

6. Unravelling Genetic Mysteries

Let us assess

1. Question

The nitrogen base absent in RNA

A. Adenine

B. Thymine

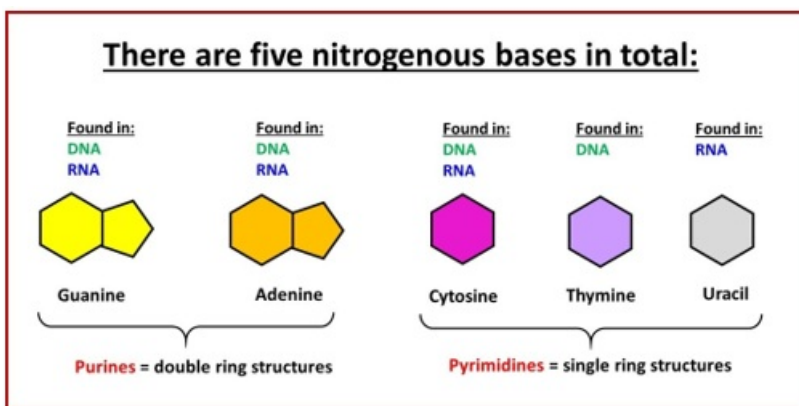
C. Uracil

D. Cytosine

Answer

RNA (Ribonucleic acid) do not contain thymine nitrogenous base because it contains uracil in place of it. Four nitrogenous bases present in RNA are Adenine, Guanine, Cytosine and Uracil.

Thymine is absent in it and therefore, correct option is (b) Thymine.



2. Question

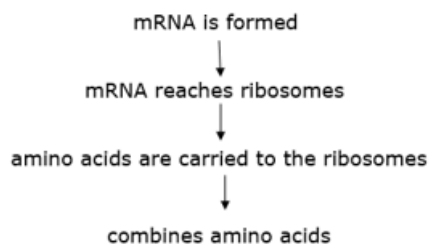
Arrange the stages of protein synthesis in the form of a flow chart.

- combines amino acids.
- mRNA reaches ribosomes.
- mRNA is formed.
- amino acids are carried to the ribosomes.

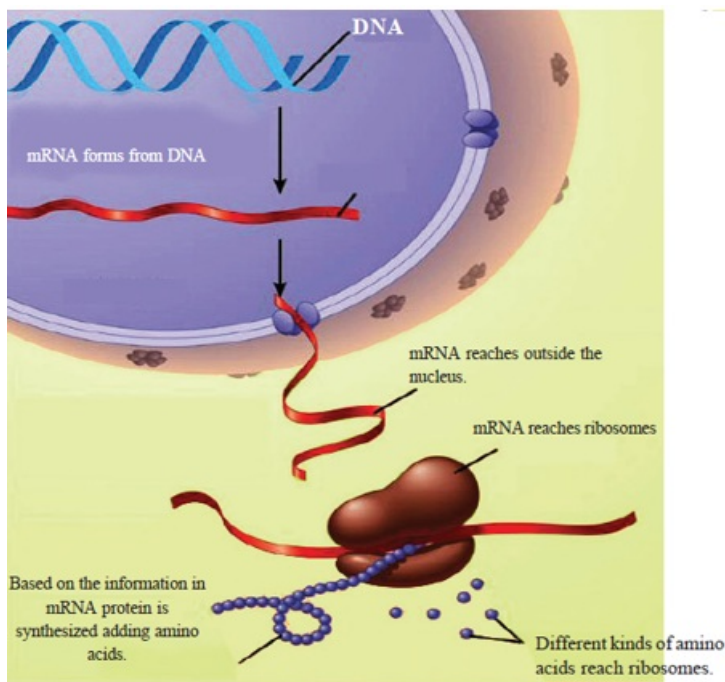
Answer

For the formation of proteins into our bodies a sequence is followed. According to those sequences different steps take place and protein is synthesised in our body.

Following is the flow chart of different steps of protein synthesis:

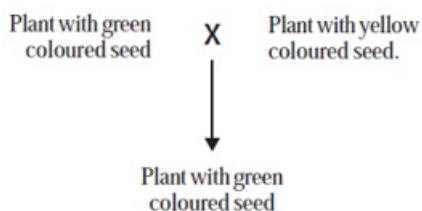


Following picture also depict the flow in which proteins are synthesised:



3 A. Question

Observe the hybridization experiment given below.



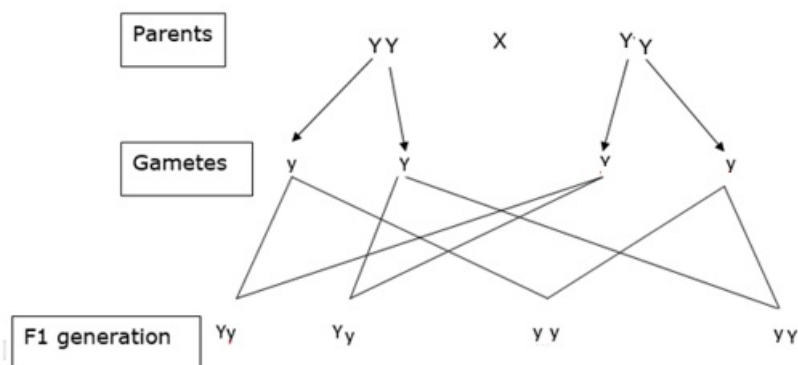
Prepare an illustration of this hybridization experiment using symbols.

Answer

In pea plants yellow colour is the dominant trait for the colour of the seeds and green colour is recessive.

We use 'YY' symbol for the yellow coloured seeds and 'yy' for green seeds.

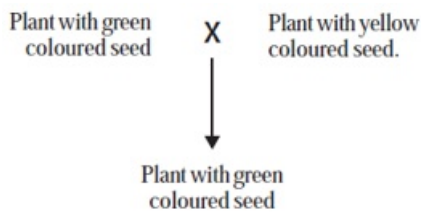
Following is the hybridisation experiment using symbols:



Here in case of yellow seeds we had taken heterozygous combination because in the given question recessive trait is appearing in First generation and it only happens when we have heterozygous dominant as our parental generation. If we had chosen homozygous dominant as our parental generation we can't have recessive trait in first generation. So, in order to satisfy the question's condition we had done so.

3 B. Question

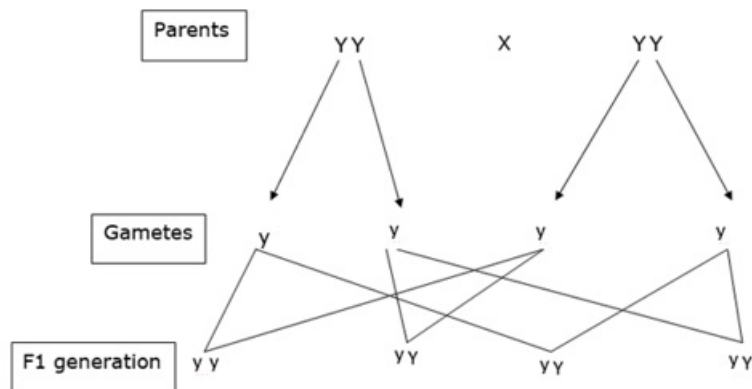
Observe the hybridization experiment given below.



Prepare an illustration for the second generation.

Answer

Since in the question we have green seeds in our First generation, we will use green seeds as our parents and self-pollinate them. Symbol for the green seeds is 'yy'. This will be homozygous as recessive trait is always expressed in homozygous condition.



Extended activities

1. Question

Prepare an excerpt including information on scientists who made contributions in the progress of genetics.

Answer

Genetics is a broad subject and it involves contribution of many scientists.

This branch of science had started many years ago. The information for these scientists can be collected from famous book of genetics and internet with the role each scientist played.

There are some scientists whose discoveries and contribution had make great change in field of genetics, information about those can also be collected from classical books of genetics.

A list of geneticists can be checked at Wikipedia.

2. Question

Prepare models of DNA and RNA using locally available materials and present them in a science exhibition.

Answer

It is quite easy to make models of DNA and RNA using some very easy to get materials.

Things you need to require for these models are as follows:

1. Wires: Since they are flexible you can easily mould them and this wire will act as the strands.
2. Beads: Beads of different colour can be used as representing different nitrogenous bases.
3. Coloured sticks or ribbons: They can be used to represent the hydrogen bands between the nitrogenous bases.
4. Wooden block or piece of thermocol: This can act as the base of the model.