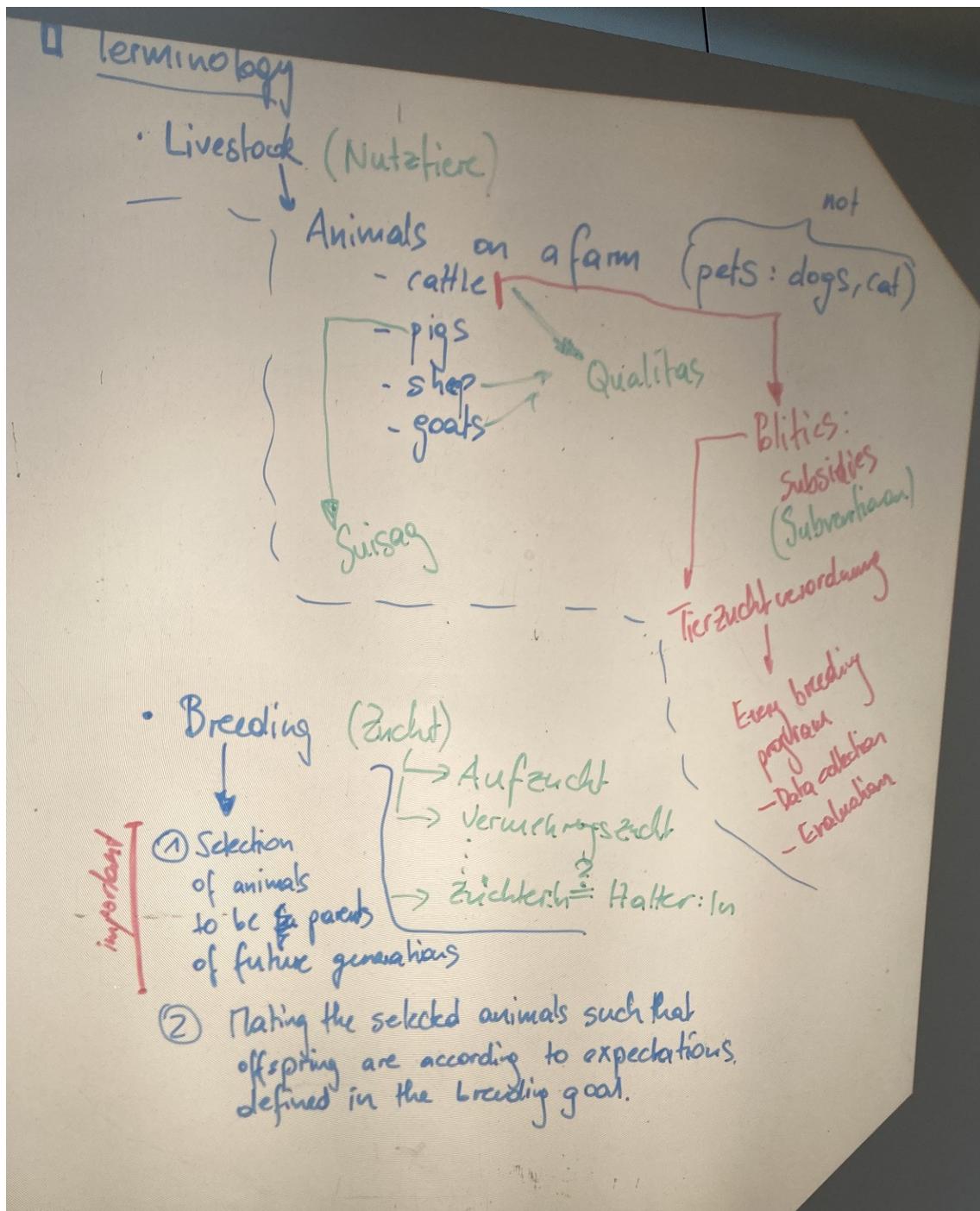
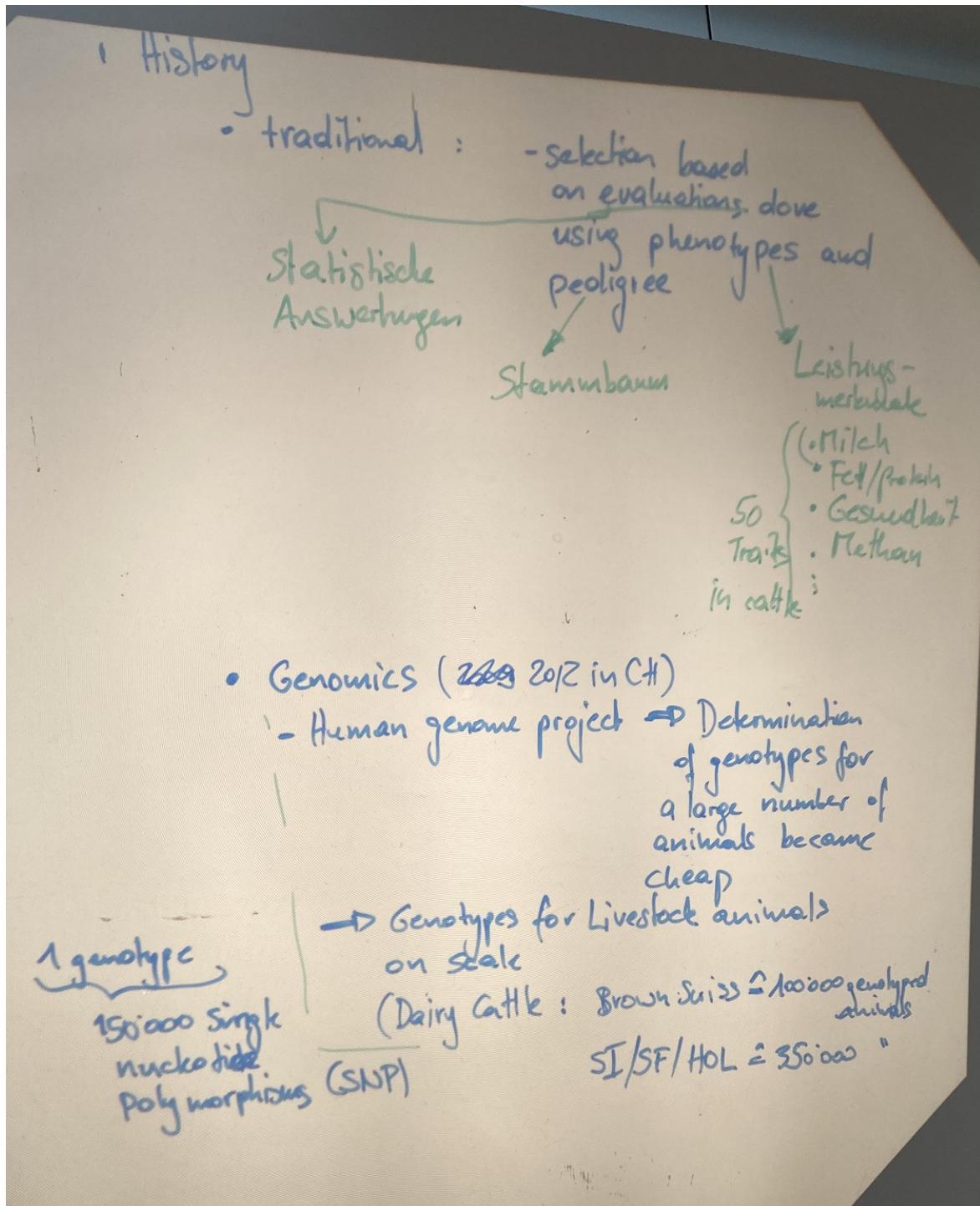


OHP Picture 1

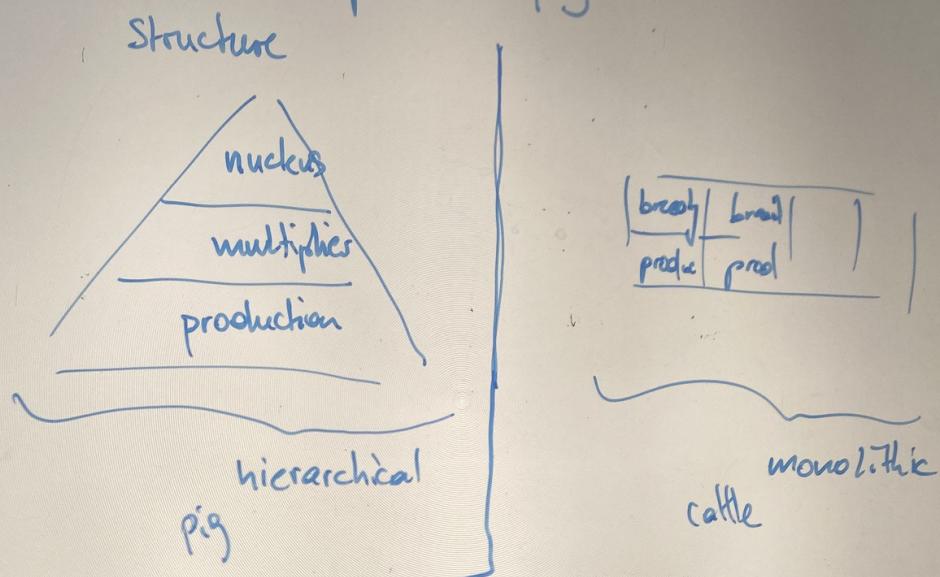


OHP Picture 2



OHP Picture 3

- Establish difference between breeding and production. This is important to resolve possible conflicts of interest. More important in cattle compared to pigs.



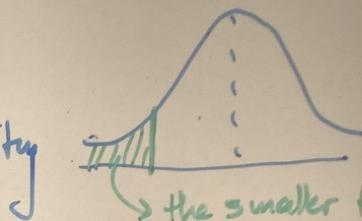
- In monolithic breeding program, the value of older animals is different with respect to the potential use
 - breeding → young animals are more valuable
 - production → older animals are most valuable as long as they are healthy

OHP Picture 4

Success of a given Selection strategy is quantified by the selection response (R)

$$R = i \cdot r \cdot \bar{G}_g$$

Selection intensity



the smaller the surface
the larger i

r : accuracy of the available information
to describe genetic background

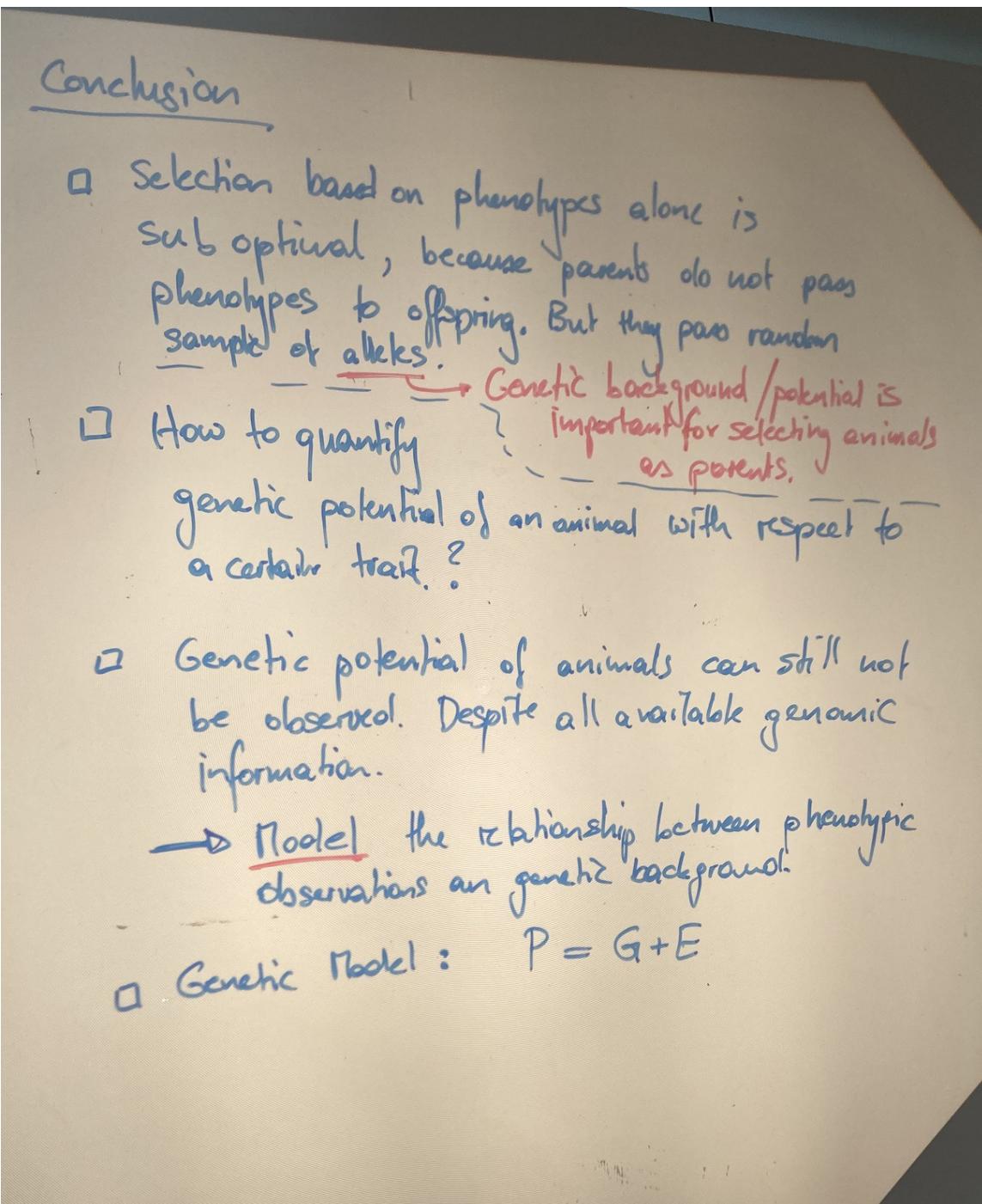
(statistics: correlation between information
and the genetic value responsible
for the trait)

→ Example: information = phenotypic observation
of methane

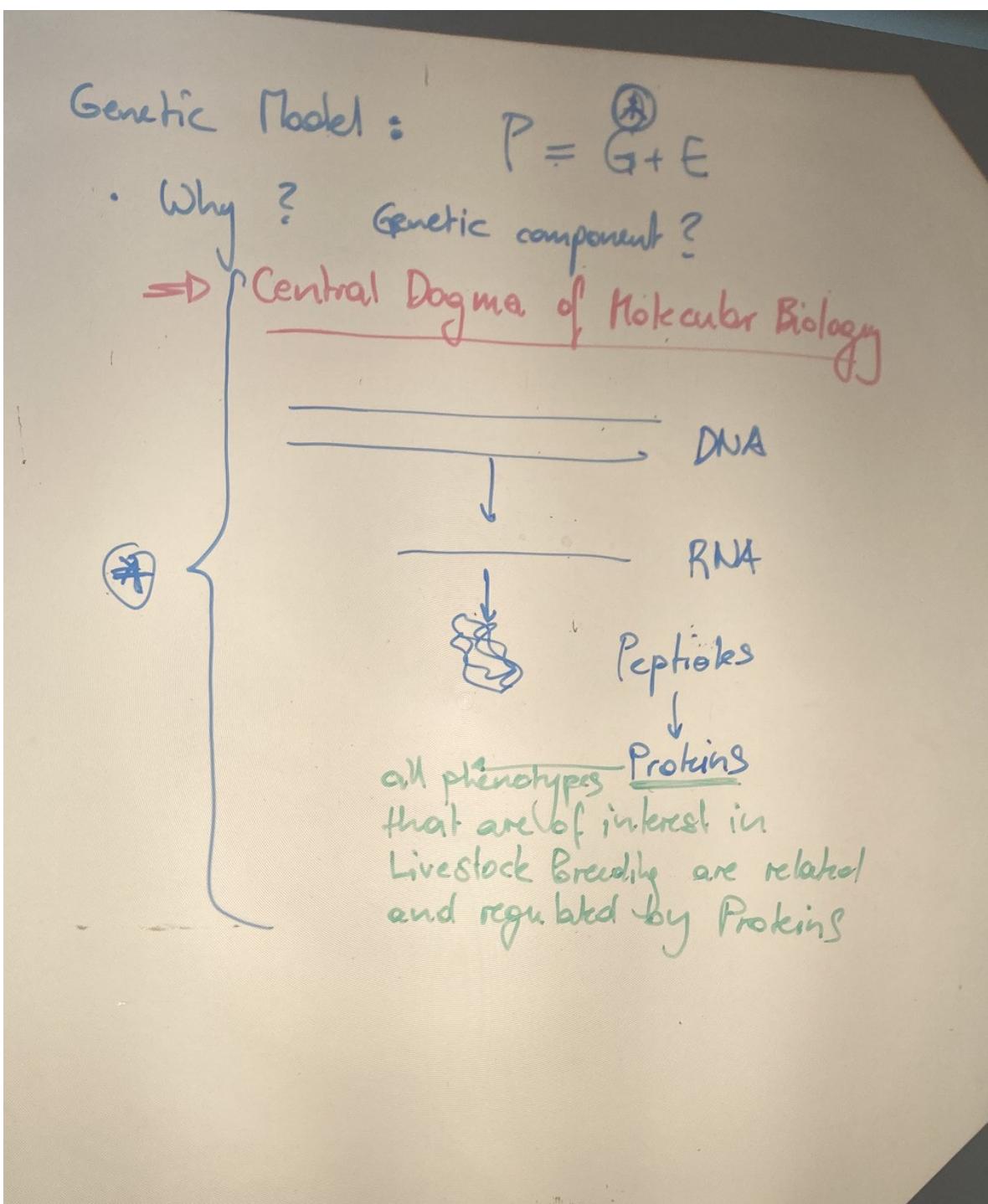
correlation is the square root of heritability

\bar{G}_g : genetic standard deviation

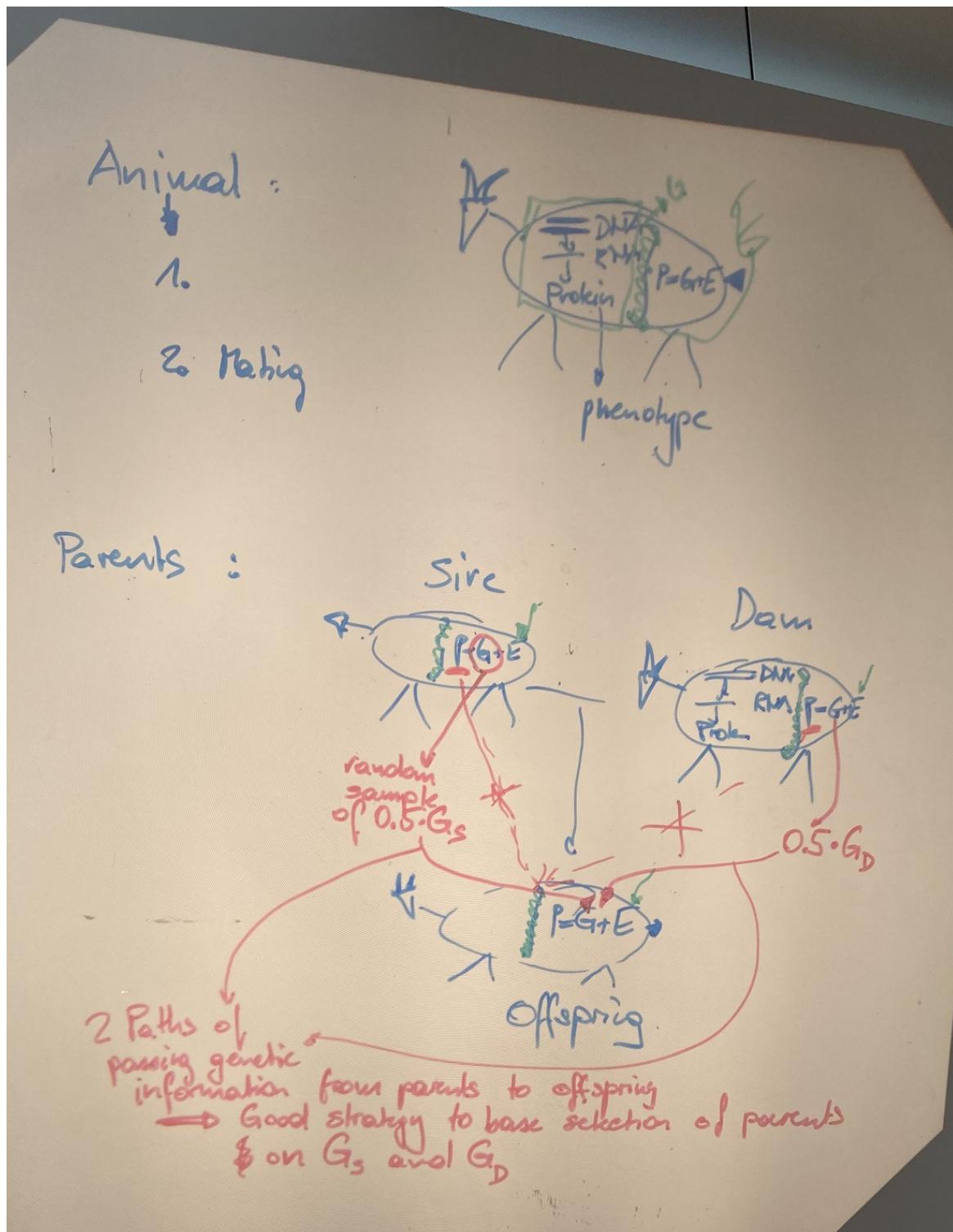
OHP Picture 5



OHP Picture 6



OHP Picture 7



OHP Picture 8

So far: Genetics

Given Model : $P = G + E$

Aim: Predictions about G based on P and E

From statistics point of view:

$\left. \begin{array}{l} G : \text{unknown} \\ P, E(\text{parts of } E) : \text{known and available as} \\ \quad \text{Farm, Season, Age, ...} \\ \text{observations} \end{array} \right\}$

Model $P = G + E$

Problem of estimating unknown parameters G
based on P and E

- BLUP : Best Linear Unbiased Prediction
- Bayesian methods

OHP Picture 9

So far: ① Genetics

Given Model : $P = G + E$

Aim: Predictions about G based on P and E

From statistics point of view:

$\left. \begin{array}{l} G : \text{unknown} \\ P, E(\text{parts of } E) : \text{known and available as} \\ \quad \underbrace{\text{Farm, Season}}_{\text{Age, ...}} \text{ observations} \end{array} \right\}$

Model: $P = G + E$

Problem of estimating unknown parameters G based on P and E

- BLUP : Best Linear Unbiased Prediction
- Bayesian methods

3: Computer Science