

Life Science

Chapters 3 & 4

Study Notes (This is NOT all inclusive)

I. Medelian Genetics

- A. **Gregor Mendel** – 1851- monk, “father of genetics”
- B. Designed experiments using pea plant traits, physical characteristics
 - a. Tall or short plants
 - b. Round or wrinkled peas
 - c. Yellow or green peas
 - d. Smooth or pinched pods
 - e. Green or yellow pod color
- C. **Purebred**: always produces the same trait
- D. **Hybrid**: an organism w/ two different alleles for a trait – it is heterozygous
- E. Generations numbered
 - a. P- Parent
 - b. F₁- first generation “sons”
 - c. F₂- 2nd generation
- F. **Gene**: factor that controls a trait
- G. **Allele**: the different forms of a gene
- H. Dominant and recessive Alleles
 - a. **Dominant allele**: trait shows up in the organism when the allele is present represented by a Capital letter ie “T” for tall
 - b. **Recessive allele**: trait is masked or covered up unless homozygous represented by a small case letter ie “t” for short
 - c. **Phenotype**: The outward visible trait being shown
 - d. **Genotype**: The genetic makeup of the trait
 - i. **Homozygous**: both alleles are the same for the trait in question
 - ii. **Heterozygous**: Alleles are different for the trait in questions

I. Probability & Genetics

- a. Expressed as a fraction & or as a percent
- b. Numerator is the chance of an event happening
- c. Denominator is the number of possible results
 - i. Examples:

1. What is the probability of rolling a 3 w/ a die? **1/6**
2. What is the probability of flipping a coin & it lands on heads? **1/2**

Punnett Square one trait

Tall plants are dominant (T), short plants recessive (t). What are possible outcomes when one parent is heterozygous tall and the other is heterozygous tall. 5 points

Genotype: _____ % homozygous tall
 _____ % heterozygous tall
 _____ % homozygous short

Phenotype: _____ % Tall
 _____ % short

		pollen grain	
		T	t
ovule	♂	T	t
	♀	TT ①	Tt ②
		T	t
		Tt ③	tt ④

