- Statistical Model is based on the decomposition of the phenotype y_i into different components
- First step: genetic / environment

$$y_i = g_i + e_i$$

- Second step: decomposition of genetic part

$g_i = \mu$ + breeding value + ~~dominance~~ dominance + interaction

$= \mu$ + breeding value + rest

Insert into y_i:

$$y_i = \mu + \text{breeding value}_i + e_i^*$$

Herd, age, height, ...

- Third step: Environment into known fixed part and unknown random part

$$y_i = \mu + x_i^T \cdot b + u_i + e_i^{**}$$

- Matrix-vector: $\underline{y} = X \cdot \underline{b} + Z\underline{u} + \underline{e}$