Genomic Relationship Matrix (G)

- Variance-Covariance matrix of genomic breeding values (g)

$$var(g) = G \cdot \sigma_g^2$$

- Properties of genomic breeding values (g)
  - linear combinations of marker effects q
  - deviations $\Rightarrow E(g) = 0$
  - G should be similar to A
    - $\Rightarrow$ diagonal elements should be dominant
    - $\Rightarrow$ high off-diagonal elements only for animals with ~~high~~ close relationship

- Genetic background
  - *A is based on identity by descent
  - *G is additionaly also considering identity by state relationships