SUPERHERO GENETICS PROJECT   Name: _____

PART I: CHOOSING THE PARENTS AND DETERMINING THEIR TRAITS

- Go to **marvel.com** and/or **dccomics.com (dc.wikia.com)**

- Choose a male and female super**hero** (no villains) to be the father and mother in your superhero family. At least one must have a superpower.

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- On your character sheet, record **12 traits** for each character. A trait is a characteristic that is determined by their genes, which can be passed on to their offspring. For example, one can pass on super powers to a baby but not a job, where one grew up or hair style.

- Each character sheet **MUST** list the **SAME** 12 traits but can, of course, have different versions.

Help finding traits…

- ✓ Height (tall or short)
- ✓ Eye Color
- ✓ Hair Color
- ✓ Hair Type

- ✓ Skin color
- ✓ Powers like flight, super speed, telekinesis, etc.
- ✓ Weaknesses

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In this project, most traits will show complete dominance. For each trait, I will determine which allele should be _dominant_ and which should be _recessive_. If the character has the dominant trait, you decide if they are _heterozygous_ (have a dominant allele and a recessive allele) or _homozygous dominant_ (have two dominant alleles). If they have the recessive trait, they are _homozygous recessive_ (two small letters). **The majority of your dominant traits must be heterozygous.** Circle the correct genotype for each trait on your worksheet.

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PART II: DETERMINING THE TRAITS OF THE BABY

Remember, traits are randomly determined based on the genes that the parents can give to their offspring.

For each trait, you will complete a Punnett Square to determine the probability that a trait will be inherited by the offspring.

When the Punnett Square is complete, use a 4-sided die (such as http://www.roll-dice-online.com/ or http://dice.virtuworld.net/ or two coin tosses to determine which genotype the offspring will inherit.

Circle the gene that the parent gives to the offspring and record it on the Superchild sheet.

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PART III: PRESENTATION

1. Either **draw and color** or print out a picture of each of the parents.

2. Once the traits of the child have been determined, **draw** a picture of the offspring as an adolescent, teen, or adult (not a baby) showing the appropriate traits. **I love to see your drawings**! If you want to create and print a picture at home, you may do so using marvel.com or heromachine.com.

3. Describe the traits of each character. (You may make a list or table)

4. Give a short back story for each character (who are they, where are they from, what do they do) and explain why you chose that character. (about 4 or 5 sentences each).

5. Put all of this together on a poster board or large paper to present to the class.

CHARACTER WORKSHEET

MOTHER

Traits	Genotype	Phenotype
1. Eye color		
2. Hair color		
3. Height		
4.		
5.		
6.		
7.		
8.		
9.		
10.		
11.		
12.		
Sex	**XX**	

List the physical expression of the traits here
For Example
1. Blue eyes
2. Brown hair
3. Tall
4. Can fly
5. Normal speed

FATHER

Traits	Genotype	Phenotype
1. Eye color		
2. Hair color		
3. Height		
4.		
5.		
6.		
7.		
8.		
9.		
10.		
11.		
12.		
Sex	**XY**	

List the physical expression of the traits here
For Example
1. Brown eyes
2. Blond hair
3. Short
4. Cannot fly
5. Super speed
Make sure they reference the same traits on the same line

SUPERCHILD

Traits	Genotype		Phenotype
1. Eye color			
2. Hair color			
3. Height			
4.			
5.			
6.			
7.			
8.			
9.			
10.			
11.			
12.			
Sex	XX	XY	

Punnett Square Worksheet

Your dominant trait may be heterozygous or homozygous. Most of your dominant traits must be heterozygous.

TRAIT #1: _____

Mom's Trait: _____ Dad's Trait: _____

Mom's alleles go here Which is dominant? _____

Choose a letter to demonstrate the dominant trait: _____

1	2
3	4

Dad's alleles go here _____

Genotype _____ _____% Phenotype _____ _____%

TRAIT #2: _____

Mom's Trait: _____ Dad's Trait: _____

Mom's alleles go here Which is dominant? _____

Choose a letter to demonstrate the dominant trait: _____

1	2
3	4

Dad's alleles go here _____

Genotype _____ _____% Phenotype _____ _____%

TRAIT #3: _____

Mom's Trait: _____ Dad's Trait: _____

Mom's alleles go here Which is dominant? _____

Choose a letter to demonstrate the dominant trait: _____

1	2
3	4

Dad's alleles go here _____

Genotype _____ _____% Phenotype _____ _____%

TRAIT #4: _____

Mom's Trait: _____ Dad's Trait: _____

Mom's alleles go here Which is dominant? _____

Choose a letter to demonstrate the dominant trait: _____

1	2
3	4

Dad's alleles go here _____

Genotype _____ _____% Phenotype _____ _____%

TRAIT #5: _____

Mom's Trait: _____ Dad's Trait: _____

Mom's alleles go here Which is dominant? _____

Choose a letter to demonstrate the dominant trait: _____

1	2
3	4

Dad's alleles go here _____

Genotype _____ _____% Phenotype _____ _____%

TRAIT #6: _____

Mom's Trait: _____ Dad's Trait: _____

Mom's alleles go here Which is dominant? _____

Choose a letter to demonstrate the dominant trait: _____

1	2
3	4

Dad's alleles go here _____

Genotype _____ _____% Phenotype _____ _____%

Punnett Square Worksheet

TRAIT #7: _____

Mom's Trait: _____
Mom's alleles go here

Dad's Trait: _____
Which is dominant? _____
Choose a letter to demonstrate the dominant trait: _____

1	2
3	4

Dad's alleles go here _____

Genotype _____ _____%   Phenotype _____ _____%

TRAIT #8: _____

Mom's Trait: _____
Mom's alleles go here

Dad's Trait: _____
Which is dominant? _____
Choose a letter to demonstrate the dominant trait: _____

1	2
3	4

Dad's alleles go here _____

Genotype _____ _____%   Phenotype _____ _____%

TRAIT #9: _____

Mom's Trait: _____
Mom's alleles go here

Dad's Trait: _____
Which is dominant? _____
Choose a letter to demonstrate the dominant trait: _____

1	2
3	4

Dad's alleles go here _____

Genotype _____ _____%   Phenotype _____ _____%

TRAIT #10: _____

Mom's Trait: _____
Mom's alleles go here

Dad's Trait: _____
Which is dominant? _____
Choose a letter to demonstrate the dominant trait: _____

1	2
3	4

Dad's alleles go here _____

Genotype _____ _____%   Phenotype _____ _____%

TRAIT #11: _____

Mom's Trait: _____
Mom's alleles go here

Dad's Trait: _____
Which is dominant? _____
Choose a letter to demonstrate the dominant trait: _____

1	2
3	4

Dad's alleles go here _____

Genotype _____ _____%   Phenotype _____ _____%

TRAIT #12: _____

Mom's Trait: _____
Mom's alleles go here

Dad's Trait: _____
Which is dominant? _____
Choose a letter to demonstrate the dominant trait: _____

1	2
3	4

Dad's alleles go here _____

Genotype _____ _____%   Phenotype _____ _____%