

Genetics Practice Problems #2

Part I- Fill in the blank

_____ was the first person to succeed in predicting how traits are passed from generation to generation. He used _____ plants in his experiments. In this type of plants the _____, or sex cells are in the same flower. To study inherited traits, he had to make crosses, pollinating plants with _____ forms of a trait. He carefully collected _____ on his experiments and the peas he used. He studied only one _____ at a time and analyzed his data mathematically.

Part II- Punnett Squares

1. Monohybrid Cross: Mr. and Mrs. SpongeBob SquarePants are thinking about starting a family. Lots of holes (H) is a dominant trait. While no holes (h) is a recessive trait. If one parent is heterozygous while the other has NO holes, what would be the genotypic and phenotypic ratios?

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Genotypic Ratio: _____

Phenotypic Ratio: _____

2. Dihybrid Cross: P= Purple; p=white. R=Round; r= wrinkled.

Cross: PpRr X ppRR

Parent 1 Gametes: _____

Parent 2 Gametes: _____

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Genotype: _____

Phenotype: _____

3. Incomplete Dominance: RR= Red, R'R'= White, RR'= Pink

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Cross: Pink Flower X White Flower

Genotype: _____

Phenotype: _____

4. Sex Linked: Hemophilia is a sex-linked, recessive trait. What is the probability of hemophilia in the offspring of a man who does not have hemophilia and a woman whose father is a hemophiliac? What are the chances of their sons having hemophilia?

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Genotype: _____

Phenotype: _____

5. Sex Linked: Colorblindness is inherited as a sex-linked recessive disease. An affected male marries a heterozygous female. What is the chance that they will have an affected child? Could any of their daughters be affected?

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Genotype: _____

Phenotype: _____

Part III- Define and provide examples:

1. Incomplete Dominance:

2. Codominance:

3. Multiple Alleles:

4. Polygenic Traits: