

Activity: How are traits carried in the DNA of organisms?	***
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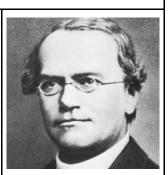
Father of Modern Genetics

Name and occupation:

Year:

Plant studied:

Conclusions drawn:



Genes and Alleles

Genes:

Alleles:

Remember: How many copies of each allele are in gametes (sex cells)?

Dominant vs Recessive

Dominant Alleles:

allele is needed.

1. Represented by a

letter.

Recessive Alleles:

1. Represented by a

letter.

2. Trait will

appear. Only

2. Trait will not appear unless

alleles are present.

GENOTYPES: Label the following pairs of alleles as homozygous (purebred) or heterozygous (hybrid).

- 1. TT_____
- 2. Tt______

PHENOTYPES: If the "T" allele represents "tall" and the "t" allele represents "short," write whether the following plants will be tall or short.

- π______
- 3. tt_



Mendelian **Inheritance**

Genotype vs Phenotype

Using the previous example, what definition would you give the word "genotype?":

Using the previous example, what definition would you give the word "phenotype?":

Phenotypic Ratio:

Monohybrid Cross: Cross two hybrid tall plants.

Tall is dominant to short

Tall : Short Genotypic Ratio: ____:__:__:___:__

TT= homozygous dominant = of 4 = %

Tt= heterozygous dominant = of 4 = %

tt= homozygous recessive = ___ of 4 = ____%

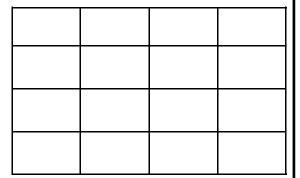
Probability of tall plant: ___ of $4 = ___\%$

Probability of short plant: ____ of $4 = ____\%$

Dihybrid Cross: Cross one homozygous dominant plant and one homozygous recessive plant.

Before starting, vou must

Parent 1_____ Parent 2_____ FOIL 1 FOIL 2



Smooth & Yellow: ____ of 16

Smooth & Green: of 16

Phenotypic Ratio:

Wrinkled & Yellow: _____ of 16 : : :

Wrinkled & Green: of 16

6F: Inheritance Patterns

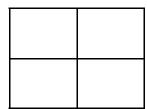
MONOHYBRID CROSSES:

Crosses looking at _____ pair of alleles.

Distinguishing F₁ from F₂ Generations:

"F" stands for filial, which refers to generations

1. F₁ Cross: Tall is dominant to short. Cross a homozygous tall plant with a homozygous short plant.



Phenotypic Ratio:

Short : Tall

Genotypic Ratio:

_____: ____: ____: ____

TT = homozygous dominant = of 4 = %

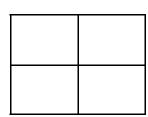
Tt= heterozygous dominant = ___ of 4 = ____%

= ___ of 4 = __ % tt= homozygous recessive

Probability of tall plant: $_{--}$ of $4 = _{--}$ %

Probability of short plant: ___ of $4 = ___\%$

2. F₂ Cross: Pick two genotypes from the F₁ cross and complete the Punnett square below.



Phenotypic Ratio:

Short Tall

Genotypic Ratio:

_____: ___: ___: ___

TT = homozygous dominant = of 4 = %

Tt= heterozygous dominant = ____ of 4 = ____%

= ___ of 4 = ___ % tt= homozygous recessive

Probability of tall plant: of 4 = %

Probability of short plant: of 4 = %



Practice: Mendelian Genetics

<u>DIHYBRID CROSSES:</u>						
Crosses lookir	ng atp	airs c	of alleles.			
3. Cross between 2	heterozygous	paren	its.			
	r = Wrir g=Yello		Deloie startii	_		
Parent 1	Parent 2		F			
FOIL 1	FOIL 2					
			I			
				_		
Smooth & Green:	of 16	Phenoty	ypic Ratio:			
Smooth & Yelllow:	of 16	•	_;;			
Wrinkled & Green:	of 16	-·	··	_		
Wrinkled & Yellow:						
4. SHORTCUT! Cross green plant with gous green plant and green?	a heterozygou	ıs rour	nd, homozy-			
Parent 1	x Parer	nt 2				
Eraction of wrinkled x f	Fraction of green -	# wrint	rlad and green			