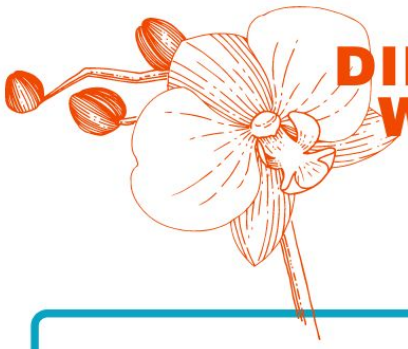

DIHYBRID CROSS WORKSHEET 6: EPISTASIS

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DIHYBRID CROSS PROBLEMS

1. An orchid species has a gene encoding pigmentation (pigmentation, P; no pigmentation, p) and another gene encoding flower color (yellow, Y; pink, y). Assuming complete dominance, if an orchid that is heterozygous for both pigmentation and flower color is self-pollinated, fill out the dihybrid cross and determine the following:

a. P1 genotypes: _____
b. P1 gamete combinations: _____
c. F1 genotypes: _____
_____

2. Using Question 1 as reference, determine what proportion of the F1 are expected to have:

a. Yellow flowers: _____
b. Pink flowers: _____
c. No pigmentation: _____
d. Pigmentation: _____
e. Unpigmented, masked yellow phenotype: _____
f. Unpigmented, masked pink phenotype: _____

3. A rare tomato plant species has a gene encoding pigmentation (pigmentation, P; no pigmentation, p) and another gene encoding fruit color (red, R; green, r). Assuming complete dominance, if a tomato plant that is heterozygous for both pigmentation and fruit color is crossed with a plant that is homozygous recessive and heterozygous for pigmentation and fruit color, respectively, fill out the dihybrid cross and determine the following:

a. P1 genotypes: _____
b. P1 gamete combinations:
   Parent 1: _____
   Parent 2: _____
c. F1 genotypes: _____

4. Using Question 3 as reference, determine what proportion of the F1 are expected to have:

a. Red fruit: _____
b. Green fruit: _____
c. Pigmentation: _____
d. No pigmentation: _____
e. Unpigmented, masked red phenotype: _____
f. Unpigmented, masked yellow phenotype: _____