AP BIOLOGY

Chi-square Analysis Practices

For genetics and chi-square, consider the following…

-Is the difference in your data due to random chance alone and therefore your hypothesis about the

genetics of a trait is supported by the data?

-Are the differences between the observed and expected results probably not due to random chance

alone, and your hypothesis about the genetics trait is thereby not supported by the data?

-Should you consider an alternative inheritance mechanism to explain the results?

1. In pea plants, yellow seeds are dominant over green seeds. In a cross between two plant both heterozygous for seed color, the following was observed: Yellow= 4400 Green= 1624

Null Hypothesis:

Expected:

Chi-Square:

Degrees of freedom:

Is your hypothesis supported or rejected? Justify!

2. In peas, smooth seeds are dominant to wrinkled seeds. In the P generations, a purebred smooth plant is crossed with a plant with wrinkled seeds. The resulting F1 plants are crossed. The seeds observed of the F2 generation were: Smooth= 5474 Wrinkled=1850

What phenotypes would you have expected to see in the F1 generation? What genotypes?

Null Hypothesis:

Expected:

Chi-Square:

Degrees of freedom:

Is your hypothesis supported or rejected? Justify!

3. In a flowering plant, white flowers are dominant over red, and short plants are dominant over tall plants. When two plants that are heterozygous for both traits were crossed, the resulting phenotypes were observed:

White, short= 206 Red, short= 83 White, tall= 65 Red, tall= 30

Null Hypothesis:

Expected:

Chi-Square:

Degrees of freedom:

Is your hypothesis supported or rejected? Justify!