

□ Animal Model

- The problem with the sire model that only sires get predicted breeding values is solved with the animal model

- LME:

$$y = X\beta + Zu + e$$

breeding values for all animals

- Expectations and Variance-Covariances

$$E(\underline{y}) = \underline{0} ; E(\underline{e}) = \underline{0} ; E(y) = X\beta$$

$$\text{var}(\underline{e}) = R = I \cdot \sigma_e^2$$

$$\text{var}(\underline{u}) = G = A \cdot \sigma_u^2$$

$$\text{var}(y) = ZGZ^T + R$$

numerator relationship matrix