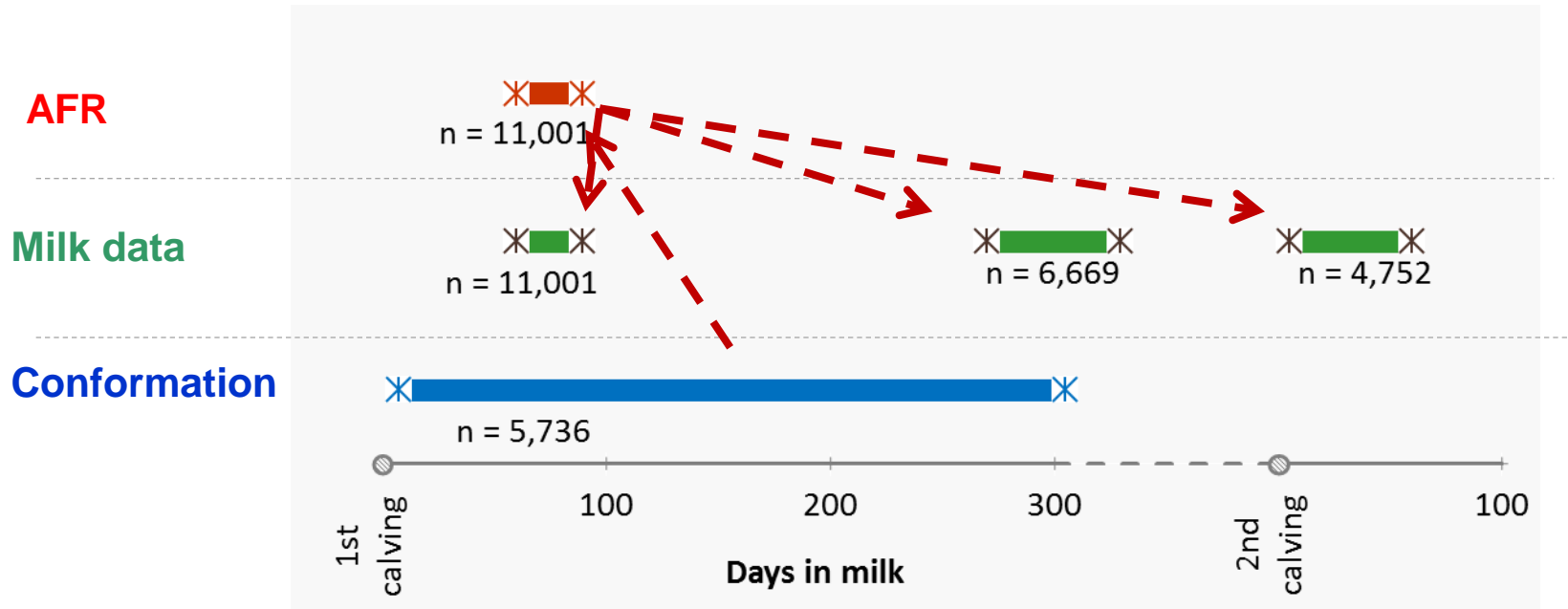
In Estonia a project between BioCC and Estonian Animal Recording Center started in 2010 to record Average Milk Flow Rate (**AFR**) from first parity cows

## Objective of this study:

- to check the quality of data recorded by milking parlours (**MP**) and automatic milking systems (**AMS**)
- To estimate **heritability** of AFR in Estonian Holstein
- To estimate the **genetic correlations** with other traits (milk yield, milk quality traits and udder conformation traits)

# Materials & Methods

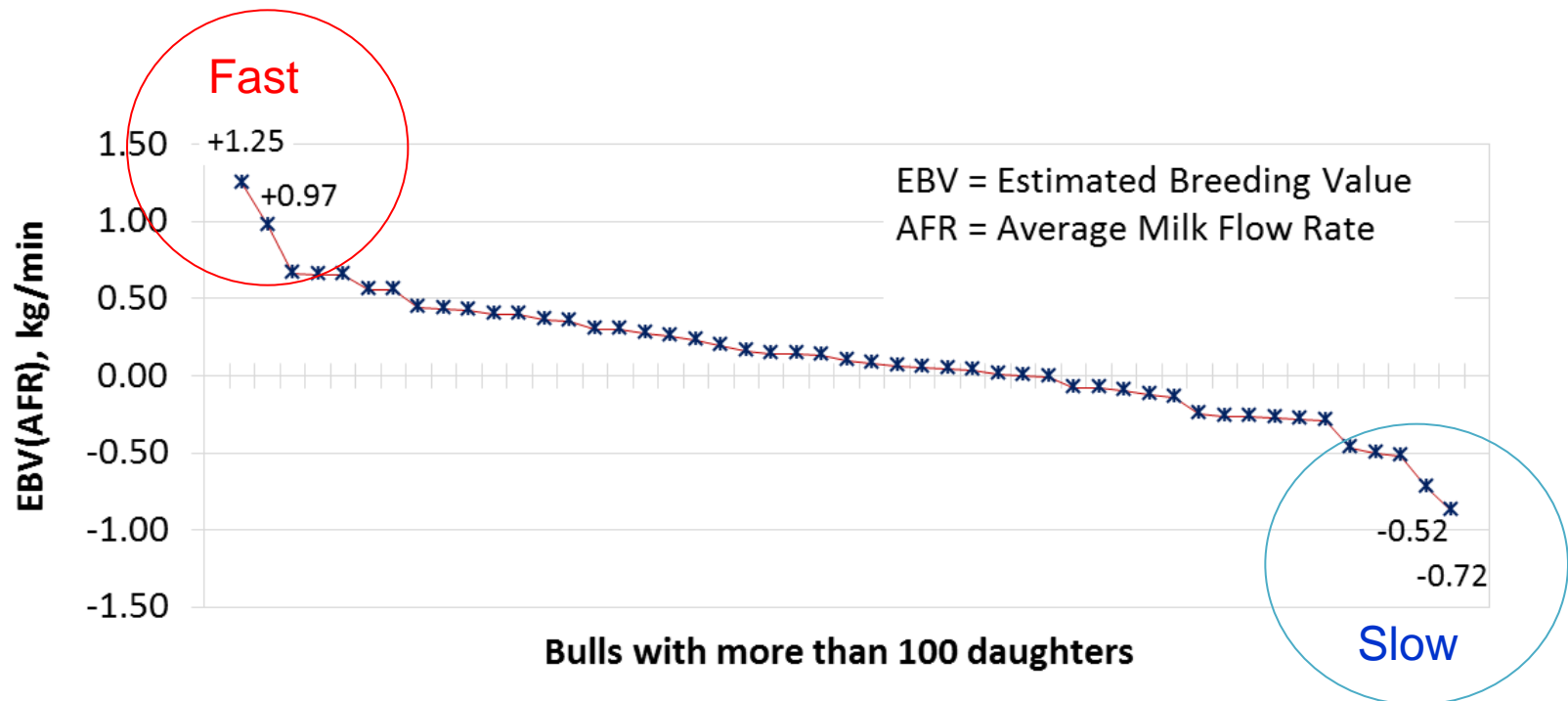
- Average milk flow rate (**AFR**, kg/min) data of 11,001 Estonian Holstein cows
  - 57 farms (23 with AMS and 34 with MP)
  - from July 2010 to December 2013
  - one data value during an official phenotypic recording between 60 and 90 days in milk (**DIM**) for primiparous cows.



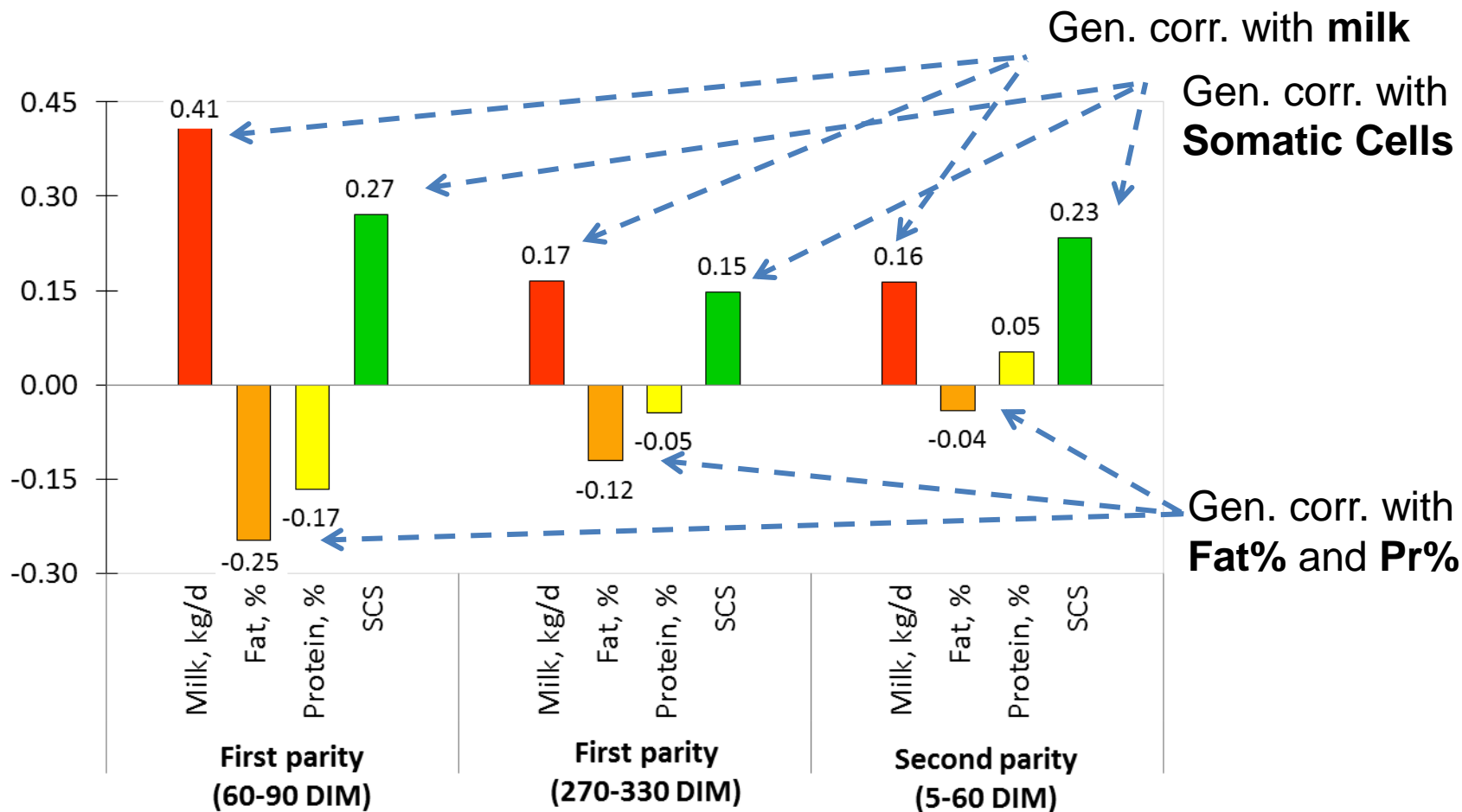


# Results: heritability

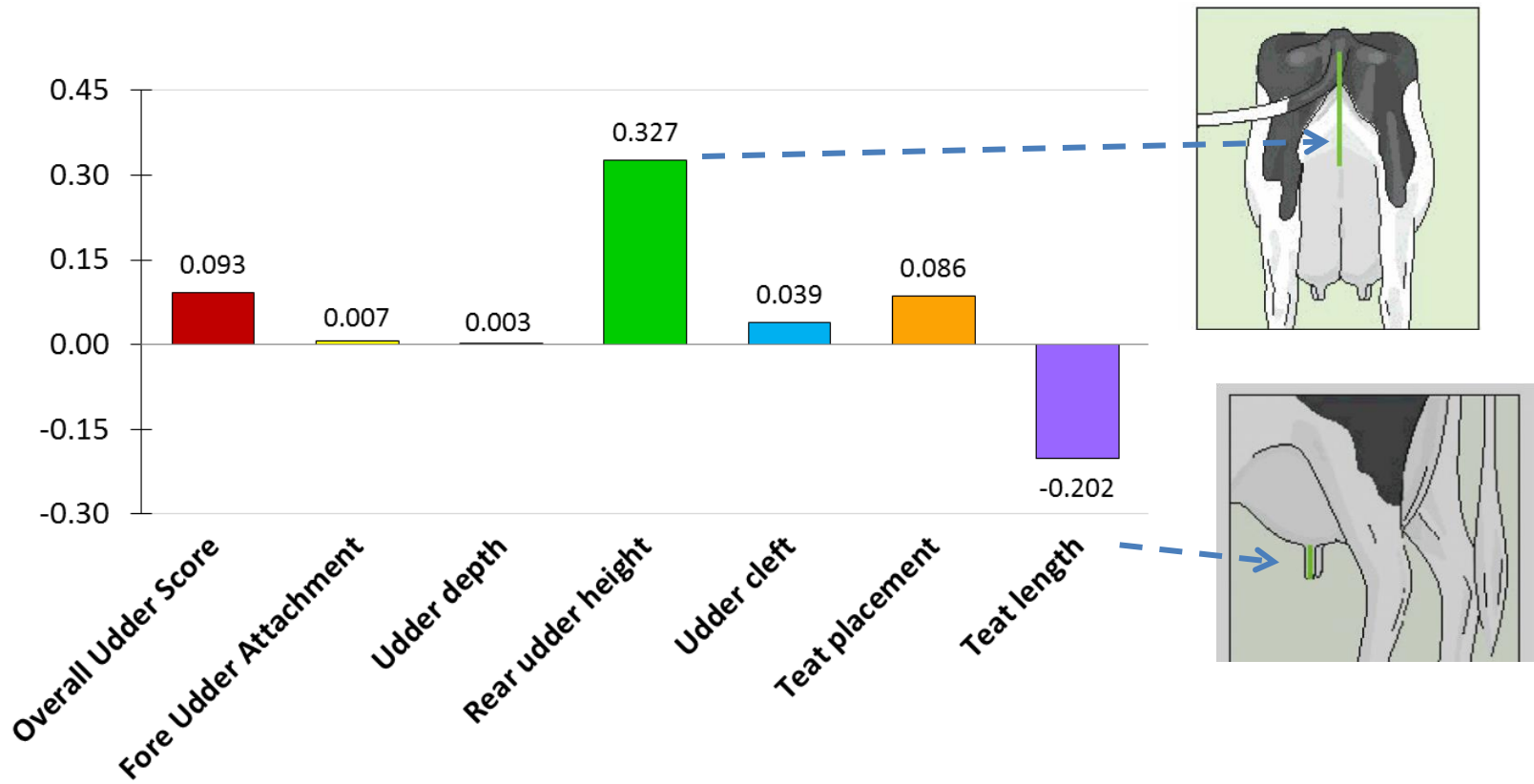
- AFR measured by AMS or MP -> Genetic Correlation **0.918**
- Average Milk Flow Rate heritability: **0.495**



# Results: Genetic Correlation with Milk traits



# Results: Genetic Correlation with Conformation traits





# Conclusion

- Average flow rate recorded electronically at the beginning of the first lactation showed **high heritability**
- The AFR measured by **AMS** and **MP** can be considered the **same trait** since there is a high genetic correlation between them
- It seems to be a good and **cheap method** for routine recording and **genetic evaluation** of AFR



# Perspectives

- **Estonian Animal Recording Centre** is planning to start the **genetic evaluation of Estonian Bulls**
- Relationship between **different milking system brands** needs to be explored
- Looking for strategies to **increase number of cows** recorded
- Need better understanding the relationship with **longevity**
  - for preliminary results look poster of Alo Tänavots et al.
- Possibility to develop a **“Milkability genetic Index”**
  - AFR + Somatic Cell + some Udder Conformation traits

# Thank you for your attention!

## Acknowledgments

- Bio-Competence Centre of Healthy Dairy Products LLC (project EU30002)
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