

DNA is genetic material.

Explanation: -

Just to prove that the DNA is genetic material the following experiments may be done -

DNA is genetic material. It can be proved by :-

1) Conjugation -> The process of conjugation was first of all introduced by 'Lederberg' and 'Tatum'.

They made their experiment on E. coli bacteria

They took two types of bacteria - one was motile and another was non-motile. The motility determines maleness and femaleness.

The motile bacterium behaves like male while the non-motile behaves like female.

The motile bacterium comes in contact with non-motile thus physical contact is formed.

For this process pili plays important role.

With the help of enzyme the contact wall is dissolved and a thin cytoplasmic tube like structure is formed, known as conjugation tube.

Through the conjugation tube the materials pass from one to another bacterium.

With the help of certain enzyme some part of DNA of motile bacteria breaks and passes away through the conjugation tube.

into the recipient bacteria

The cell contributing the DNA is known as donor cell.

and another is recipient cell.

The recipient cell becomes recombinant due to presence of some new genetic material from donor cell.

As the fusion between the two cells is only partial the recipient cell is termed as 'merozygote'. And finally this merozygote produces a new strain of bacterium.

2) Transformation:—

- Avery, McCleoid & McCarty.
- Griffith
- Pneumococcus

DNA is genetic material and can be proved by transformation experiment.

The transformation process was first of all explained by

'Griffith'. The whole process was established by three scientists known as Avery, McCleoid and McCarty.

The whole experiment was done in pneumococcus bacteria.

According to them if a suspension

of dead cells of one strain

(type) is mixed with living cells

of the other strain, recombina-

tion may occur resulting

into the change of character

in the living cells. They

observed that the third

strain of pneumococcus which

is capsulated is responsible

for the pneumonia disease.

The other strain are II is

non-capsulated <sup>and</sup> are not

capable of causing the

disease.

When non-capsulated are II

is mixed with the DNA

# PERISTOME

Definition  $\Rightarrow$  "In most of Bryidae the mouth of the capsule just below the operculum is surrounded by a fringe of teeth known as peristome."

It <sup>has been</sup> derived from two greek words meaning 'around the teeth'.

Function  $\rightarrow$  Peristome plays an important role in the dispersal of spores from capsule. It helps in the classification of mosses. Hedwig (1801) was the first bryologist to propose a system of classification of mosses based on the characters of peristome in his treatise "Species Muscorum Frondosorum".

Carex (1910) proposed four main types of peristomes on the basis of origin & structure.  $\rightarrow$

- a) Tetraphidales
- b) Polytichales
- c) Buxbaumiales
- d) Eubryales.

He divided Eubryales on the basis of peristome structure into three  $\rightarrow$

- a) Haplolepidal
- b) Diplolepidal
- c) Heterolepidal.

The haplolepidal and diplolepidal

were further divided into Series on the basis of minor characters

- a) Archidiozoal
- b) Saccarozal
- c) Monocrazoal
- d) Ditrichocrazoal
- e) Platycrazoal <
  - Epicrazoal
  - Haplocrazoal

Dixon (1932) has also divided bryales on the principal character of peristome into Arthrodontea and Nematodonteae.

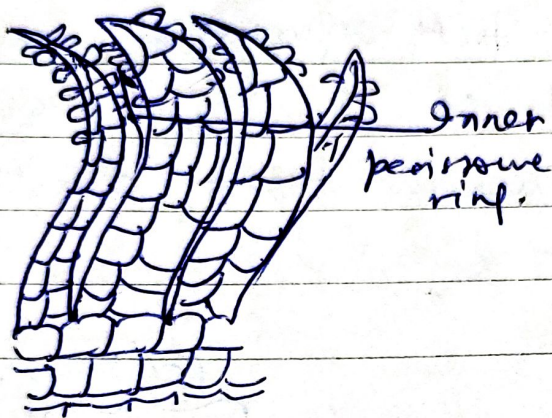
On the basis of origin and fundamental structure the peristome can be divided into two main groups -

- a) Nematodontous peristome
- b) Arthroodontous peristome.

- 1) Nematodontous peristome → a) It originates from several concentric layers of amphithecium.
- b) The peristome teeth are solid consisting of bundles of whole dead cells and are without articulations.
- c) The peristome forming zone consists of several concentric layers of cells of the amphithecium. Structure ⇒ Structures differ in different orders of nematodonteae.

A In tetrastichales - a) simplest type of sp peristome is found.

① whole tissue is found within a single layered operculum, which splits almost equally into four sectors.

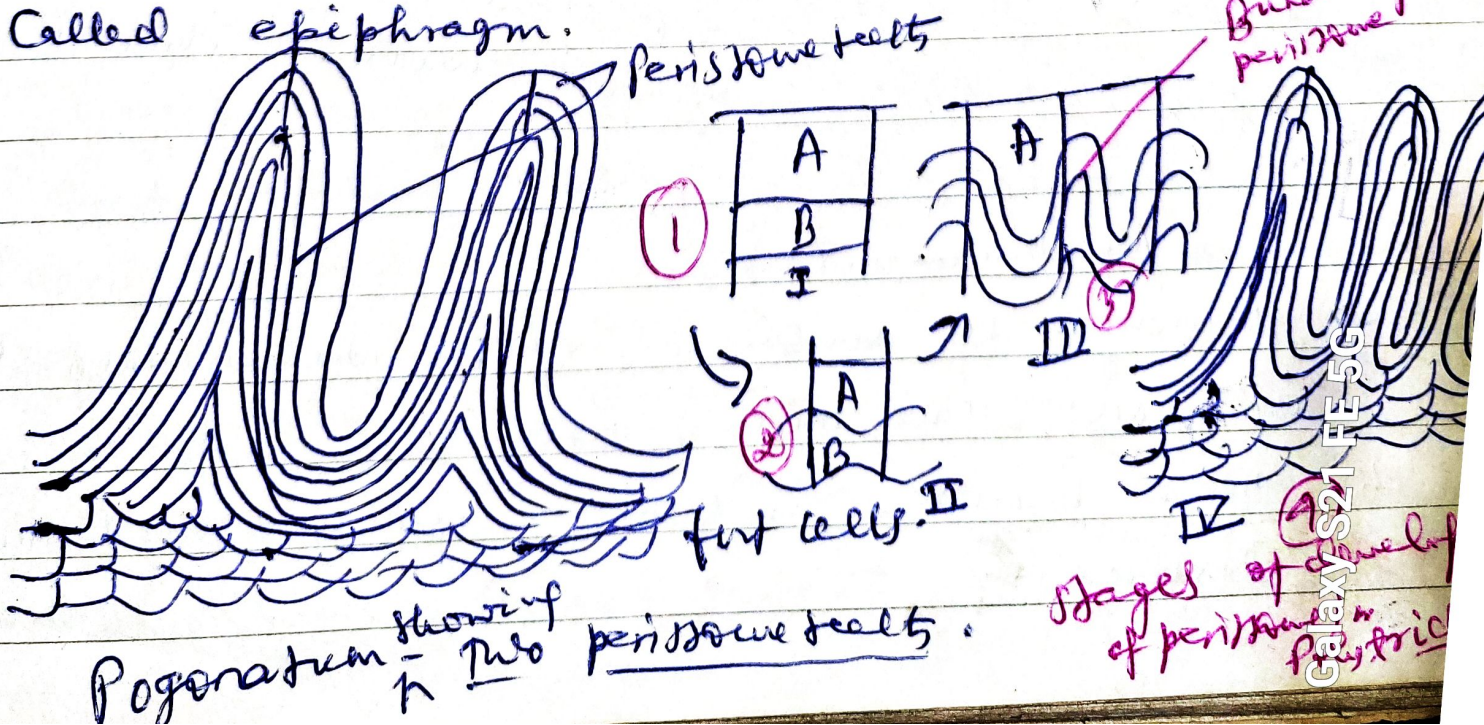


Peristome - Funaria.

B<sup>o</sup> In polytrichales → ① the peristome consists of a ring of 32 or 64 short pyramidal solid teeth.

② Teeth made up a central pillar.

③ Teeth tip are joined to a thin, pale membrane called epiphragm.

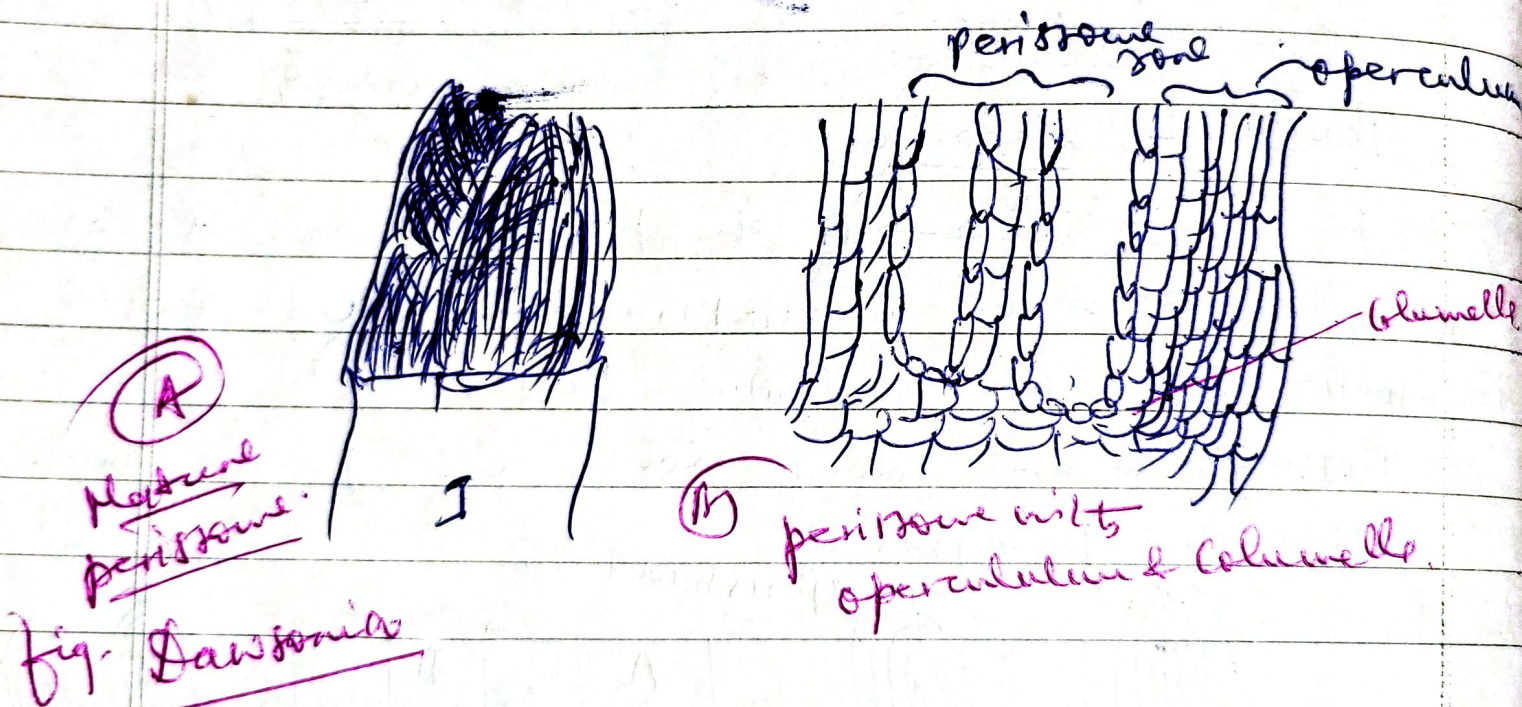


In Dawsoniales → a) In this the peristome opening zone is broad.

b) Peristome consists of numerous much elongated filaments.

c) Cross section of the opercular region shows that these 16 teeth form several concentric circles instead of a single one.

d) The long filamentous teeth are simple and continuous.



In Buxbaumiales →

a) Peristome is double. i.e. differentiated into two an inner and outer peristome.

b) Inner peristome is more regular and more distinctive.