

# Chapter 11.3: Exploring Mendelian Genetics

Alleles separate during gamete formation.

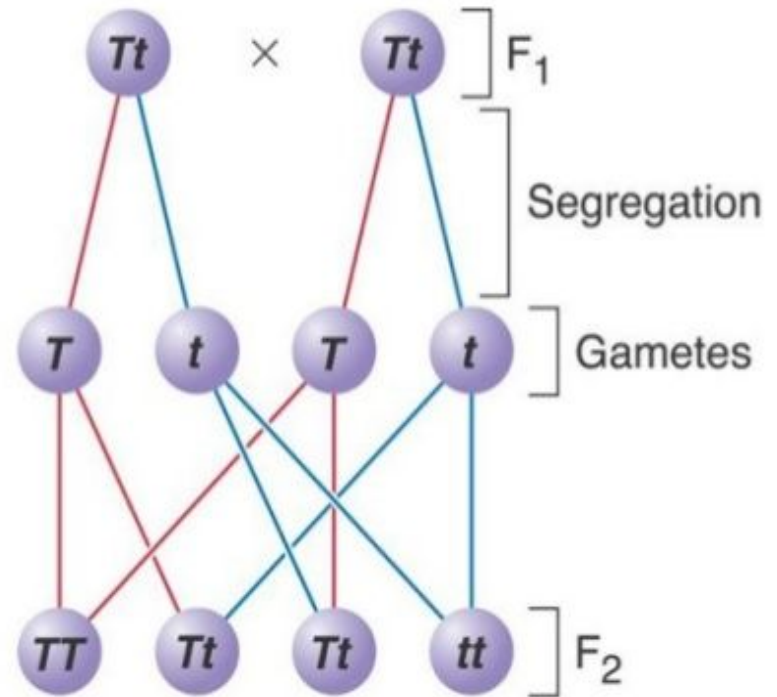
## The principle of segregation:

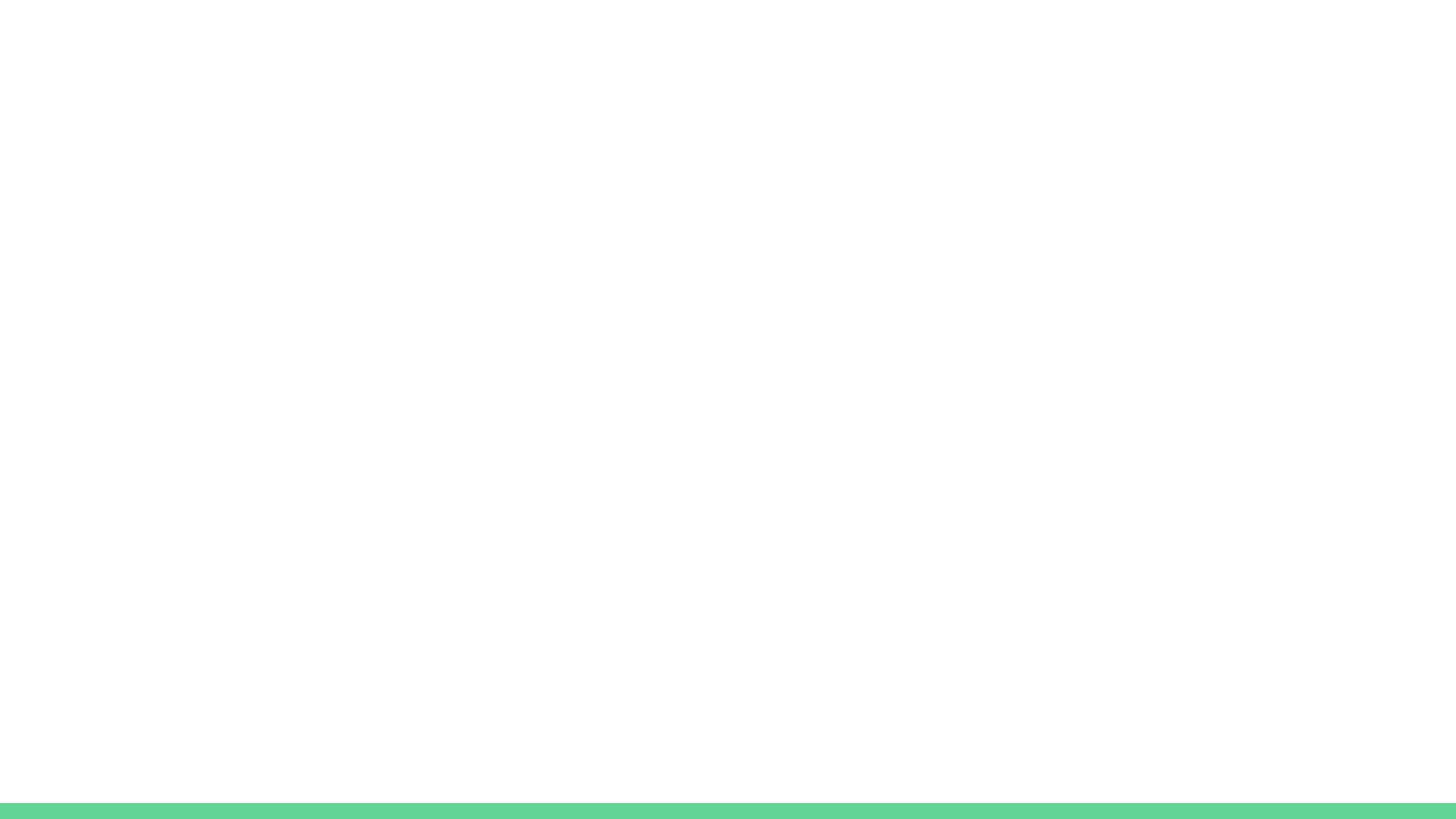
alleles separate during the formation of reproductive cells.

## Principle of independent

## assortment:

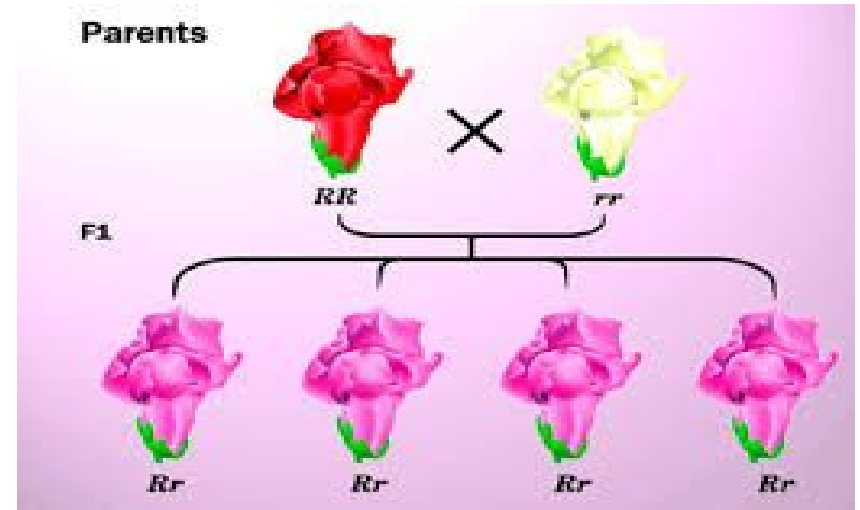
genes for different traits can recombine to make new genetic variations.





Some alleles are neither dominant nor recessive.

**Incomplete dominance**: when the heterozygous phenotype is a blended combination of the two homozygous phenotypes.







**Codominance**: when both alleles contribute to the phenotype and a mixing of the the phenotypes is observed.

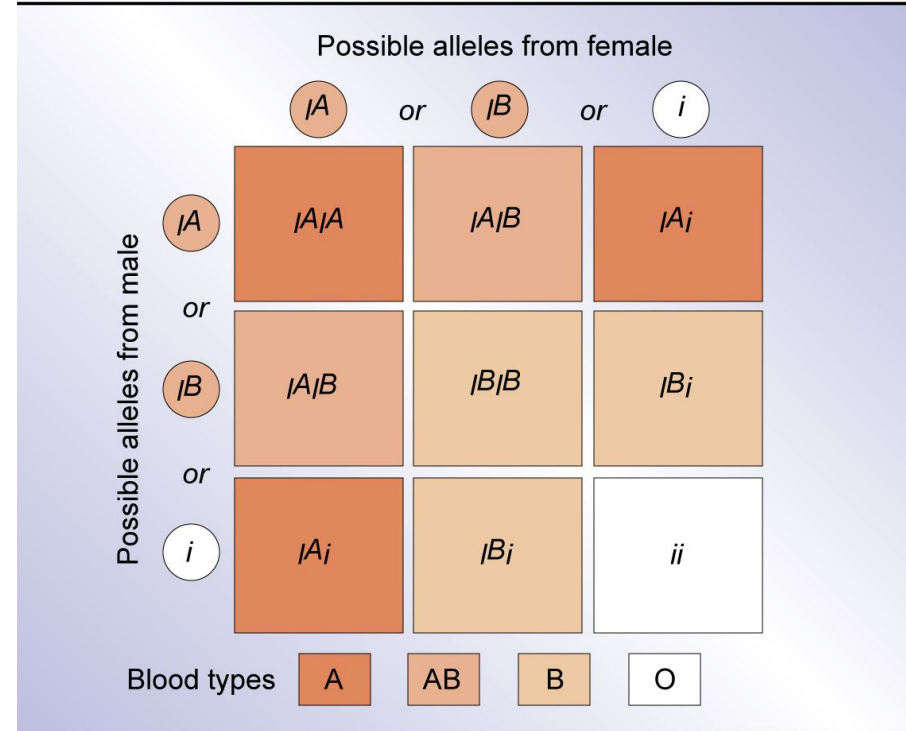
The diagram shows three chickens representing different phenotypes: a white chicken, a black chicken, and a speckled chicken. Below the images is a table summarizing the phenotypes and their corresponding genotypes.

Phenotype	White	Black	Speckled
Genotype	WW	BB	BW

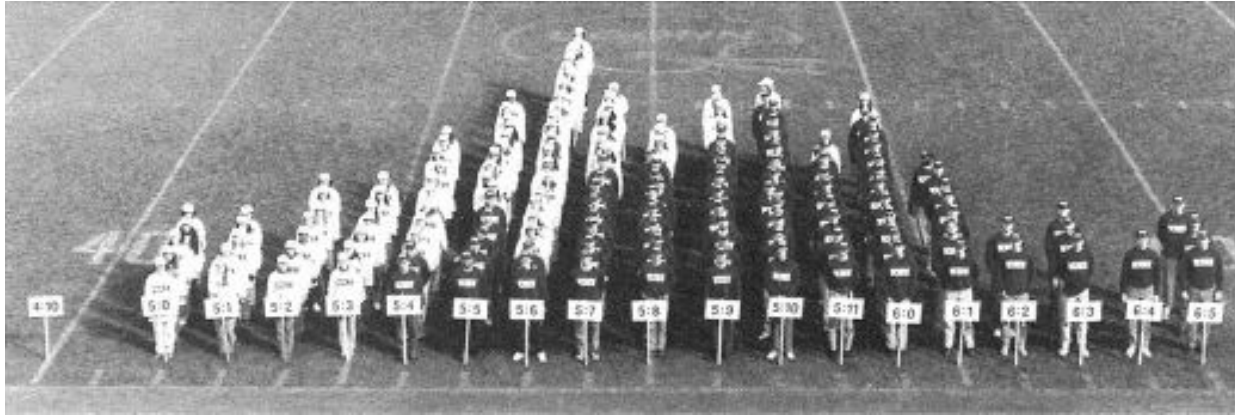
# Multiple alleles: genes that have more than 2 alleles.

	<u>Genotype</u>	<u>Phenotype</u>
 Albino	$cc$	White hairs over the entire body
 Himalayan	$c^h c^h$	Black hairs on the extremities; white hairs everywhere else
 Chinchilla	$c^{ch} c^{ch}$	White hair with black tips on the body
 Wild-type	$c^+ c^+$	Colored hairs over the entire body

## Amoeba sisters video



**Polygenic traits**: traits controlled by more than two genes.  
*poly= many genic= genes*



- Height
- Skin color
- Eye color

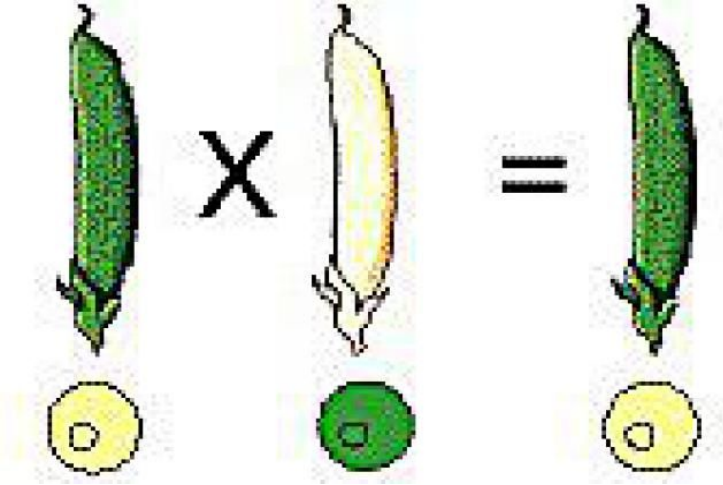
Controlled by more than 4 alleles, but all have not been identified



RRYY

rryy

RrYy



Homozygous  
dominant

Homozygous  
recessive

heterozygous

### Dihybrid Cross:

a genetic cross between two different traits, with 4 alleles represented.

True Breeding Green Pods with Yellow Seeds



GGYY  
gametes=GY

×

True Breeding Yellow Pods with Green Seeds



ggyy  
gametes=gy

=

F1 All Green Pods with Yellow Seeds



GgYy



F1  
GgYy



F1 GgYy

	GY	Gy	gY	gy
GY	 GGYY 	 GGYy 	 GgYY 	 GgYy 
Gy	 GGYy 	 GGyy 	 GgYy 	 Ggyy 
gY	 GgYy 	 GgYy 	 ggYY 	 ggYy 
gy	 GgYy 	 Ggyy 	 ggYy 	 ggyy 