

ملخص الدرس الأول Inheritance الوراثة منهج انسباير



تم تحميل هذا الملف من موقع المناهج الإماراتية

موقع المناهج ← المناهج الإماراتية ← الصف السادس ← علوم ← الفصل الثالث ← ملخصات وتقارير ← الملف

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منهج انجليزي | ملخصات وتقارير | مذكرات وبنوك | الامتحان النهائي | للمدرس

المزيد من مادة
علوم:

التواصل الاجتماعي بحسب الصف السادس



صفحة المناهج
الإماراتية على
فيسبوك

الرياضيات

اللغة الانجليزية

اللغة العربية

التربية الاسلامية

المواد على تلغرام

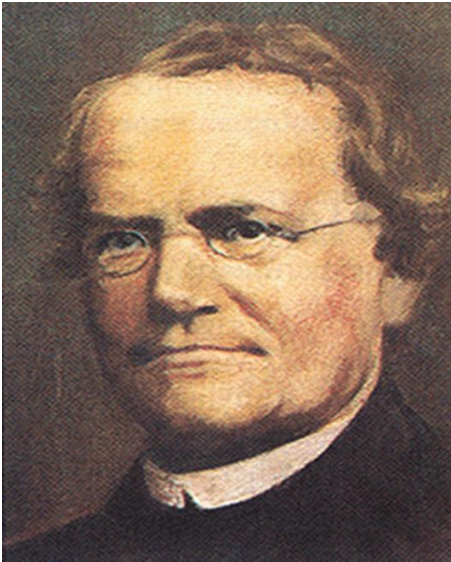
المزيد من الملفات بحسب الصف السادس والمادة علوم في الفصل الثالث

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Module 1 Reproduction of Organisms

Lesson 1 Inheritance

Gregor Johann Mendel (1822-1884) is considered the father of genetics

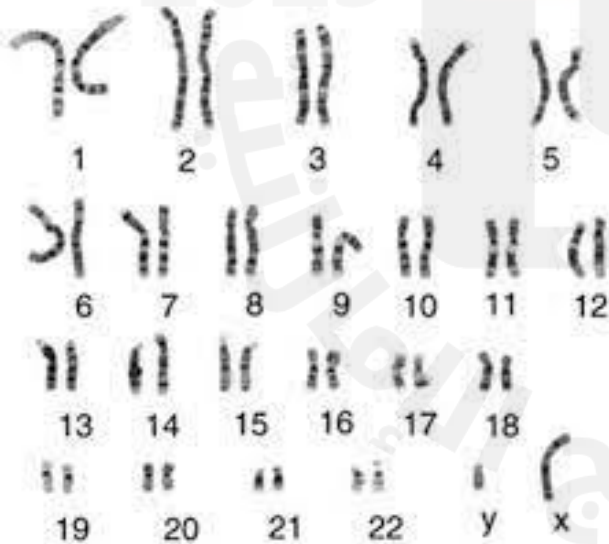


Mendel's Laws

	Flower color	Seed shape	Seed color	Pod color	Pod shape	Plant height	Flower position
DOMINANT	 Purple	 Round	 Yellow	 Green	 Inflated	 Tall	 Axial
RECESSIVE	 White	 Wrinkled	 Green	 Yellow	 Constricted	 Short	 Terminal

What is genetics?

1. **Hereditary** is the passing of traits from parents to offspring.
2. **Traits** are characteristics of living organisms as hair color , eye color, height...etc



Major Genetics Terms

Gene:

- A section of DNA that holds instructions for making one protein

Ex: gene for hemoglobin protein

Alleles:

- Different versions of a gene

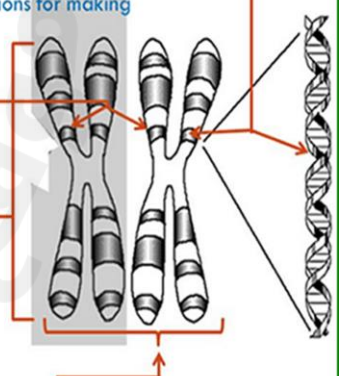
Ex: normal hemoglobin allele vs. mutated hemoglobin allele

Chromosome:

- A long strand of DNA, coiled and wrapped up, that contains many genes

Homologous Chromosomes:

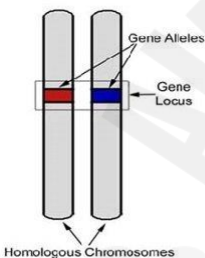
- A pair of chromosomes that contain the same genes but not necessarily the same alleles



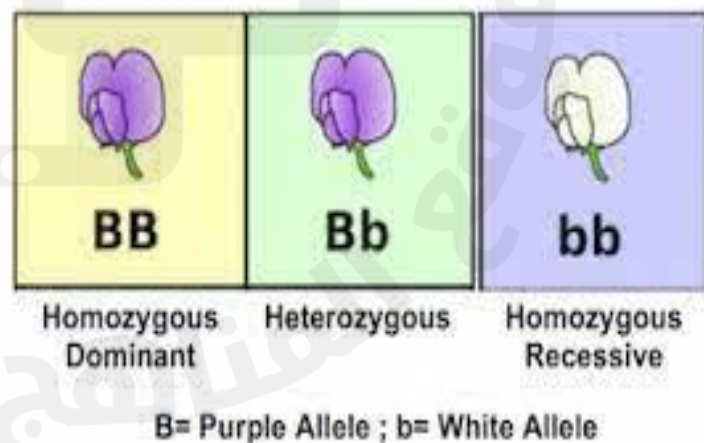
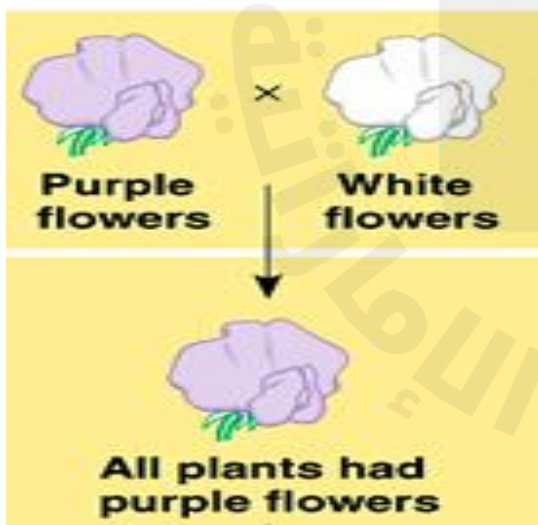
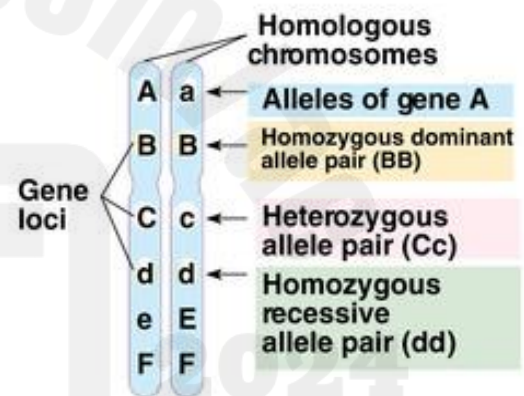
3. **Genetics:** The study of how traits are passed from parents to offspring.
4. Each trait is controlled by two alleles (different forms of a gene).

5. **A gene**: is a section on a chromosome (DNA) that has genetic information of one trait.
6. **Dominant trait**: A genetic factors that blocks another genetic factors.
CAPITAL letter
The dominant gene in an allelic pair is expressed (seen). It masks the recessive allele (unseen).
Represented by a CAPITAL letter
7. **Recessive trait**: A gentic factor that is blocked by the dominant factor.
small letter
the trait that is masked by the dominant characteristic. Represented by a lowercase letter.

Genes and Alleles

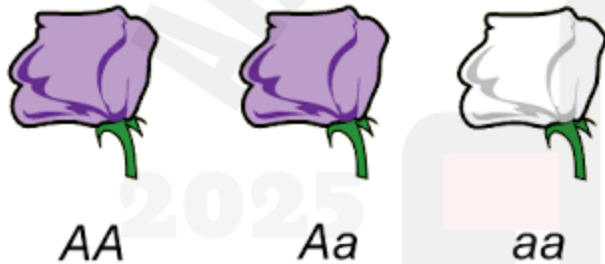


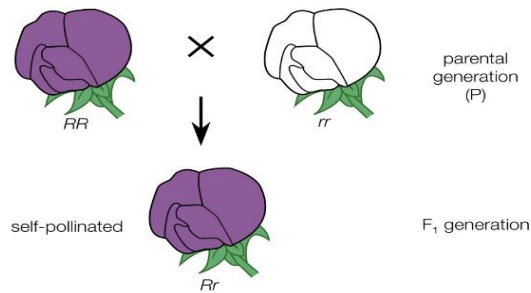
- **Gene**: unit of information about a specific trait, passed from parent to offspring
- **Allele**: all of the different forms of the gene, in diploid organisms, each gene has at least two alleles.



*The dominant color is.....but the recessive color isbecause.....

8. **Phenotype** : The appearance of the offspring (you can see the phenotype)
9. **Genotype**: The two alleles that control the phenotypes of a trait. ex. TT, Tt, tt
10. **Allele**: the dominant or recessive form of a gene. You inherit one allele from mom and one from dad.
Examples RR ,Rr and rr are different forms of the genes that cause the color of the flower in pea plants.
11. **Homozygous**: (pure) both alleles are the same ex. TT - tall tt - short
12. **Heterozygous**-(hybrid) possessing two different alleles for the same trait
ex Tt





		pollen	
		R	r
ovules	R	 RR	 Rr
	r	 Rr	 rr

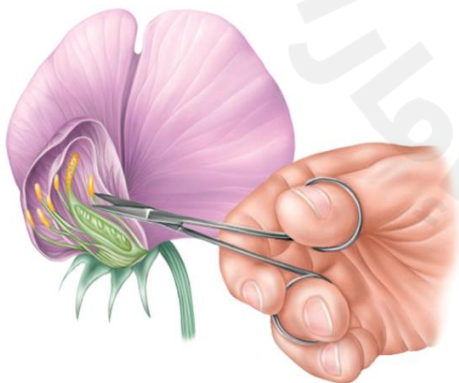
F₂ generation

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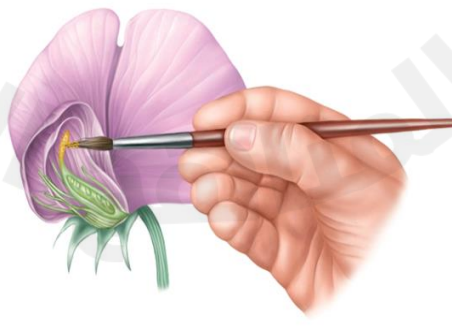
13. Mendel worked with pea plants. Why peas ?

- * reproduction is easy to control
- * Produce many offspring in a short time
- * Pea plants have contrasting characteristics .
- * Easy to grow.
- * work with large numbers of samples.

* Mendel's Experiments:



Mendel controlled the fertilization of his pea plants by removing the male parts, or stamens.

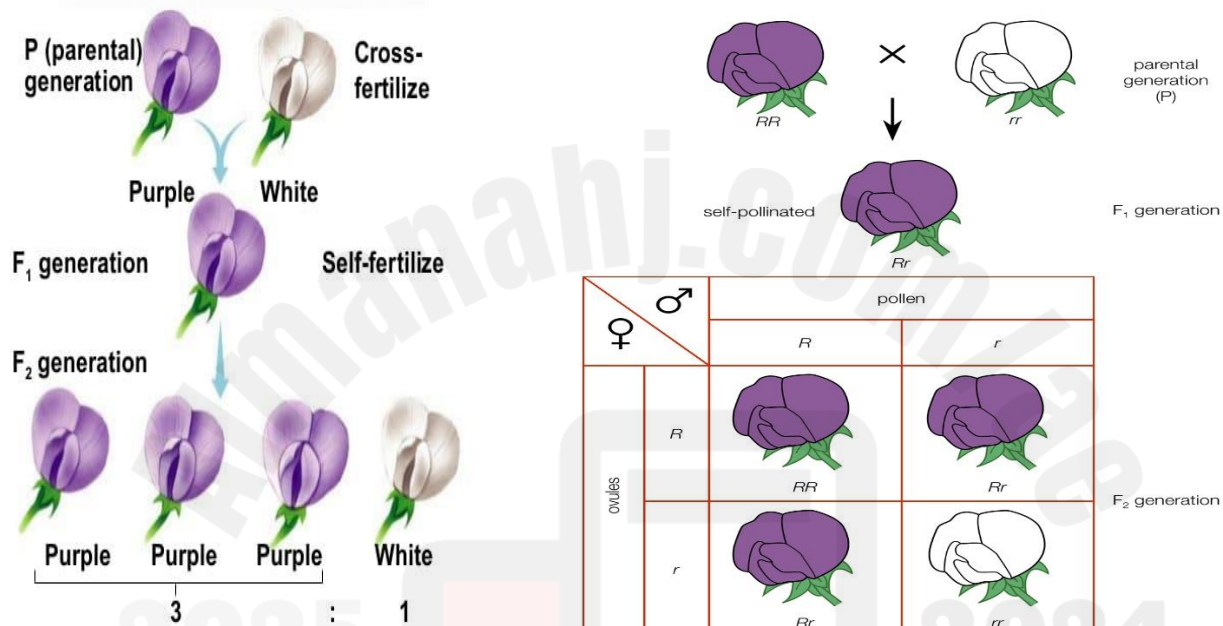


He then fertilized the female part, or pistil, with pollen from a different pea plant.

*Mendel used (plants of pure traits) True breeding - If the parent repeatedly only produce offspring with the same trait

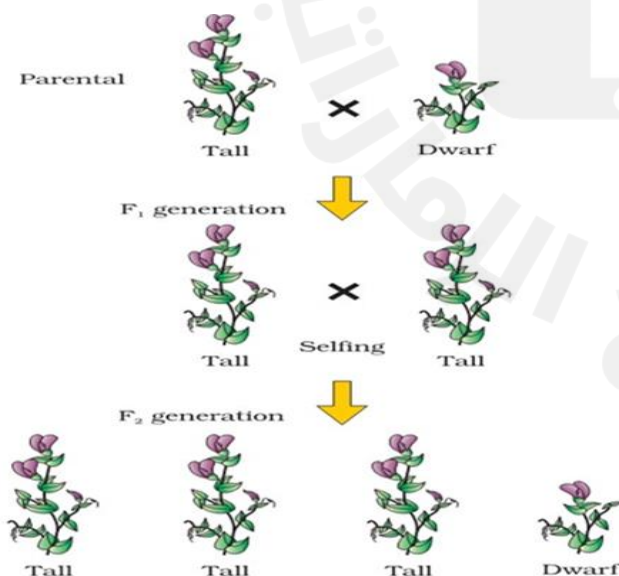
What happens if you cross two plants which are true-breeding for contrasting traits?

purple flowers x white flowers

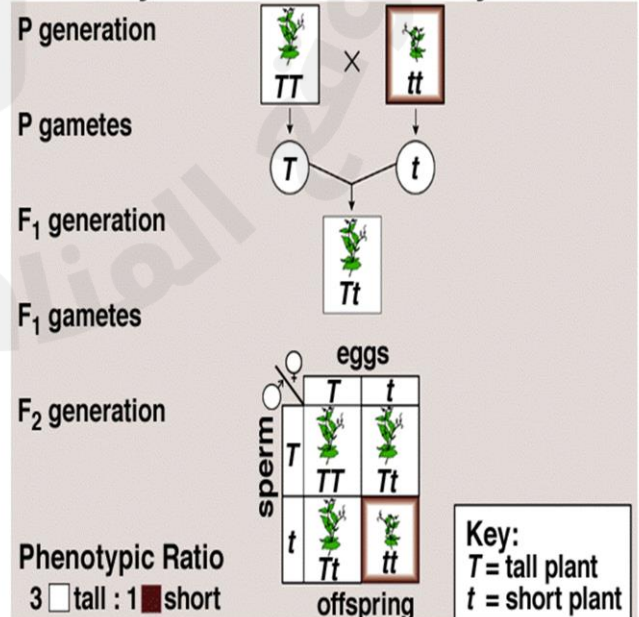


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tall plants x short plants

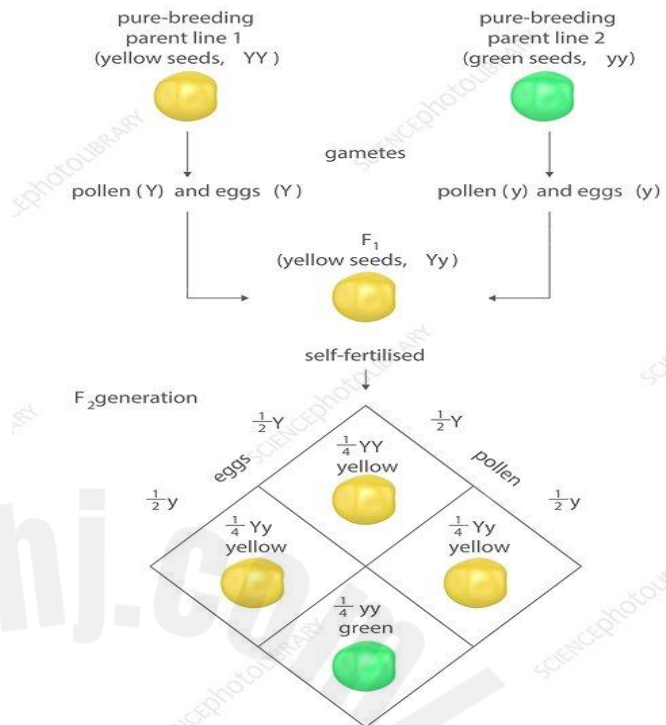
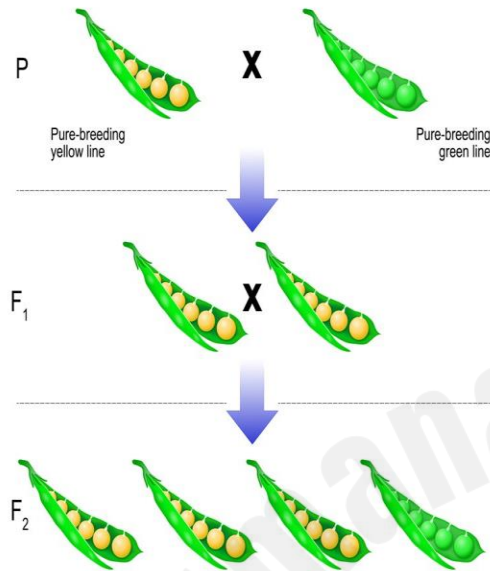


Monohybrid cross done by Mendel



Yellow and green seeds

MENDELIAN INHERITANCE



Dominant trait	Recessive trait
<ol style="list-style-type: none"> 1. The trait which appears in F₁ generation are called dominant trait. 2. It appears in more number. 3. Dominant trait can express itself in the presence of recessive trait. 4. The presence of another similar allele is not required to produce its phenotype. 	<ol style="list-style-type: none"> 1. The trait which does not appear in F₁ generation are called recessive trait. 2. It appears in less number. 3. Recessive trait cannot express itself in the presence of dominant trait. 4. The presence of another similar allele is required to produce its phenotype.

Types of crosses:



- A. Homozygous x Homozygous (PP x pp)
- B. Homozygous x Heterozygous (PP x Pp)
(complete dominance)
- C. Heterozygous x Heterozygous (Pp x Pp)
- D. Test cross (pp x P_{__})

Chapter 11 and 14 Genetics 2010

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14. Punnett Square: Is a model used to predict possible genotypes and phenotypes of offsprings.

Punnett square

4. "split" the letters of the genotype for each parent & put them "outside" the punnett square
5. determine the possible genotypes of the offspring by filling in the punnett square
6. summarize results (genotypes & phenotypes of offspring)

TT x tt

	T	T	
t	Tt	Tt	Genotypes: 100% Tt Phenotypes: 100% Tall plants
t	Tt	Tt	

Fill in the punnet square of this cross (fertilization).

	R	r
R		
r		

If a heterozygous round seed is crossed with itself (Rr x Rr) a Punnett square can help you figure out the ratios of the offspring.

Practice!

6. Cross a heterozygous brown haired rabbit with a homozygous recessive white haired rabbit. Determine phenotype & genotype.

Bb x bb

	b	b	
B	Bb	Bb	<u>Phenotype:</u> 50% brown haired 50% white haired <u>Genotype:</u> 50% hybrid 50% pure recessive
b	bb	bb	

Punnett Square Practice

Black rabbits are dominant over brown rabbits. A heterozygous male is crossed with a brown female.

flowers. **B b**

	B	b
b	Bb	bb
b	Bb	bb

What is the mother's genotype? **bb**
 What is the father's genotype? **Bb**
 Diagram a Punnett Square for this cross.
 What is the genotypic ratio? **1:1**
 What is the phenotypic ratio? **1:1**

	R	r
R	RR	Rr
R	RR	Rr

Homozygous × heterozygous

	RR × RR	
	R	R
R	RR	RR
R	RR	RR

	Rr × Rr	
	R	r
R	RR	Rr
r	Rr	rr

Genotypes Of the parents: Rr and Rr

Phenotypes of the parents: Pink and Pink

Genotypes of the Offsprings: RR, Rr, Rr, and rr

Phenotypes of the Offsprings: Red, Pink, Pink, and white

	r	r
R	Rr	Rr
r	rr	rr

	A	a
a		
a		

Punnett Square
Error Analysis

	T	t
t	<u>tt</u>	<u>tt</u>
t	<u>tt</u>	<u>tt</u>

	R	r
1. r	RR	rr
r	Rr	Rr

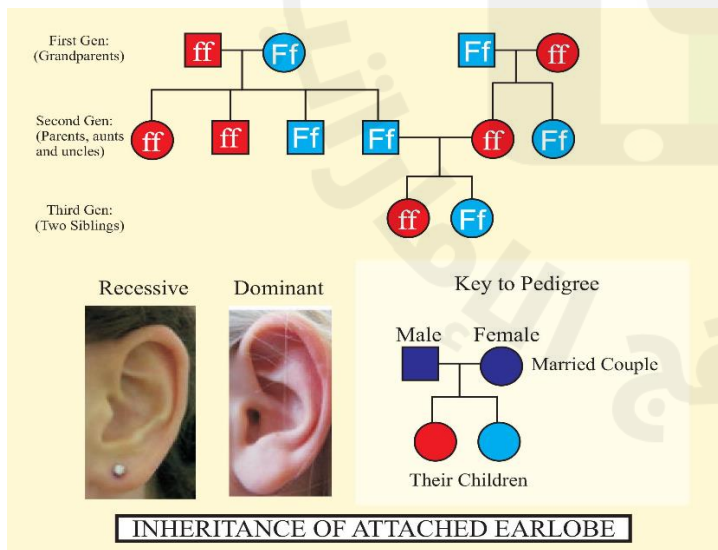
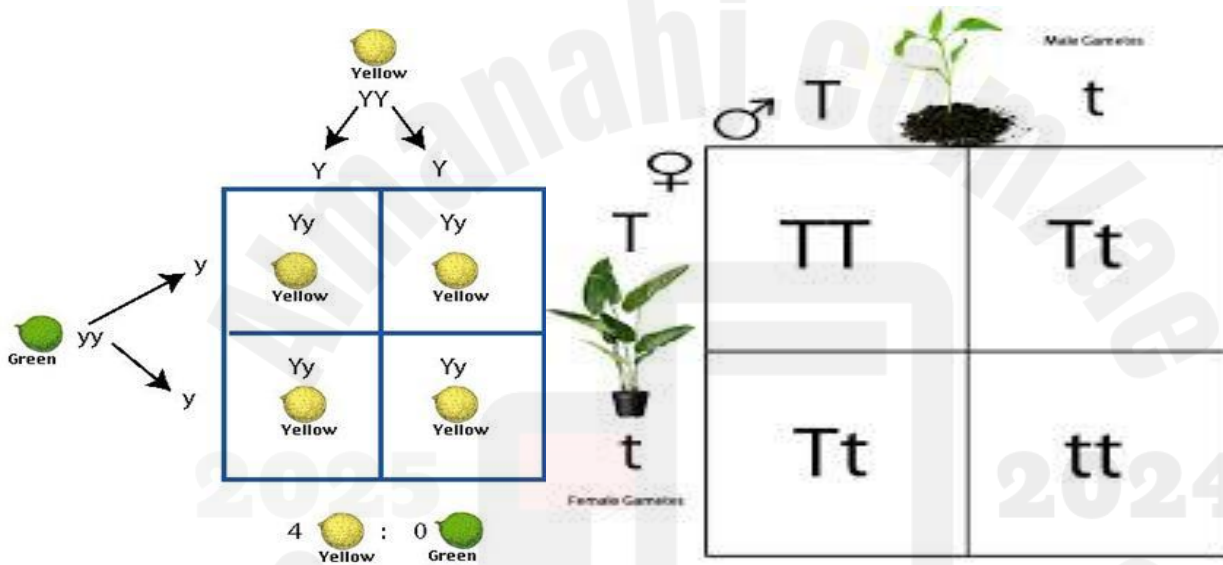
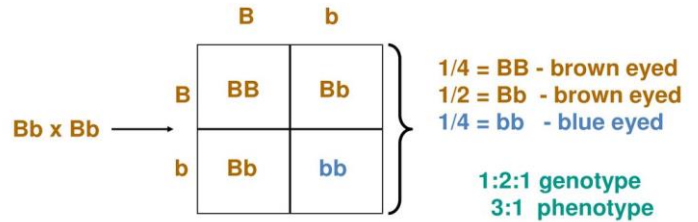
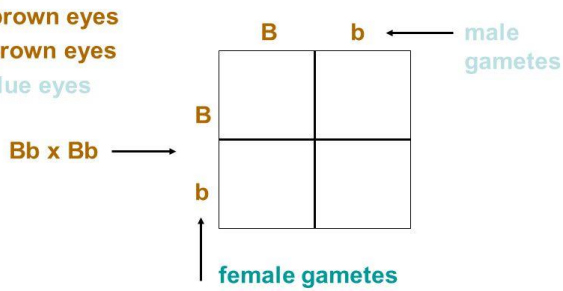
	R	r
2. r	Rr	rr
r	Rr	rr

	R	r
3. r	rr	rr
r	rr	Rr

Monohybrid Cross

- Example:** Cross between two **heterozygotes** for **brown eyes (Bb)**

BB = brown eyes
Bb = brown eyes
bb = blue eyes



15.A pedigree: Is a model that can show inherited traits, phenotypes and genotypes of the genetically related family members.

Predict the results of cross reproduction between these two flies

