Genetic growth profiles for carcass traits in steers

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The Irish Agriculture and Food Development Authority

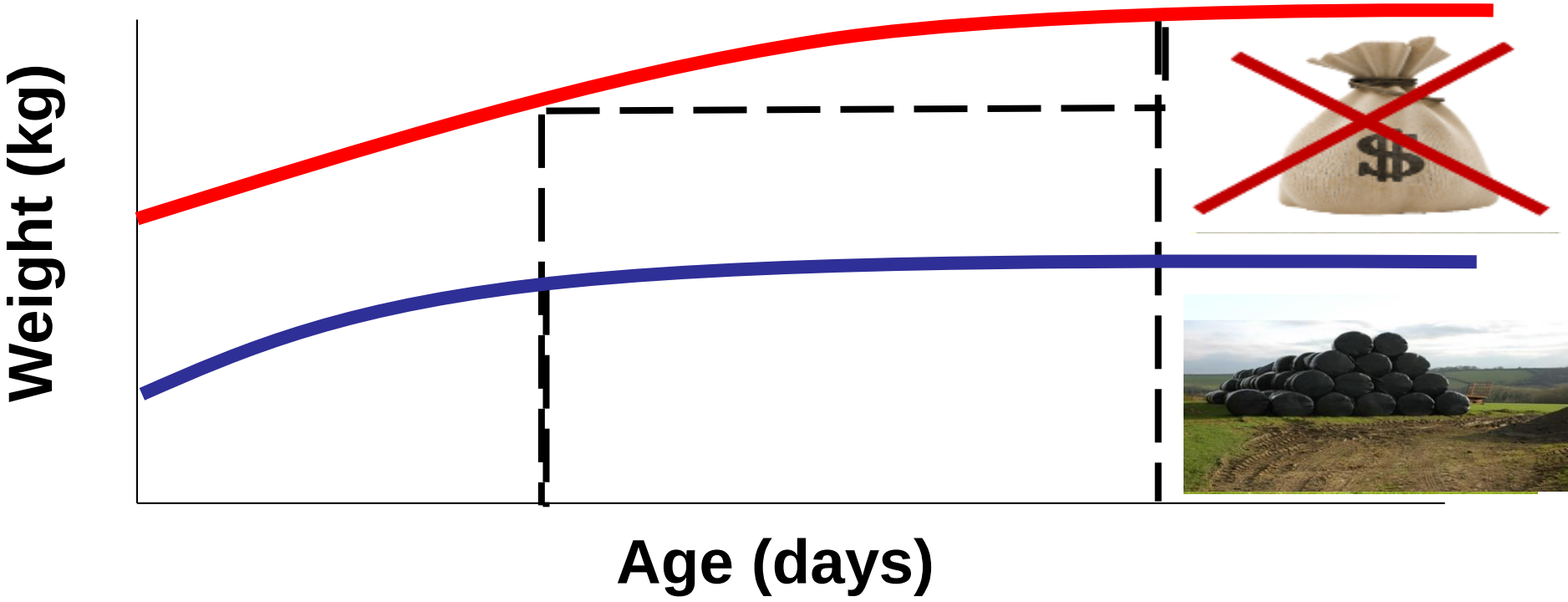
Growth Profiles

- Modelling trait development over time

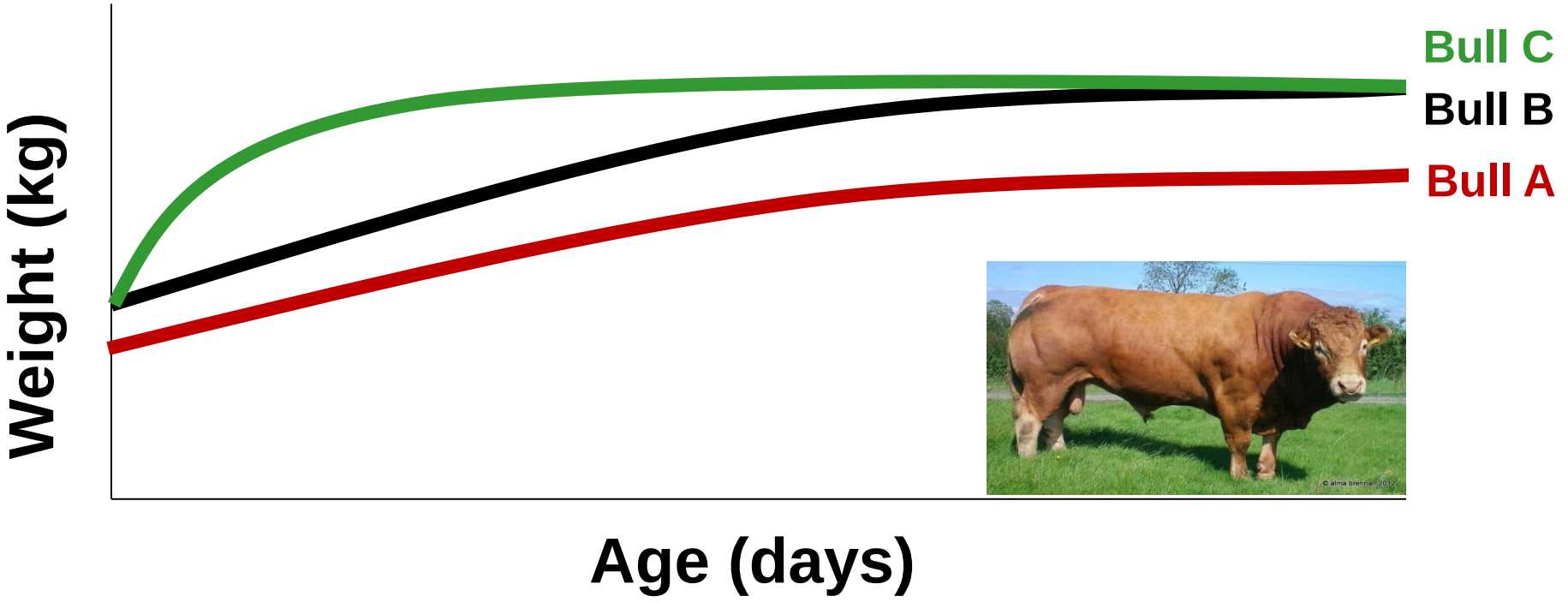
- Carcass growth (Δ carcass weight)
- Muscular development (Δ conformation)
- Body fat accumulation (Δ fat)

- Information on variation in rate of development
- Informed management decisions

Growth rate



Within breed differences



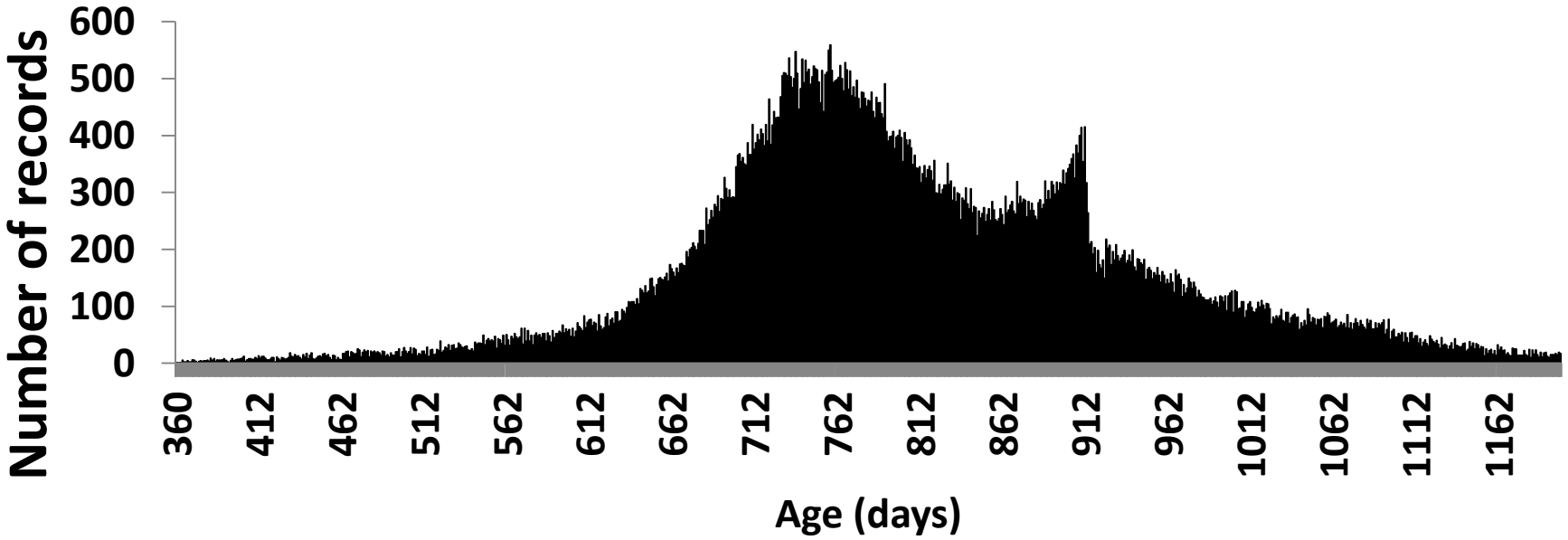
Aim

- **Examine variability in rate of trait development**
  - **Estimate optimum slaughter age of progeny**

Materials and methods

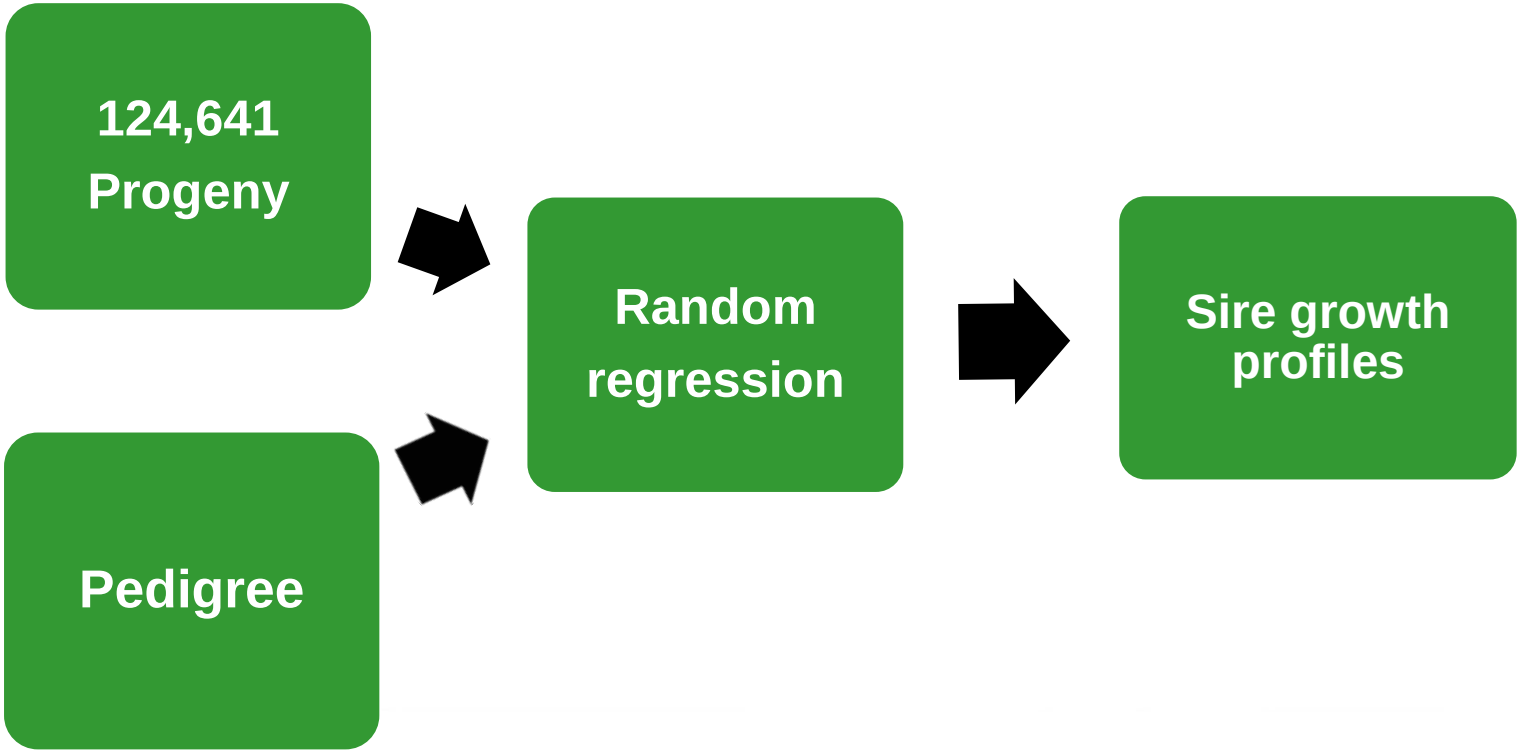
- **Carcass records 2010-2013**
- **Multiple beef and dairy breeds**
- **Steers: 360-1200 days**
- **Known sire and dam**
- **Sire ≥ 5 progeny**

Age distribution



n = 124,641

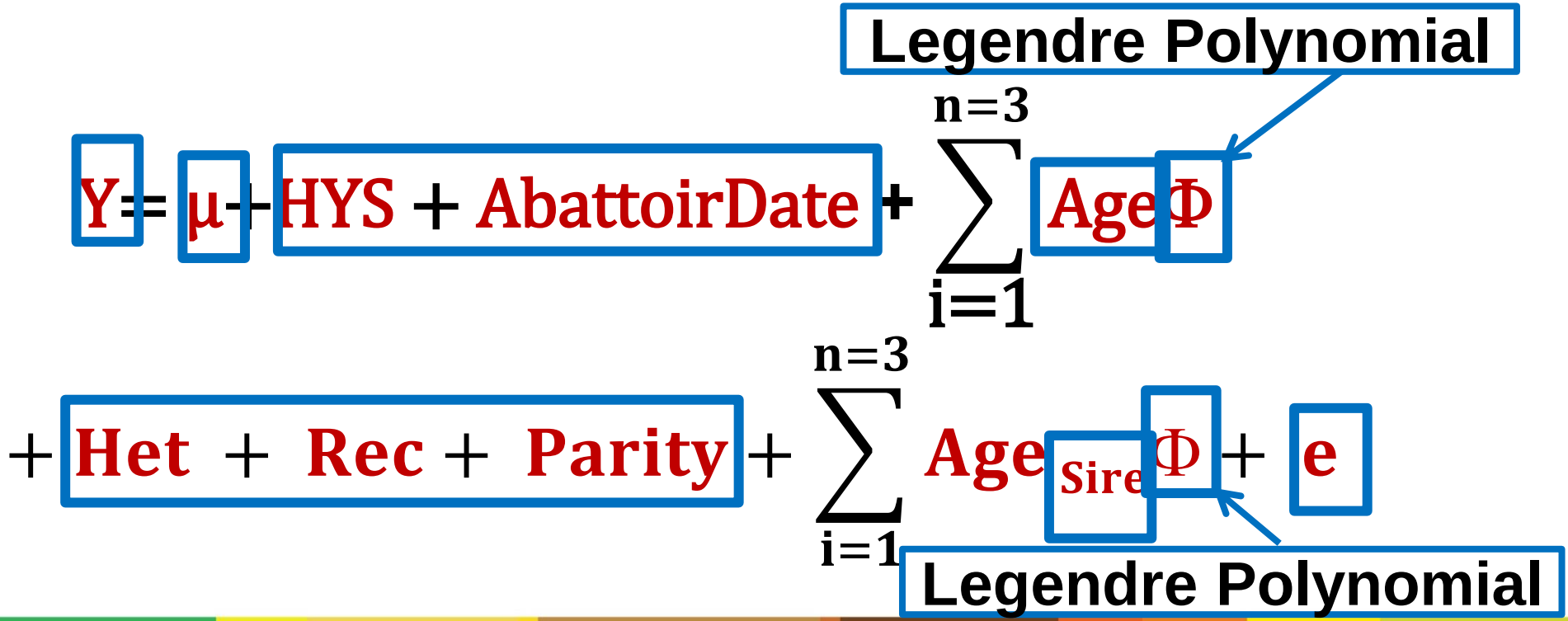
Materials and methods



Random regression models

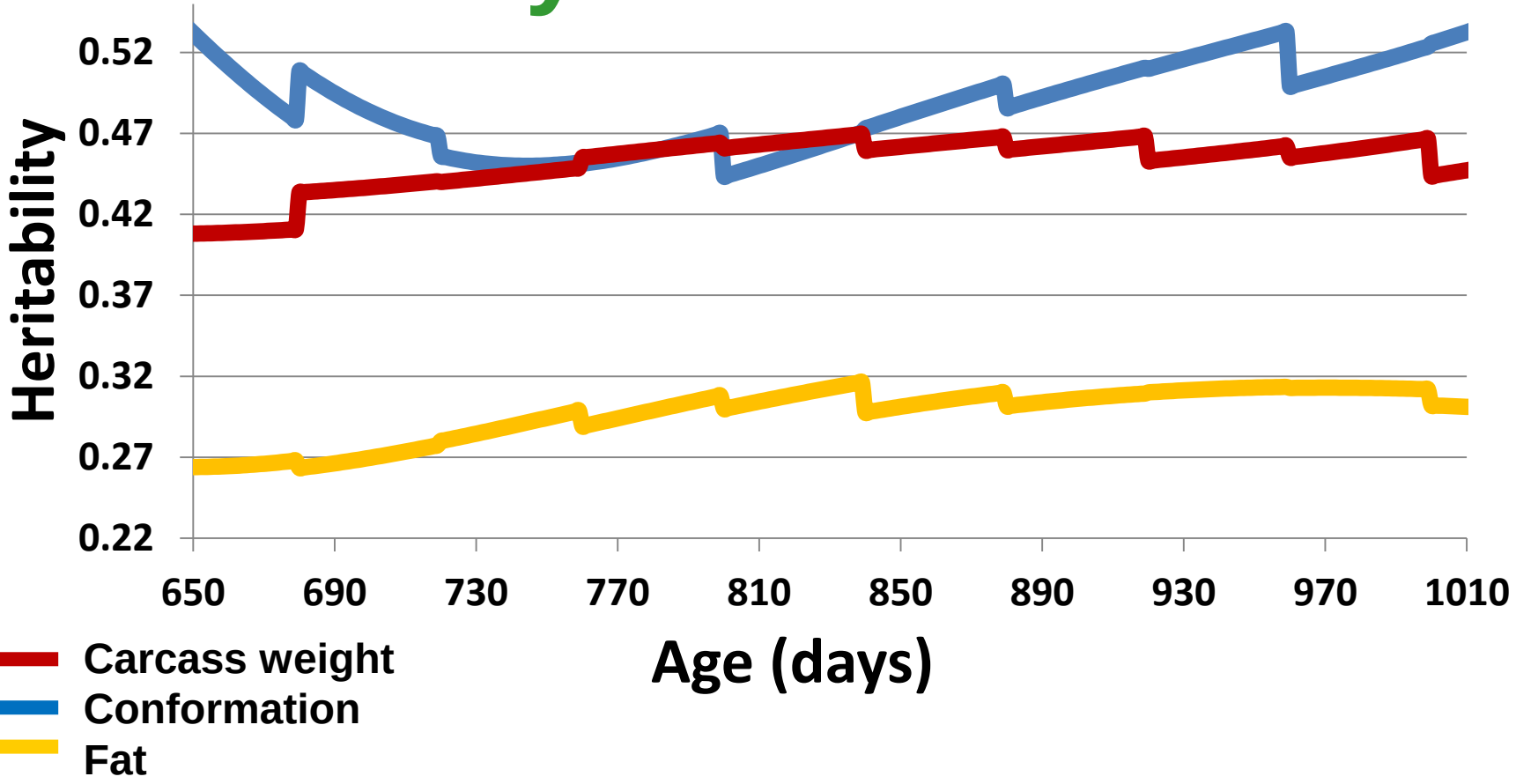
- **Model trait changes over time**
- **Using repeated measurements**
- **Not traditionally used in study of carcass traits**
- **Model traits at a sire level**

Random regression model

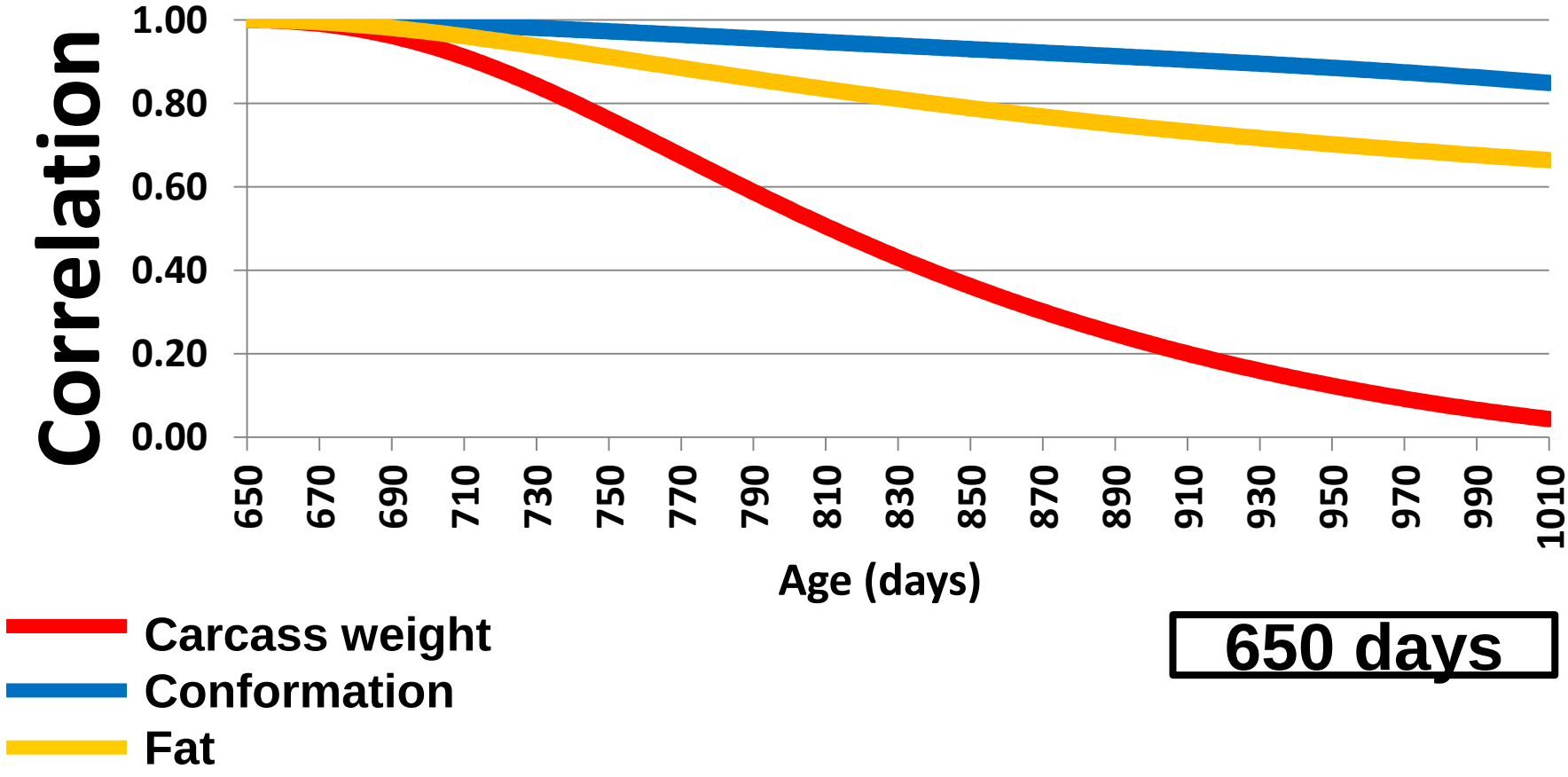


Results

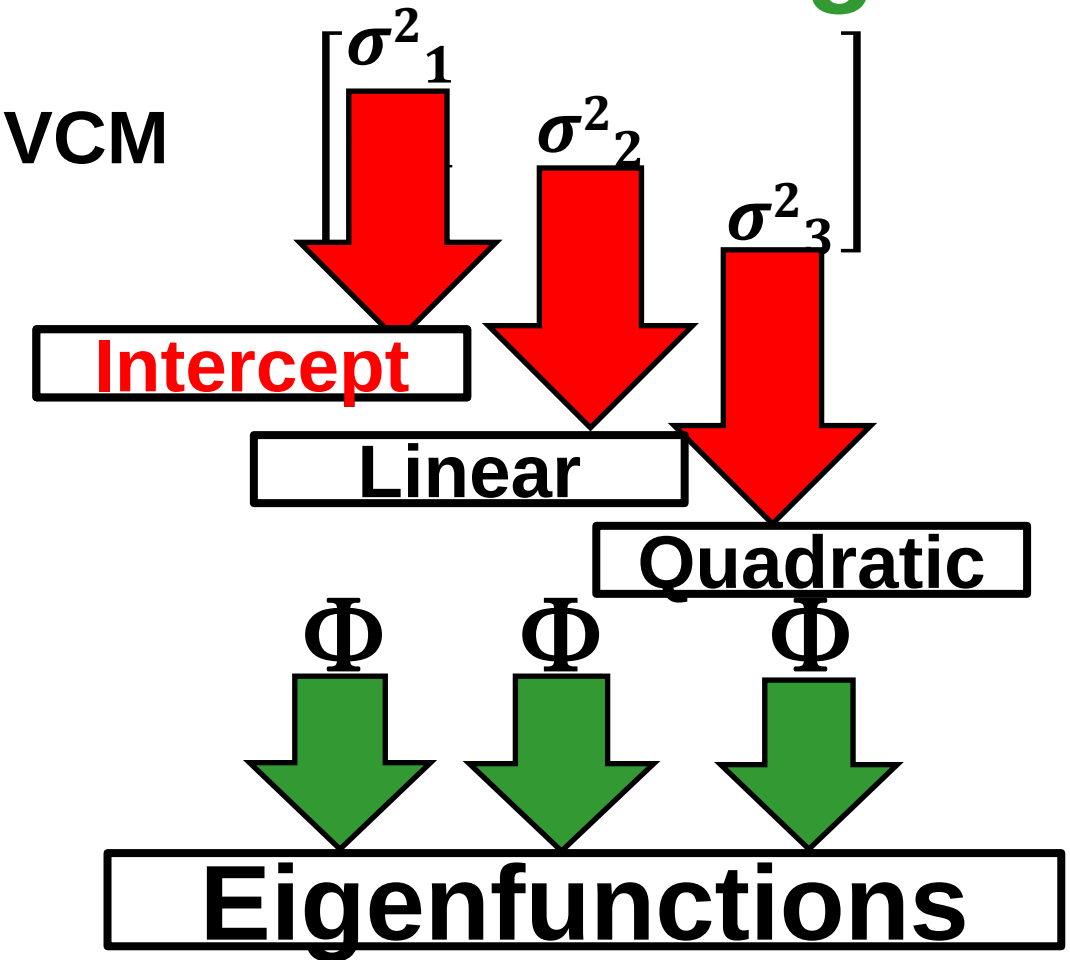
Heritability



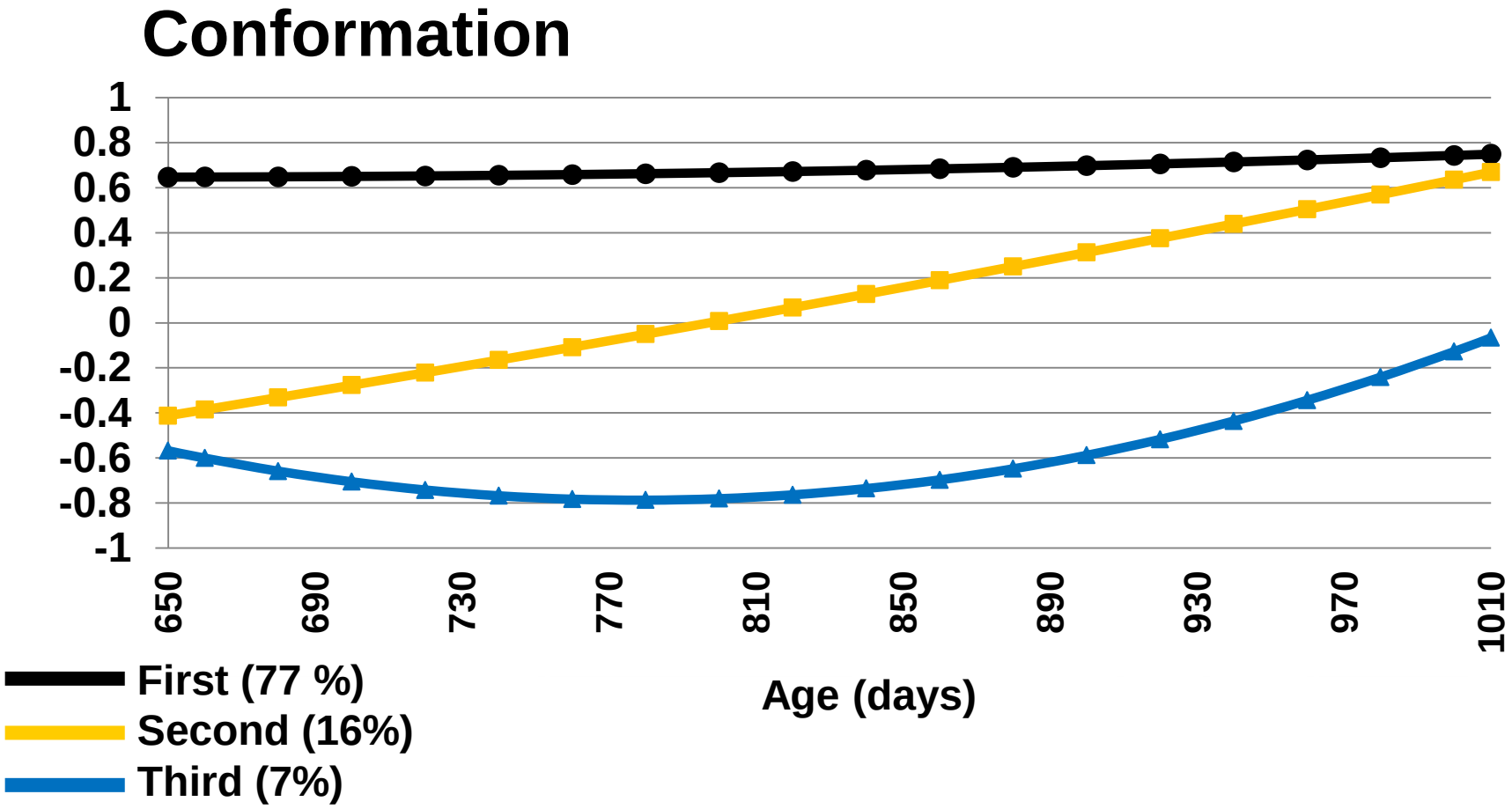
Genetic correlations within trait



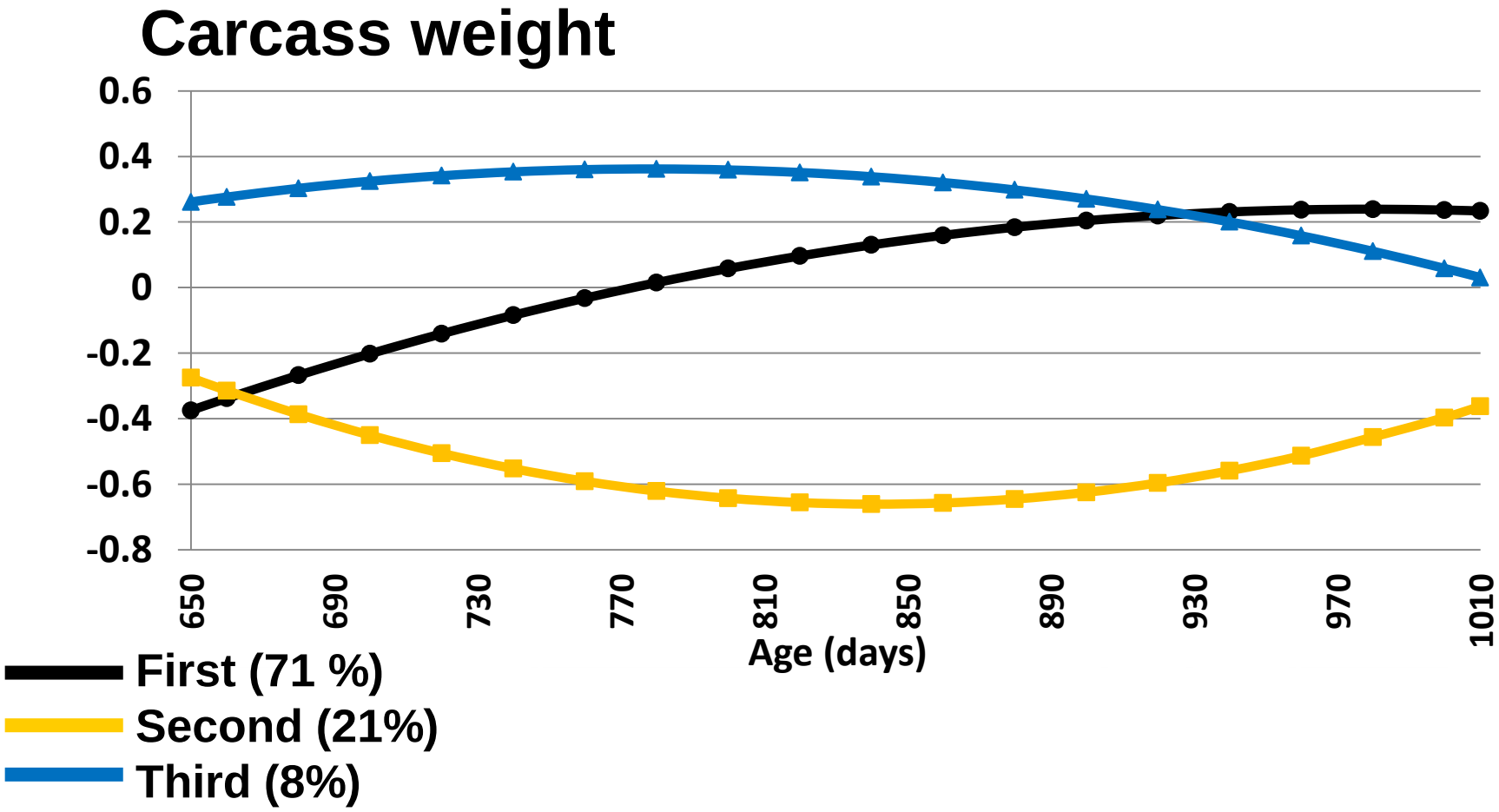
Eigenfunctions & eigenvalues



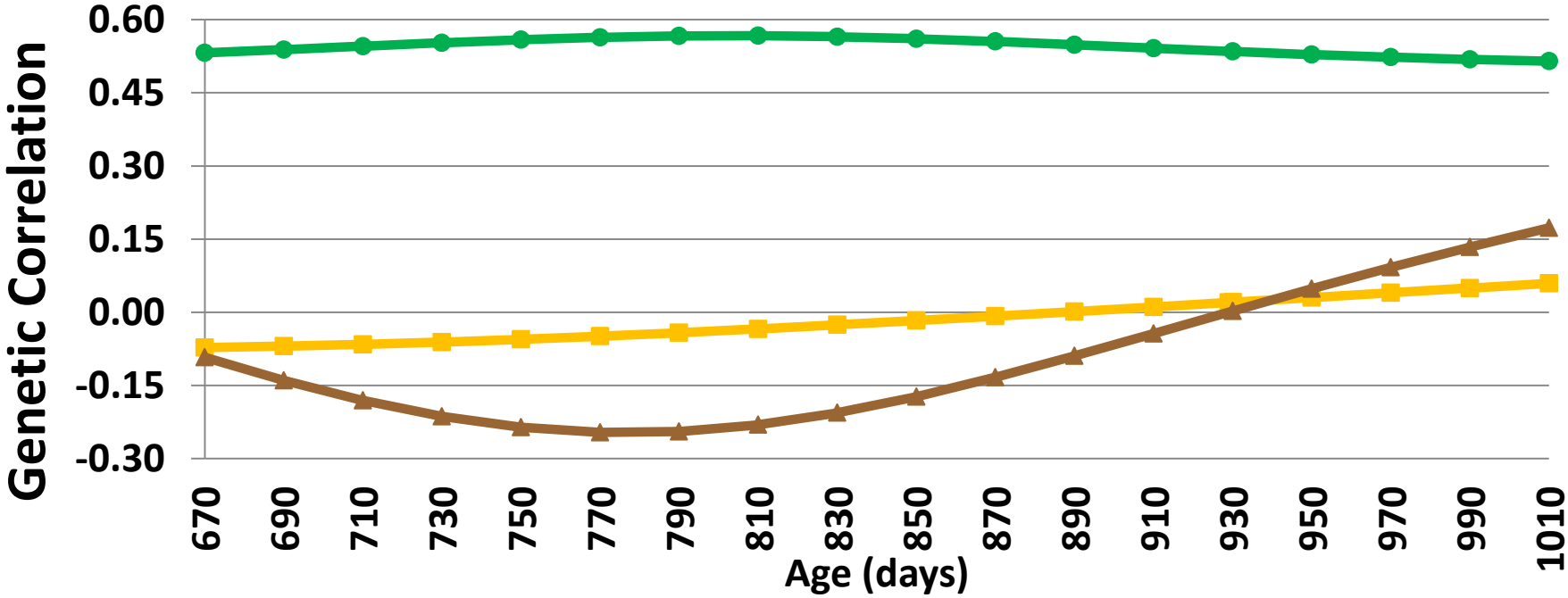
Eigenfunctions



Eigenfunctions



Bivariate correlations

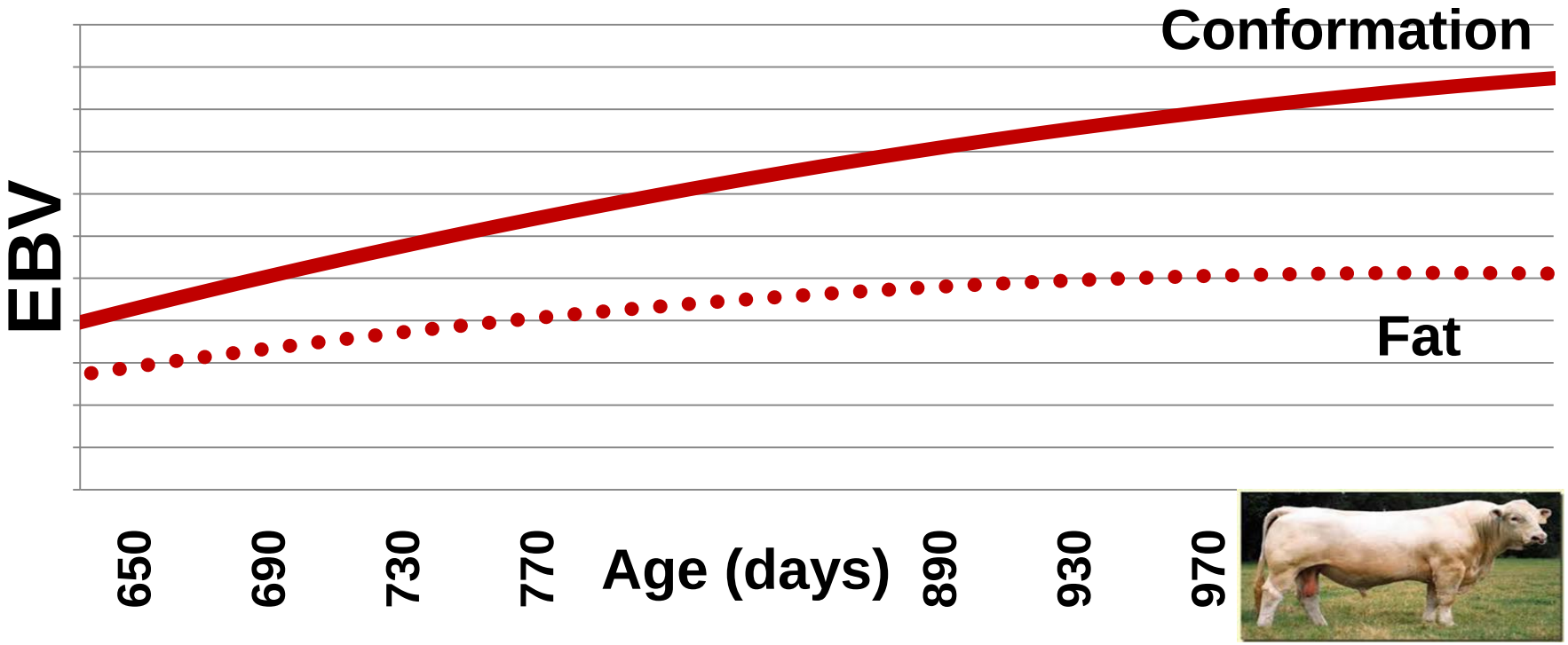


Carcass weight and Conformation

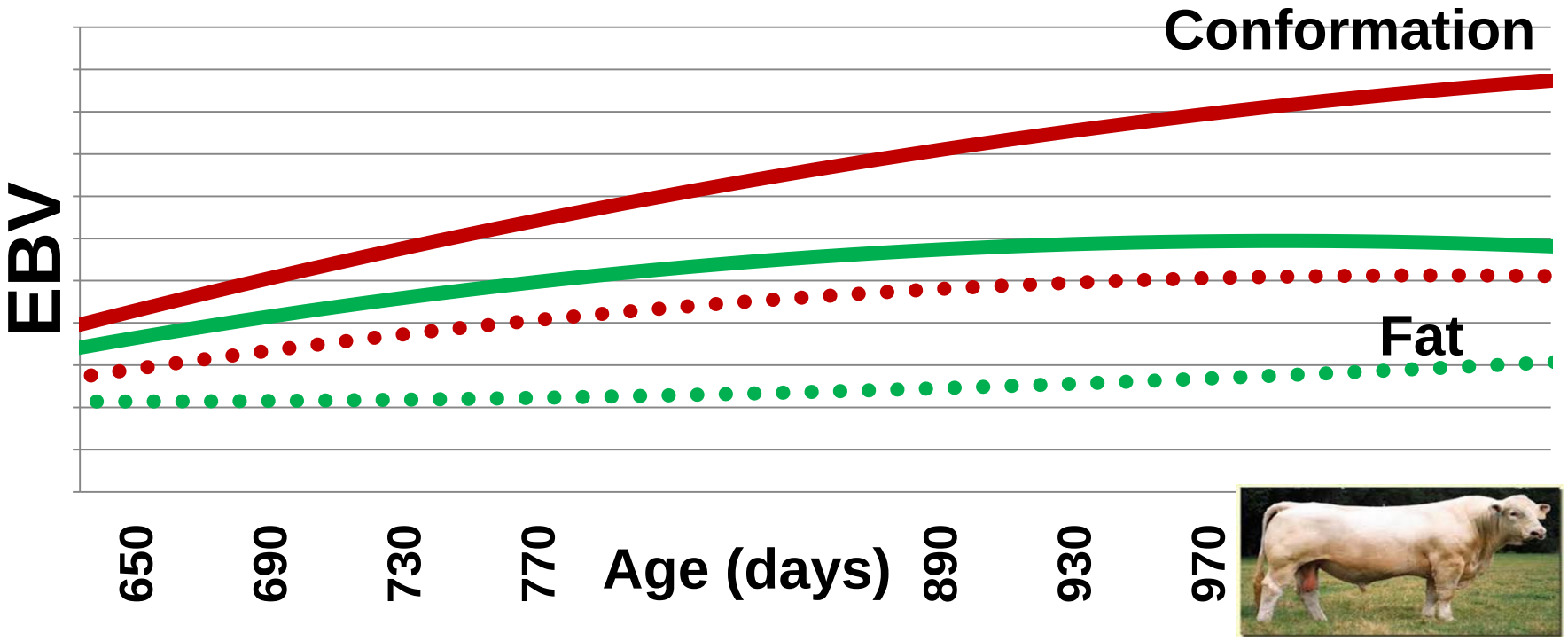
Conformation and fat

Carcass weight and fat

Within Breed



Within Breed



Conclusions

- **Carcass weight at younger ages is under different genetic control than at older ages**
- **Genetic variability exists among animals in the shape of their growth profiles**
- **May be exploited in breeding programs.**

Implications

Very Early Maturing




Early Maturing




Late Maturing




Very Late Maturing




Thanks For Listening

Teagasc
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