## Observed Heterozygosity

#### The observed fraction of individuals that have at least two alleles per locus.

XY

 $H_{\Omega}$ 

### The expected fraction of individuals in the sample

that are not homozygous.

$$H_E = 1 - \sum_{i=1}^{\ell} p_i^2$$

The expected fraction of individuals in a sample of several populations that are not homozygous.

several populations that are not homozygous. 
$$\tilde{N} = \begin{pmatrix} \ell & \ell & \ell \\ \tilde{N} & \ell & 2 \end{pmatrix} = \begin{pmatrix} H_O \end{pmatrix} = \tilde{N}$$

# Observed Heterozygosity

The observed fraction of individuals that have at least two alleles per locus.  $H_O = \frac{N_{XY}}{N}$ 

The expected fraction of individuals in the sample that are not homozygous.  $\rho$ 

$$H_E = 1 - \sum_{i=1}^{n} p_i^2$$

The expected fraction of individuals in a sample of several populations that are not homozygous.

$$H_S = \frac{\tilde{N}}{\tilde{N} - 1} \left( 1 - \sum_{i=1}^{\ell} p_{k,i}^2 - \frac{H_O}{2\tilde{N}} \right) \qquad \tilde{N} = \frac{1}{\sum_{i=1}^{K} \frac{1}{n_i}}$$

### Genetic Distance