NAME \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

COLLECT DATA

|  |  |
| --- | --- |
| Tasters | Non-tasters |
|  |  |

CLASS DATA



2. Is there a difference between the frequency of tasters/non-tasters in the population at Brookings High School compared to the North American population? Use Chi-Square statistics to compare the two populations. Show your work. EXPLAIN your conclusions. (Remember Chi square analysis uses counting data NOT percentages.)

QUESTIONS- HARDY-WEINBERG Case Studies

LIST THE 5 MAJOR ASSUMPTIONS THAT MUST BE TRUE FOR A POPULATION
TO STAY IN HARDY-WEINBERG EQUILIBRIUM.

1. \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

2. \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

3. \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

4. \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

5. \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

CASE I-IDEAL HARDY-WEINBERG
1.What does the Hardy-Weinberg equation predict for the final p and q frequencies compared to the frequencies in the starting population?

2. Do the results you obtained in this simulation agree? If not, WHY?

3. Which of the major H-W assumption(s) above were NOT strictly followed in this simulation?

\* \* \* \* \* \* \* \* \* \* \* \* \*

CASE II-NATURAL SELECTION
1. How are the final p and q frequencies different from the results from Case I?

2. Which of the major H-W assumption(s) above were NOT strictly followed in this simulation?

3. PREDICT what would happen to the frequencies of p and q if you simulated another 5 generations?

4. In a large population, would it be possible to completely eliminate a deleterious recessive allele?
EXPLAIN

CASE III-HETEROZYGOTE ADVANTAGE:
1. How are the final p and q frequencies different from the results from Case II and Case I?

2. Which of the major H-W assumption(s) above were NOT strictly followed in this simulation?

3. EXPLAIN the importance of heterozygote advantage in maintaining genetic variation in a population.
 Include an example of heterozygote advantage you learned about.

\* \* \* \* \* \* \* \* \* \* \* \* \*

CASE IV: GENETIC DRIFT

1. How did the phenotype frequencies in the post-disaster population compare to the beginning population?

2. What do the results indicate about the importance of population size as an evolutionary force?

|  |  |  |  |  |
| --- | --- | --- | --- | --- |
|  | ORIGINAL POPULATION | PERCENTAGEOF POPULATION | NUMBERAFTER YOUPICK 20 | PERCENTAGEOF POPULATION |
| BLUE | 30 | 6 |  |  |
| PURPLE | 30 | 2 |  |  |
| GREEN | 15 | 2 |  |  |
| YELLOW | 15 | 4 |  |  |
| ORANGE | 10 | 6 |  |  |
| TOTAL | 100 | 80 |  |  |

