

Frequencies of Genotypes

$$\begin{aligned}
 f(G_1 G_1) &= \frac{\# G_1 G_1}{N} = \frac{4}{10} = 0.4 \\
 f(G_1 G_2) &= \frac{\# G_1 G_2}{N} = \frac{3}{10} = 0.3 \\
 f(G_2 G_1) &= \frac{\# G_2 G_1}{N} = \frac{3}{10} = 0.3 \\
 f(G_2 G_2) &= \frac{\# G_2 G_2}{N} = \frac{0}{10} = 0
 \end{aligned}
 \left. \begin{array}{l} \\ \\ \\ \end{array} \right\} \begin{array}{l} \text{Sum:} \\ f(G_1 G_1) + f(G_1 G_2) \\ + f(G_2 G_1) + f(G_2 G_2) = 1 \end{array}$$

\nwarrow Number of
 \nearrow total number of animals in the population

• Alleles:

$$\begin{aligned}
 f(G_1) &= \frac{\# G_1}{2N} = \frac{11}{20} = 0.55 \\
 f(G_2) &= \frac{\# G_2}{2N} = \frac{9}{20} = 0.45
 \end{aligned}
 \left. \begin{array}{l} \\ \end{array} \right\} f(G_1) + f(G_2) = 1$$

• Allele frequencies from Genotype frequencies

$$f(G_1) = \frac{\# G_1}{2N} = \frac{2N \cdot f(G_1 G_1) + f(G_1 G_2) \cdot N}{2N} = \frac{f(G_1 G_1) + \frac{1}{2} f(G_1 G_2)}{1}$$

$$\# G_1 = 2 \cdot \underbrace{\# G_1 G_1}_{\rightarrow N \cdot f(G_1 G_1)} + 1 \cdot \# G_1 G_2 = f(G_1 G_1) \cdot N + f(G_1 G_2) \cdot N$$