

These Slides Accompany the YouTube Video Tutorial:  
<https://www.youtube.com/watch?v=fOUf51wkPwI>

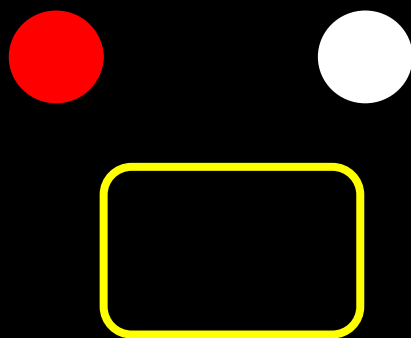
# Exceptions to Mendel's Laws

- 1) *Incomplete dominance*
- 2) *Codominance*
- 3) *Multiple Allele Traits*
- 4) *Polygenic Traits*
- 5) *Pleiotropic Genes*

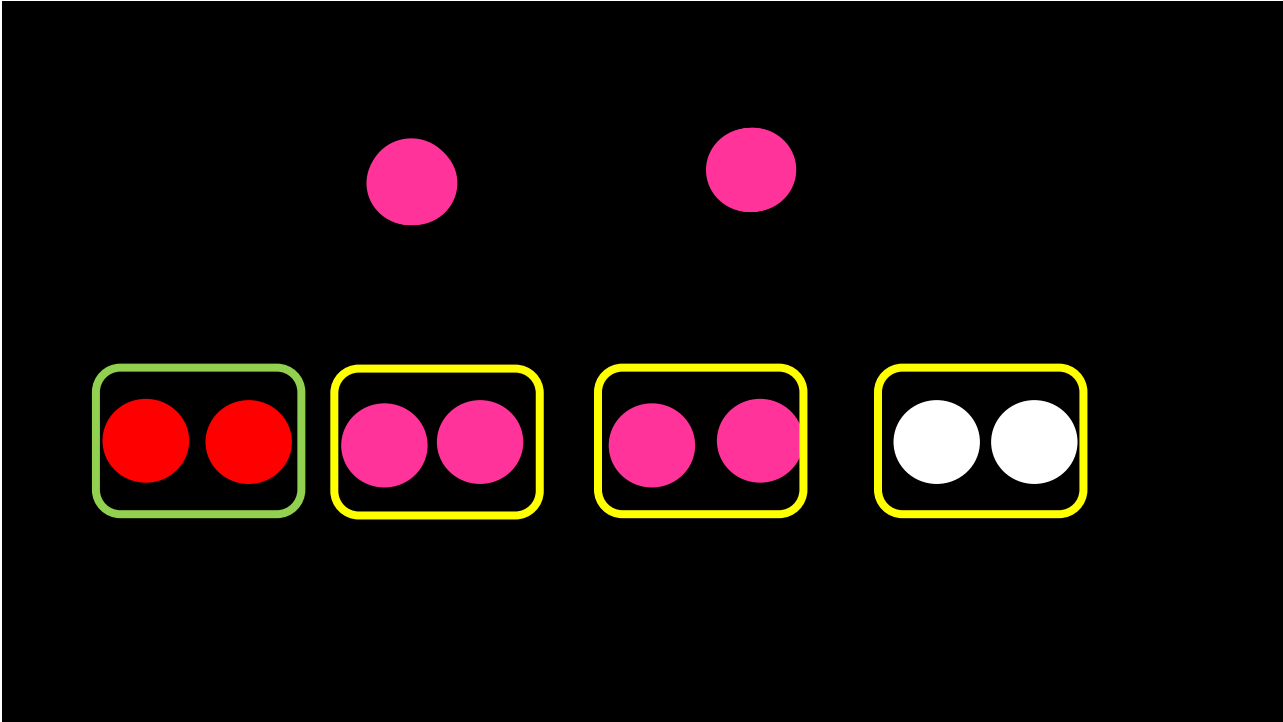
These Slides Accompany the YouTube Video Tutorial:  
<https://www.youtube.com/watch?v=fOUf51wkPwI>

## Incomplete Dominance

Some alleles are not completely dominant and the offspring will have a “blending” of the parents traits.



These Slides Accompany the YouTube Video Tutorial:  
<https://www.youtube.com/watch?v=fOUf51wkPwI>



*Mirabilis jalapa* (Four O'clock) flower  
Snapdragon flower

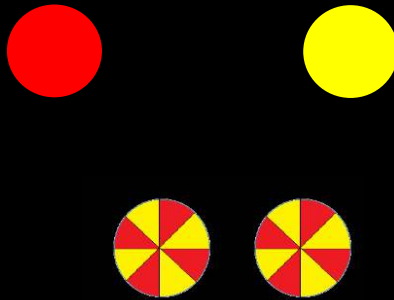


These Slides Accompany the YouTube Video Tutorial:  
<https://www.youtube.com/watch?v=fOUf51wkPwI>

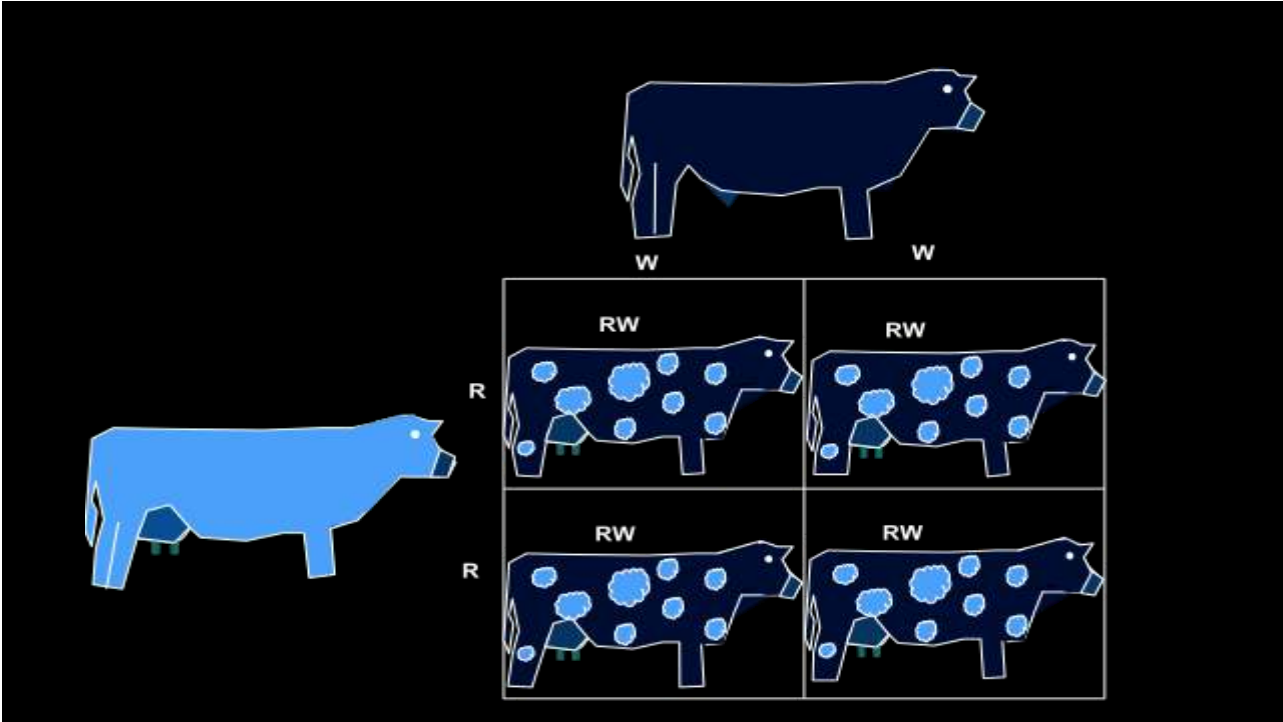
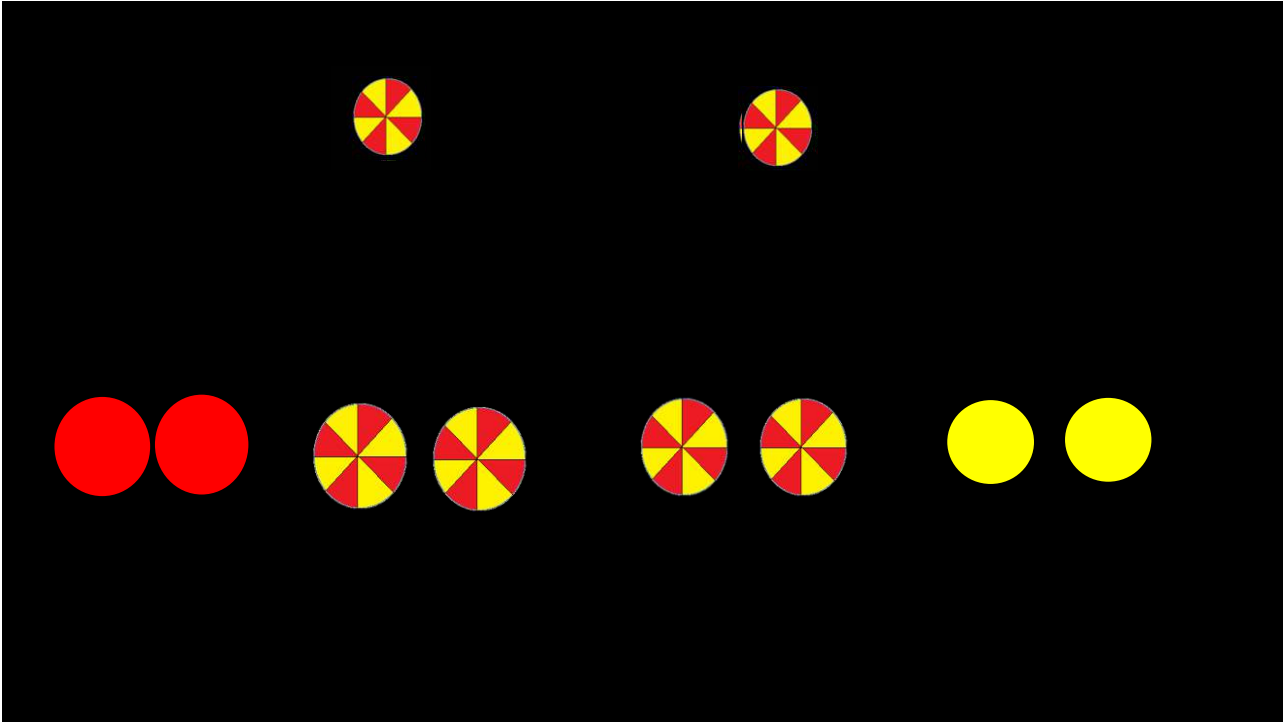
## Codominance

In the heterozygous condition, **both** alleles are expressed **equally**

NO blending!



These Slides Accompany the YouTube Video Tutorial:  
<https://www.youtube.com/watch?v=fOUf51wkPwI>



These Slides Accompany the YouTube Video Tutorial:  
<https://www.youtube.com/watch?v=fOUf51wkPwI>

*Which Mendelian idea is depicted by a cross in which F<sub>1</sub> generation resembles both the parent*

*If you cross a red plant with a white plant and the offspring is pink, what is that called?*

- A. Incomplete dominance*
- B. Polygenic inheritance*
- C. Codominance*
- D. Multiple alleles*

These Slides Accompany the YouTube Video Tutorial:  
<https://www.youtube.com/watch?v=fOUf51wkPwI>

# Multiple Alleles

More than two alleles for a gene

Blood group-

A B O

Blood Type	Genotype	Antigen	Antibody	Can receive blood from
------------	----------	---------	----------	------------------------

A	$I^A I^A / I^A i$	A	B	A or O
---	-------------------	---	---	--------

B	$I^B I^B / I^B i$	B	A	B or O
---	-------------------	---	---	--------

AB	$I^A I^B$	A & B	None	All
----	-----------	-------	------	-----

O	ii	None	A & B	Only from O
---	----	------	-------	-------------

These Slides Accompany the YouTube Video Tutorial:  
<https://www.youtube.com/watch?v=fOUf51wkPwI>

*Some people have AB blood types for the ABO blood system. They have all of the characteristics of both type A and type B blood--they are not a blend of them. The inheritance pattern responsible for this is referred to as*

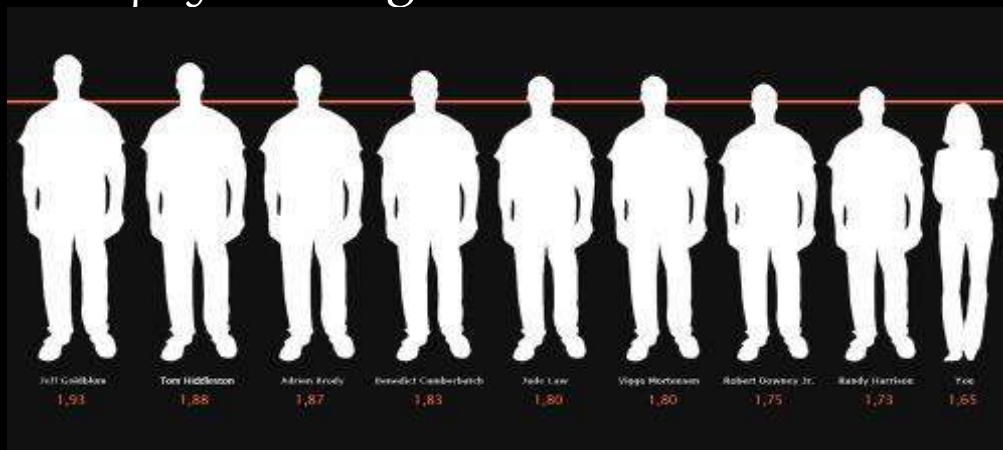
*A child has blood group O .If father is of group A and mother of blood group B, work out the genotype of the parents and find out the expected genotypes of other offspring*



These Slides Accompany the YouTube Video Tutorial:  
<https://www.youtube.com/watch?v=fOUf51wkPwI>

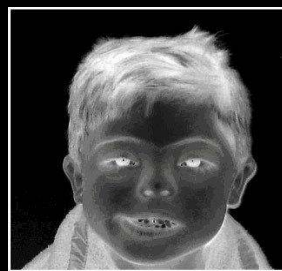
## Polygenic Traits

Group of several genes



## Pleiotropic Genes

- Phenylketonuria Disease-Gene on chr. 12
- Phenylalanine hydroxylase



These Slides Accompany the YouTube Video Tutorial:  
<https://www.youtube.com/watch?v=fOUf51wkPwI>

## *Effect of Environment on Phenotype*

*Curly hair and straight hair are coded by alleles in humans. Explain parents with curly hair can have children with curly hair but parents have straight hair have children with curly or straight. Use genetic diagram.*

These Slides Accompany the YouTube Video Tutorial:  
<https://www.youtube.com/watch?v=fOUf51wkPwI>

*Ram has two daughters. He blame his wife for bearing only daughters and no son. How will you convince Ram that his wife has no role in giving birth to daughter. Only so that she should not be blamed fot it. Further, females are rather more important component of society. What values are involves in the advice.*

*Woman-homogametic(22+X)*

*Man-Heterogametic (22+X) (22+Y)*

*Gynosperm Androsperm*