□ Mixed linear effect models contain fixed
and random effects

□ Example: $y_{ijk} = \mu + \beta_j + u_i + e_{ijk}$ → random residual

μ → intercept

β_j → fixed effect of herd j

u_i → random breeding value for animal i

y_{ijk} → observation k for animal i in herd j

□ Fit the model to the data:

Animal 12: $2.61 = \mu + \beta_1 + u_{12} + e_{12,1,1}$

13: $2.31 = \mu + \beta_1 + u_{13} + e_{13,1,1}$

27: $3.16 = \mu + \beta_2 + u_{27} + e_{27,2,1}$

Goal: - Estimates for fixed effects β_1 and β_2
- Predictions for breeding values: $u_1, \ldots, u_{27}$
- Estimate of σ_u^2 and σ_e^2 → not possible with Least Squares