

## Exercise: *Hardy-Weinberg equilibrium*

• 1)

|         |        |       |       |
|---------|--------|-------|-------|
| 100/100 | 100/75 | 75/75 | total |
| 1       | 22     | 7     | 30    |
|         |        |       |       |

prop 100:

prop 75:

Test of HW equilibrium: via  $X^2$  test

|            |         |        |       |       |
|------------|---------|--------|-------|-------|
|            | 100/100 | 100/75 | 75/75 | total |
| observed   | 1       | 22     | 7     | 30    |
| expected   |         |        |       | 30    |
| chi-square |         |        |       |       |

d.f. =

p =

## Exercise: *Hardy-Weinberg equilibrium*

• 2)

| A1A1 | A1A2 | A1A3 | A2A2 | A2A3 | A3A3 | Total |
|------|------|------|------|------|------|-------|
| 4    | 8    | 15   | 6    | 21   | 28   | 82    |
|      |      |      |      |      |      |       |

prop A1:

prop A2:

prop A3:

Test of HW equilibrium: via  $\chi^2$  test

|            | A1A1 | A1A2 | A1A3 | A2A2 | A2A3 | A3A3 | Total |
|------------|------|------|------|------|------|------|-------|
| observed   | 4    | 8    | 15   | 6    | 21   | 28   | 82    |
| expected   |      |      |      |      |      |      | 82    |
| chi-square |      |      |      |      |      |      |       |

d.f. =

p =

## Exercise: *F*-statistics

| Population | Genotypes |          |          | Total | Allele frequency         | $H_o$ | $H_e$ | F |
|------------|-----------|----------|----------|-------|--------------------------|-------|-------|---|
|            | $A_1A_1$  | $A_1A_2$ | $A_2A_2$ |       |                          |       |       |   |
| 1          | 50        | 21       | 3        |       | $A_1: p =$<br>$A_2: q =$ |       |       |   |
| 2          | 14        | 23       | 12       |       | $A_1: p =$<br>$A_2: q =$ |       |       |   |

combined:  $H_I =$        $A_1: p =$        $H_S =$   
                                   $A_2: q =$        $H_T =$

$F_{ST} =$        $F_{IS} =$   
                                   $F_{IT} =$

## Exercise: *F*-statistics

| Population | Genotypes |          |          |          |          |          | Total | Allele frequency                    | $H_o$ | $H_e$ | F |
|------------|-----------|----------|----------|----------|----------|----------|-------|-------------------------------------|-------|-------|---|
|            | $A_1A_1$  | $A_1A_2$ | $A_1A_3$ | $A_2A_2$ | $A_2A_3$ | $A_3A_3$ |       |                                     |       |       |   |
| 1          | 35        | 25       | 20       | 15       | 14       | 8        |       | $A_1: p=$<br>$A_2: q=$<br>$A_3: r=$ |       |       |   |
| 2          | 23        | 31       | 45       | 12       | 25       | 31       |       | $A_1: p=$<br>$A_2: q=$<br>$A_3: r=$ |       |       |   |
| 3          | 12        | 9        | 2        | 9        | 3        | 1        |       | $A_1: p=$<br>$A_2: q=$<br>$A_3: r=$ |       |       |   |

combined:

$H_I =$

$A_1: p=$

$H_S =$

$A_2: q=$

$H_T =$

$A_3: r=$

$F_{ST} =$

$F_{IS} =$

$F_{IT} =$