PLNT 3140 - Introductory Cytogenetics December , 2023

Name

Student ID number

Assignment 4

**1. (1 point) Based on the Hardy-Weinberg calculation, some of the expected number of aa larvae are less than 1. You can't have a fraction of a larva. What is the meaning of a number less than 1?**

**2. (1 point) The results for the A, C and F inversions are in strong agreement with HW frequencies. The authors state that the observed genotype counts G-arm inversion do not agree with HW equilibrium. Using q and n from the table, re-calculate the HW frequencies and expected number of progeny for the G inversion, and at least one of A, C or F. For your convenience, a spreadsheet template is provided in** [**as4.spreadsheet\_template.xlsx**](http://home.cc.umanitoba.ca/~frist/PLNT3140/as4/as4.spreadsheet_template.xlsx)**. When finished, paste your spreadsheet results into the report. Explain how the results tell us that G is out of equilibrium in this population.**

**3. (1 point) On both sampling dates, the observed number of aa larvae for G is 0. What is a possible explanation for this result?**

**4. (1 point) Figure 6 shows mirror histograms of how many larvae were found with the standard chromosome (above the 0 line), and how many were found with the inverted chromosome (below the line). The numbers of Standard/Inversion larvae are roughly symmetrical for G and C, while for A and F the Standard counts above the 0 line are much greater than the Inversion counts below the 0 line. Based on the data, what is the basis for the lack of symmetry for the A and F data? In other words, why is the area under the curve about the same above and below the line for G and C, whereas most of the area under the curve very little for the A and C inversions?**

**5. (1 point) The G inversion data in Fig. 6 seems skewed, compared to A, C and F. Based on the data given below, what does the data tell us about G larvae, compared to A, C or F larvae?**