Celebrity Genetics Instructions

This activity is designed to give you practice with creating and analyzing Punnett Squares for different trait types. You will use the traits of celebrities to explore various genetic crosses. By the end of this activity you will have constructed a new baby!

1. Pick celebrities whose genes you would like to cross (or yourself and a celebrity)
   Write your pair's name here:

2. You will be learning how to use Punnett Squares to illustrate the possible genetic outcomes from your celebrity pair. You will learn about several different types of crosses: complete dominance (monohybrid and dihybrid crosses), incomplete dominance, polygenic inheritance, and sex-linked traits. For each type of cross you will create a Punnett Square to discover the traits of your baby. You will have a chance to practice each type of cross after the lecture on that subject. Some traits will fall under multiple genetic cross categories.
   - ***Completely dominant traits:*** *face shape, chin size, chin shape, cleft chin, widow's peak, eye shape, lip thickness, dimples, nose shape, earlobe attachment*
   - ***Incompletely dominant traits:*** *eye color, skin color, hair color, hair type, blood type*
   - ***Polygenic traits:*** *eye color, skin color, hair color, blood type*
   - ***Sex-linked traits:*** *color blindness*

How to make your Punnett Squares:

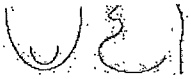
1. Identify the traits associated with the genetics skill you just learned.
2. Use the genotypes given/found to determine the missing information.
   - You may need to use the book or do some research to find the phenotypes for a couple of the traits.
3. Use the given genotypes to create the appropriate Punnett Square.
4. Cross your traits.
5. Calculate the phenotypic and genotypic proportions from the outcome of your cross.
6. Repeat with the next type of cross.
7. Once we've reached the end of the Genetics unit, you will combine your traits to illustrate your celebrity baby. At the end of the unit, you will turn in all your crosses, proportions, and illustration for a grade.

Trait	Brad Pitt	Taylor Lautner	Robert Pattinson	Roger Federer	Usher	Enrique Iglesias	Zac Efron	Justin Bieber
Face Shape	AA	AA	aa	Aa	AA	Aa	AA	AA
Chin Size	Bb	Bb	BB	BB	bb	Bb	BB	bb
Chin Shape	Cc	CC	cc	cc	Cc	Cc	Cc	CC
Cleft Chin	dd	Dd	dd	dd	dd	dd	dd	dd
Widow's Peak	oo	oo	oo	oo	oo	oo	oo	oo
Eye Shape	tt	TT	Tt	TT	TT	TT	tt	tt
Lip Thickness	cc	Cc	cc	cc	Cc	cc	cc	cc
Dimples	DD	Dd	dd	dd	DD	dd	dd	dd
Nose Shape	ff	ff	ff	Ff	Ff	ff	ff	ff
Earlobe Attachment	Hh	hh	hh	hh	hh	hh	Hh	hh
Eye Color	PpQQ	PPQq	PpQQ	PpQq	PPQq	PpQq	ppQQ	PpQQ
Skin Color	Eeffgg	EEffGg	eeffgg	eeffGg	EEfFGg	EEffgg	eeffGg	eeffgg
Hair Color	EeFfgghh	EEFFGGHH	EEffGghh	EEFFGghh	EEFFGGHH	EEFfGgHh	EEffGGHh	EEFfgghh
Hair Type	M_1M_2	M_2M_2	M_1M_2	M_2M_2	M_1M_2	M_1M_2	M_2M_2	M_1M_2
Blood Type	AA	AO	AB	OO	BB	AB	AB	BO
Color Blindness	X^bY	X^BY	X^bY	X^BY	X^BY	X^bY	X^BY	X^bY

Trait	Taylor Swift	Venus Williams	Kristin Stewart	Heidi Klum	Jennifer Lopez	Angelina Jolie	Tyra Banks	Vanessa Hudgens
Face Shape	AA	AA	AA	aa	AA	aa	Aa	aa
Chin Size	BB	BB	bb	Bb	bb	bb	Bb	Bb
Chin Shape	cc	cc	Cc	cc	Cc	cc	Cc	cc
Cleft Chin	dd	dd	dd	dd	dd	dd	Dd	Dd
Widow's Peak	oo	oo	oo	oo	oo	OO	oo	oo
Eye Shape	Tt	tt	tt	tt	tt	Tt	tt	Tt
Lip Thickness	cc	CC	cc	CC	Cc	CC	CC	cc
Dimples	dd	DD	dd	dd	DD	dd	Dd	Dd
Nose Shape	ff	FF	ff	ff	ff	ff	Ff	ff
Earlobe Attachment	Hh	HH	hh	hh	HH	hh	Hh	hh
Eye Color	PpQq	PPQQ	PpQQ	PpQQ	PpQq	Ppqq	PpQQ	PpQq
Skin Color	eeffgg	EEFFGG	eeffgg	eeffgg	EeFfGg	EEffgg	EEFFgg	Eeffgg
Hair Color	EEffgghh	EEFFGGHH	EEFFgghh	EEffgghh	EEFFgghh	EEFFGghh	EEFFGGHH	EEFFGGHh
Hair Type	M_1M_1	M_2M_2	M_1M_2	M_1M_2	M_1M_2	M_1M_2	M_1M_1	M_1M_2
Blood Type	AB	BO	AO	OO	OO	AB	AB	AB
Color Blindness	X^BX^b	X^BX^B	X^BX^B	X^bX^B	X^BX^b	X^BX^B	X^BX^B	X^BX^B

1. FACE SHAPE:
Round (AA, Aa) Square (aa)

2. CHIN SIZE: The results may affect the next two traits.
Very prominent (BB, Bb) Less prominent (bb).



4. CLEFT CHIN: Only flip coins for this trait if chin size is very prominent. The genotype bb prevents the expression of this trait.
Present (DD, Dd) Absent (dd)

5. SKIN COLOR: To determine the color of skin or any other trait controlled by mar pair. Dominant alleles represent color; recessive alleles represent little or no color. Fi
a. First coin toss determines whether the child inherits E or e, b.
Second coin toss decides F or f inheritance.
c. Third coin toss determines inheritance of G or g.
6 dominant alleles - black
5 dominant alleles - very dark brown
4 dominant alleles - dark brown
3 dominant alleles - medium brown
2 dominant - light brown
1 dominant - light tan
0 dominant - white

9. WIDOW'S PEAK:
Present (OO, Oo) Absent (oo)

10. EYE COLOR:
PPQQ - black
PpQq - brown
ppQQ - green
PPQq - dark brown
PPqq - violet
ppQq - dark blue
PpQQ - brown with green tints
Ppqq - gray blue
ppqq - light blue

Chin Shape

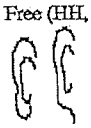
Round (CC, Cc) Square (cc)

22. NOSE SIZE:

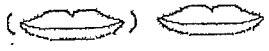
Large (E1E1) Medium (E1E2) Small (E2E2)

20. LIP THICKNESS: Thick (CC, Cc) Thin (cc)

25. EARLOBE ATTACHMENT:
Free (HH, Hh) Attached (hh)



21. DIMPLES:
Present (DD, Dd) Absent (dd)



6. HAIR COLOR: Determined by 4 gene pairs.
8 dominant - black
7 dominant - very dark brown
6 dominant - dark brown
5 dominant - brown
4 dominant - light brown
3 dominant - brown mixed w/blonde
2 dominant - blond
1 dominant - very light blond
0 dominant - silvery white

8. HAIR TYPE:
Curly (M1M1) Wavy (M1M2) Straight (M2M2)

Individual 1:					
Completely Dominant Traits	Face Shape	Chin Size	Chin Shape	Cleft Chin	Widow's Peak
	Genotype:				
	Phenotype:				
	Eye Shape	Lip Thickness	Dimples	Nose Shape	Earlobe Attachment
Incompletely Dominant Traits	Eye Color	Skin Color	Hair Color	Hair Type	Blood Type
Polygenic Traits	Eye Color	Skin Color	Hair Color	Blood Type	
Sex-Linked Traits	Color Blindness				

Individual 2:					
Completely Dominant Traits	Face Shape	Chin Size	Chin Shape	Cleft Chin	Widow's Peak
	Genotype:				
	Phenotype:				
	Eye Shape	Lip Thickness	Dimples	Nose Shape	Earlobe Attachment
Incompletely Dominant Traits	Eye Color	Skin Color	Hair Color	Hair Type	Blood Type
Polygenic Traits	Eye Color	Skin Color	Hair Color	Blood Type	
Sex-Linked Traits	Color Blindness				