

The Chi-Square Test

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- The chi-square tests determines whether the observed value is significantly different from the expected value
 1. The test tells us whether this is due to chance or some kind of outside influence
- The null hypothesis is a statement that assumes there is no difference between the observed and expected values
 1. For Example: “There is no significant difference between the experimental results and those which would be expected”
- The formula is as given:

$$\chi^2 = \sum \left(\frac{(O - E)^2}{E} \right) \quad (1)$$

- The number of degrees of freedom is always one less than the number of terms in the formula above (one less than the possibilities)
- A table with degrees of freedom will always be given. In biology, we will use the 5% column (probability equals 95% true)
- If χ^2 is greater than the critical value, reject the null hypothesis
- This means that the difference you are seeing in your results is **NOT** due to chance
- If χ^2 is lower than the critical value, accept the null hypothesis
- This means that the difference you are seeing in your results **IS** due to chance