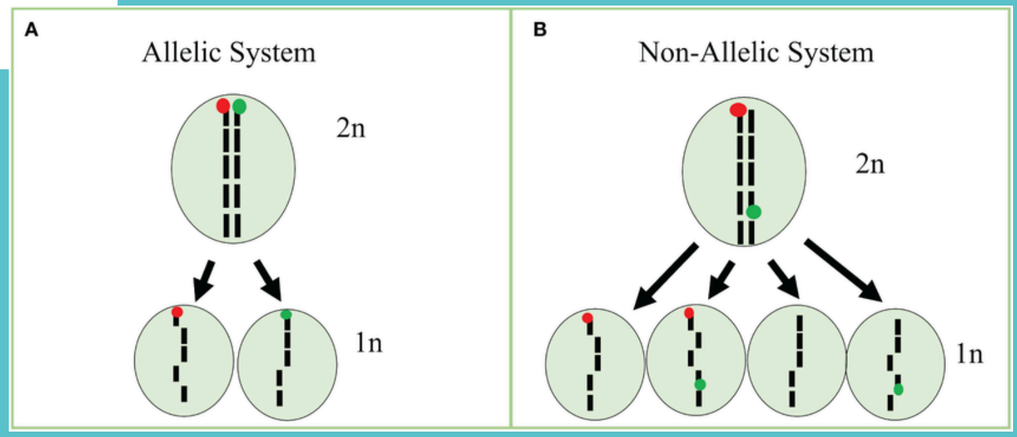
NON-MENDELIAN GENETICS

GRADE 10

INCOMPLETE DOMINANCE
CO-DOMINANCE
EPISTASIS
POLYGENIC TRAITS

Learning goal

Compare the interaction of allelic and non-allelic genes.

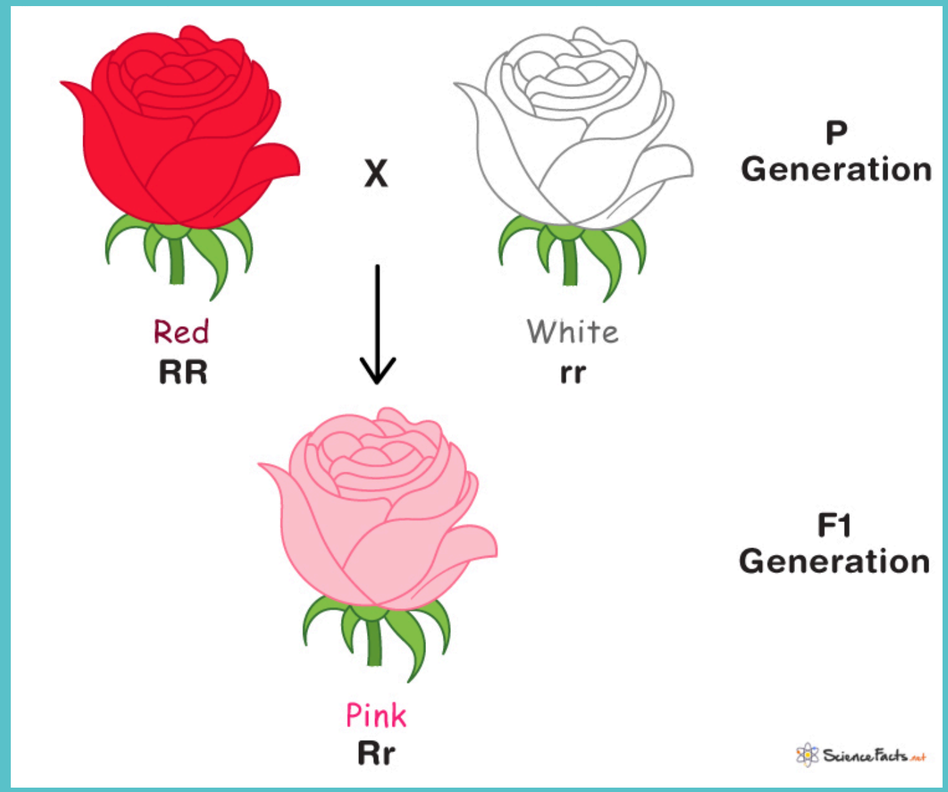


Engage

What would happen if traits didn’t follow simple dominant-recessive rules? What might the offspring look like if both parent traits were equally visible or if a trait was a blend?

Explore
Group work

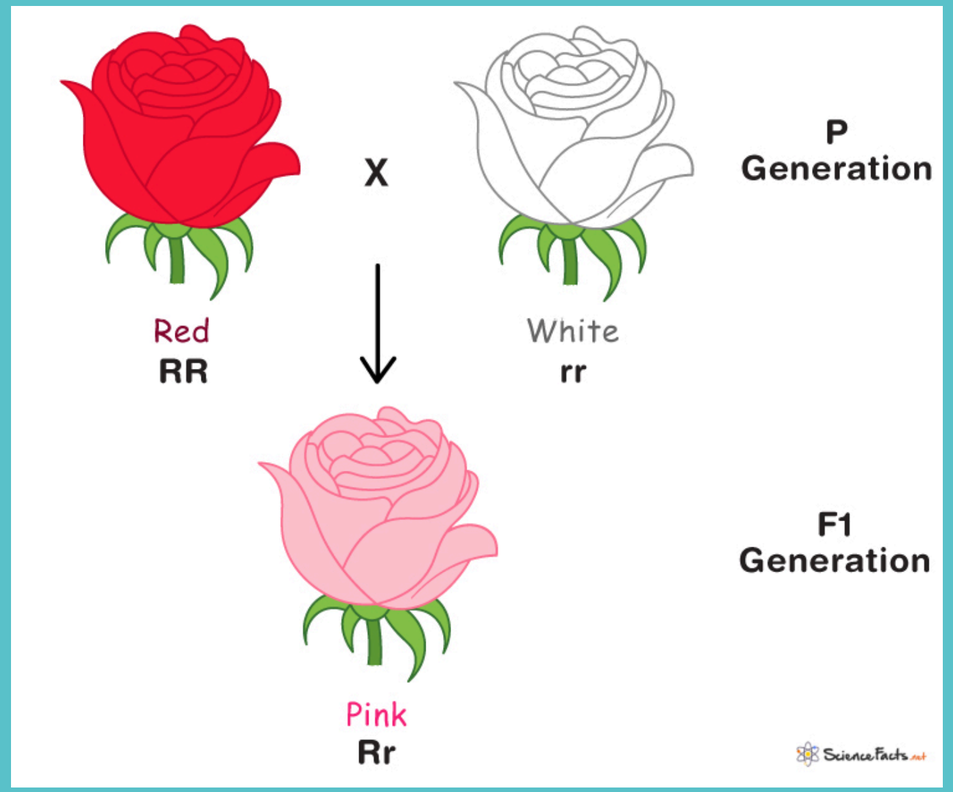
INCOMPLETE DOMINANCE



Give definition.....

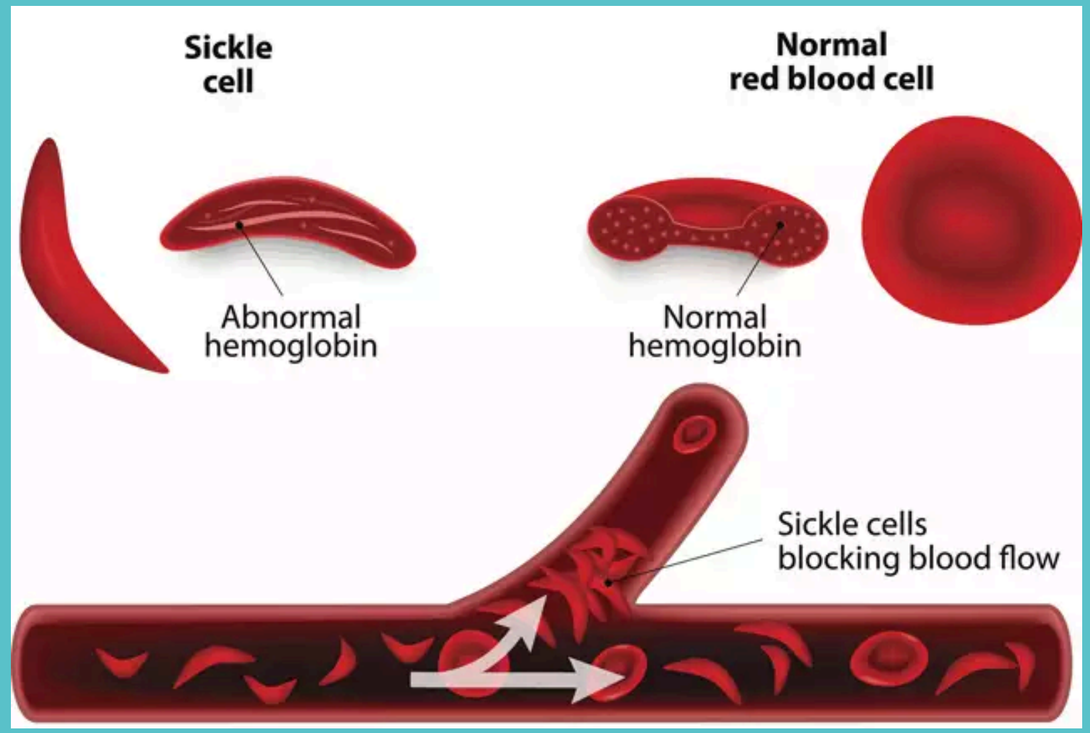
INCOMPLETE DOMINANCE

•In heterozygous organisms, the phenotype is intermediate between homozygous dominant and recessive.



INCOMPLETE DOMINANCE

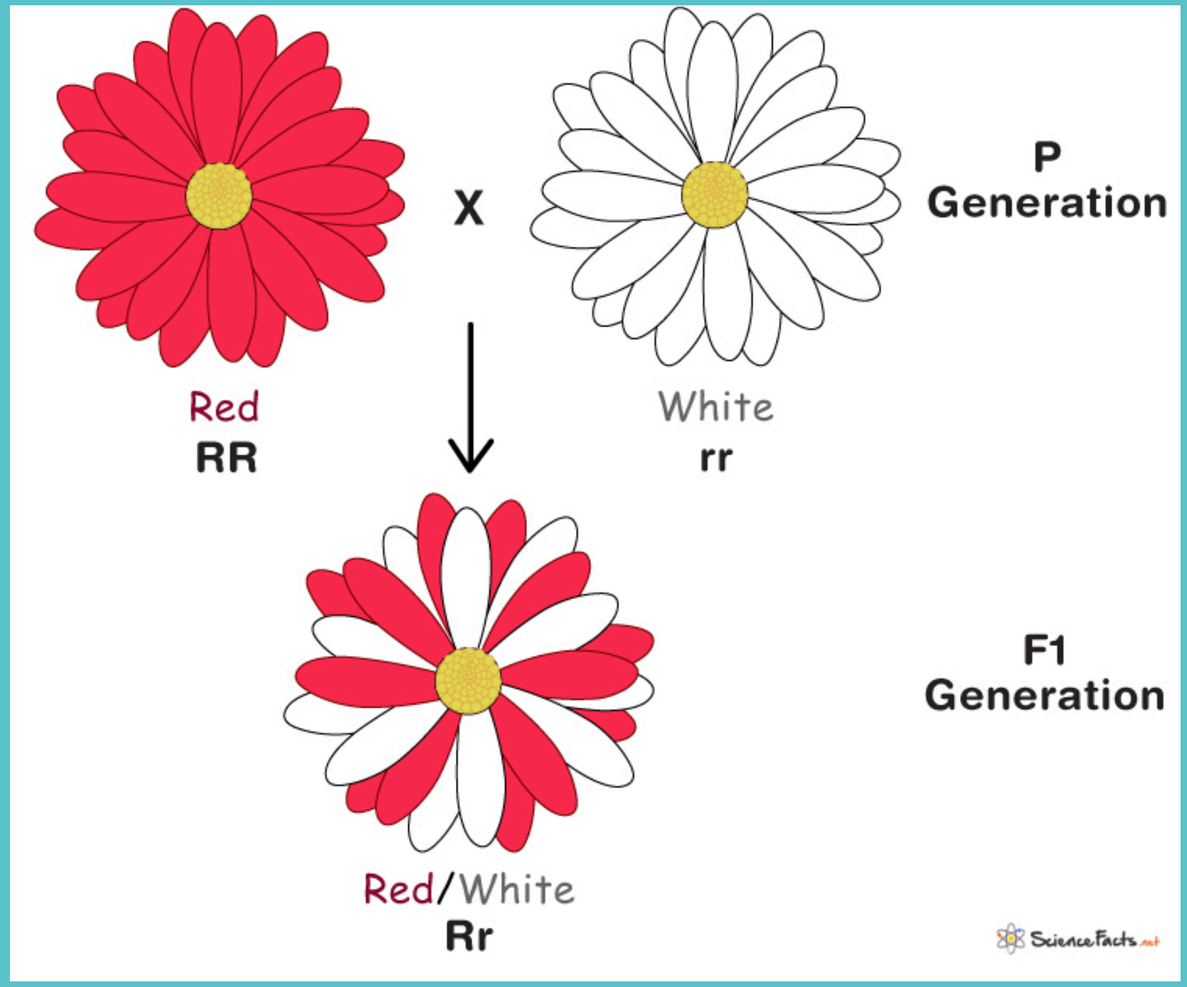
S-hemoglobins cause RBC to have a sickle shape in the deficiency of oxygen. Individuals with two mutated alleles (homozygous) die in early childhood. Heterozygous can live, with mild symptoms



Sickle cell anemia

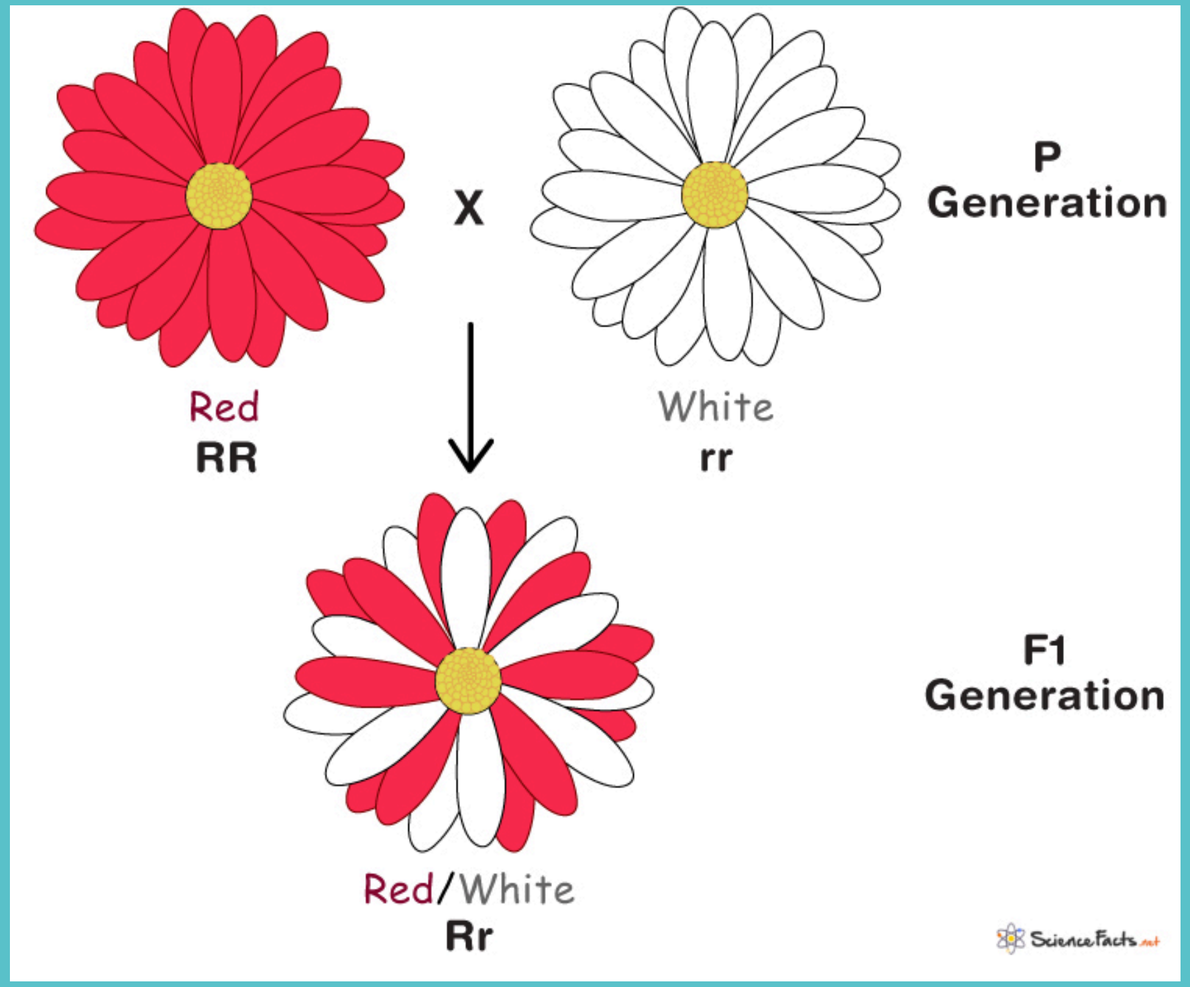
CO-DOMINANCE

Give definition .....



CO-DOMINANCE

•Both alleles in heterozygous individuals express their traits fully.



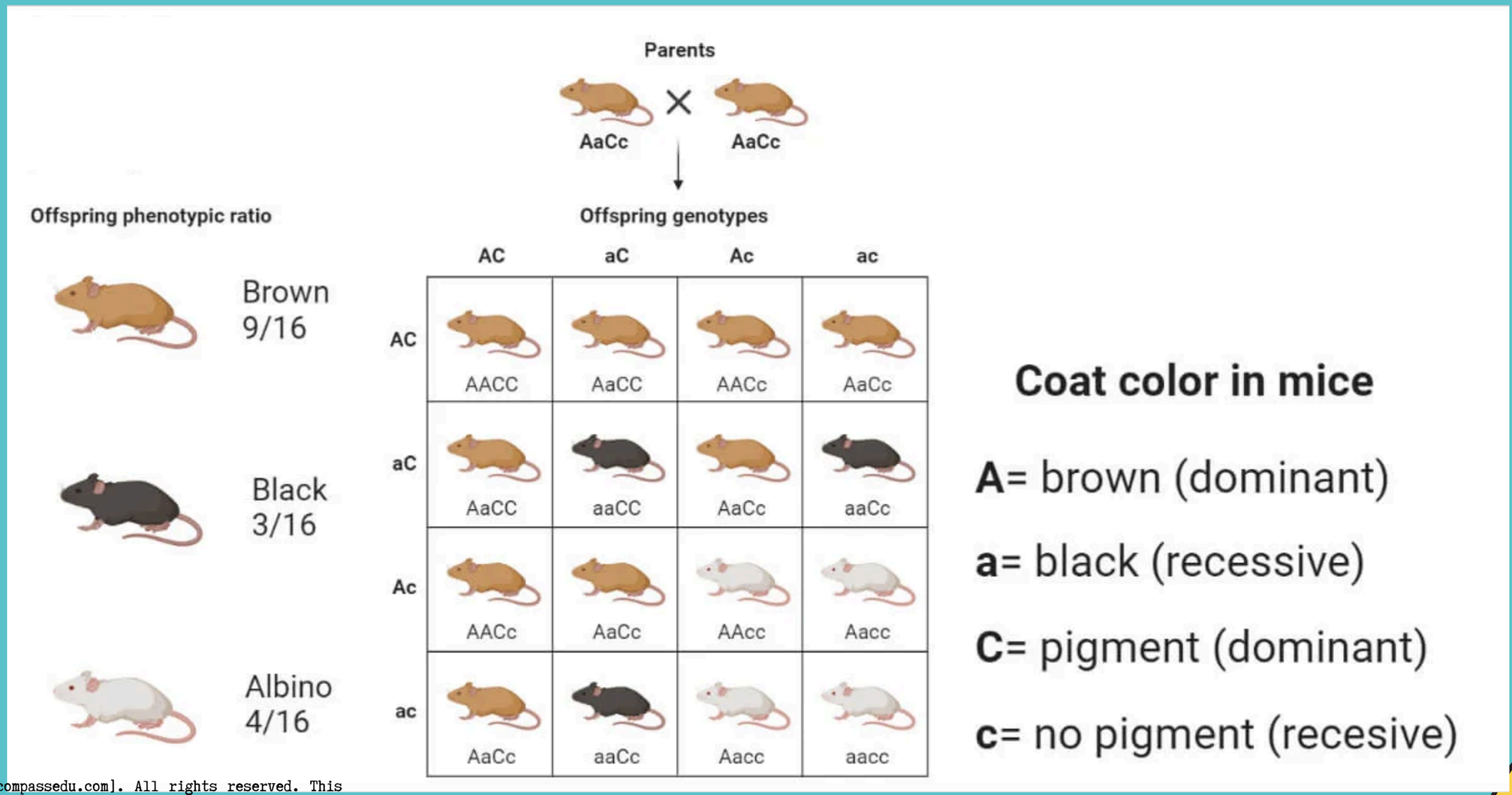
CO-DOMINANCE

•Both alleles in heterozygous individuals express their traits fully.

Genotype	Phenotype	
$I^A\_$ (I^AI^A or I^Ai)		Type A
$I^B\_$ (I^BI^B or I^Bi)		Type B
ii		Type o
I^AI^B		Type AB

Blood types

EPISTASIS



Coat color in mice

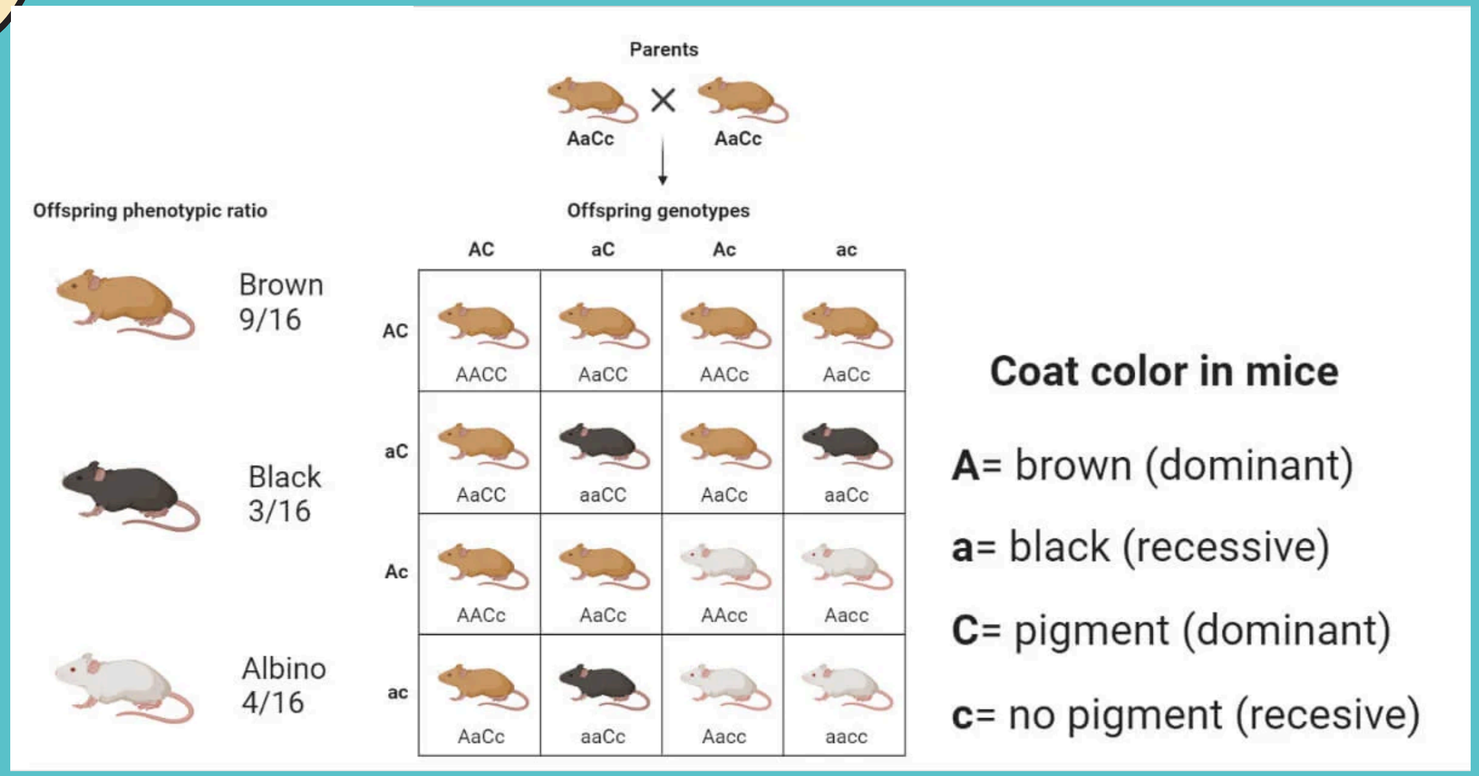
A= brown (dominant)

a= black (recessive)

C= pigment (dominant)

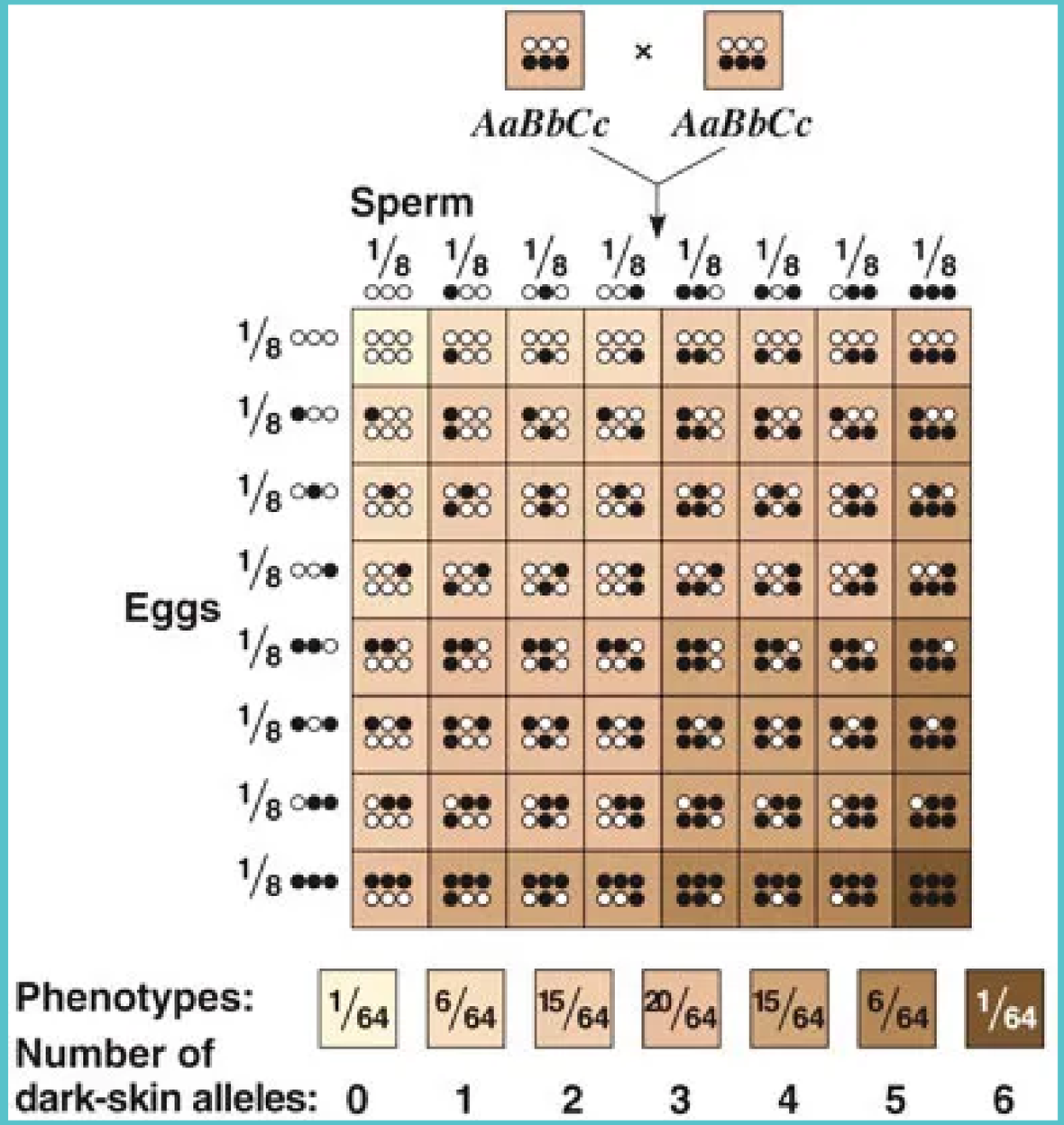
c= no pigment (recesive)

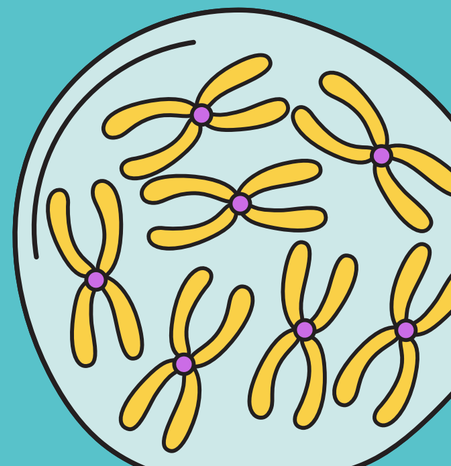
EPISTASIS



One gene can mask or suppress the expression of another gene

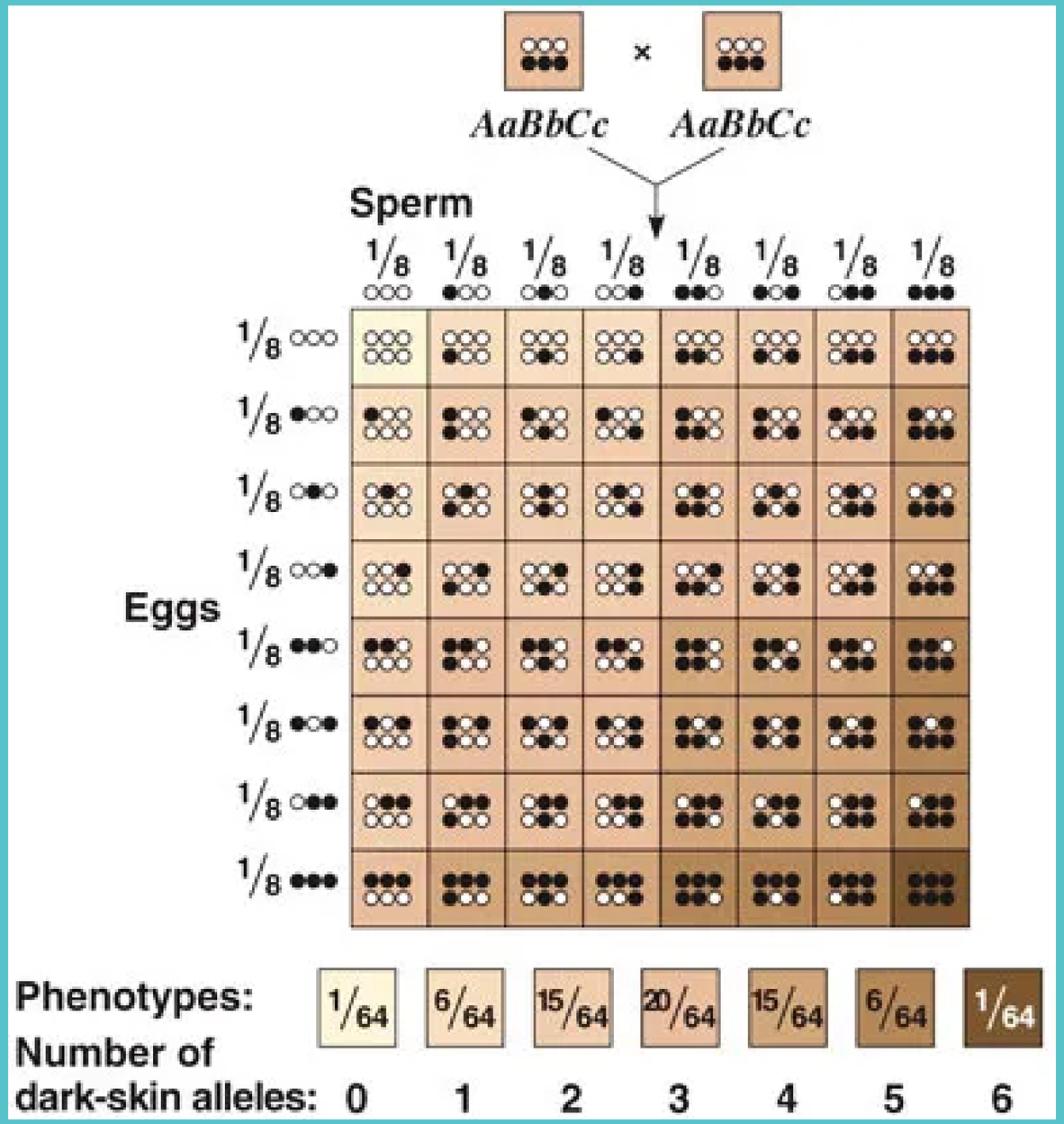
POLYGENIC INHERITANCE

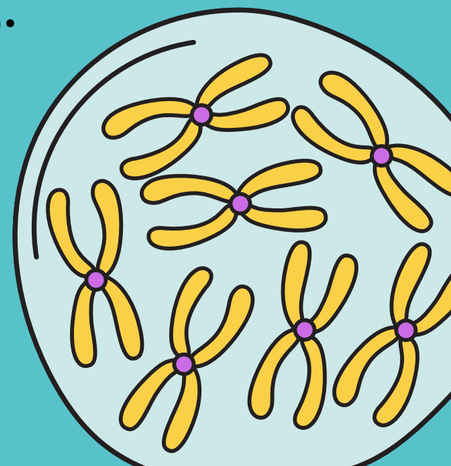




POLYGENIC INHERITANCE

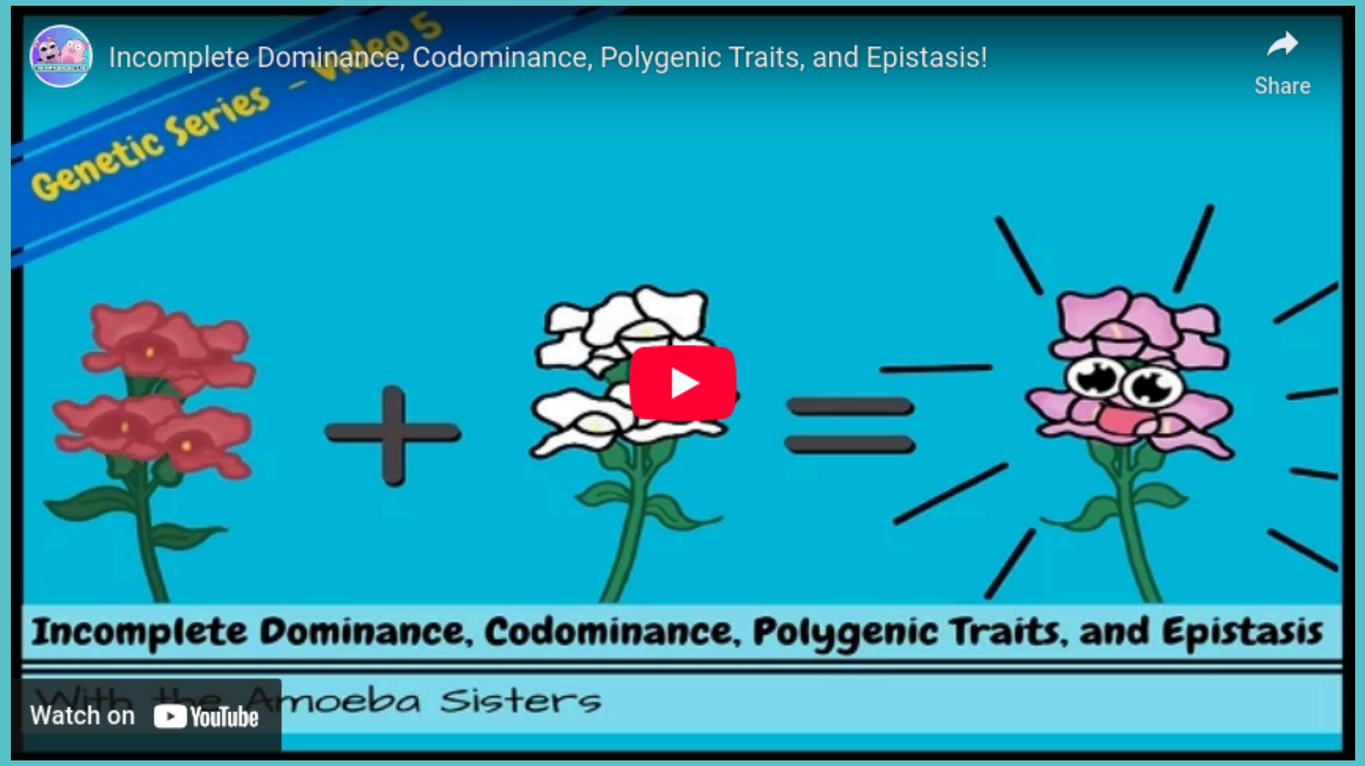
Traits controlled by multiple genes, each contributing a small effect.





EXPLANATION

https://www.youtube.com/watch?v=YJHGfbW55l0



ELABORARTE

1. Form a group with your classmates and receive your assigned genetic scenario.
2. Work together to complete the assigned tasks and discuss your observations.
3. Answer the discussion questions as a group.

EVALUATE

-What is one new thing you learned about genetics today?

-Which inheritance type do you think is most common in humans? Why?

-Which type of inheritance do you still find confusing?