

**DICTYOTA**

**BROWN ALGAE**

# OCCURRENCE

- marine algae
- Includes 35 sp. Out of which 12 reported along indian coast.
- Common sp. Is *D. dichotoma*
- Most of the sp. Are found in tropics and few are temperate.

# VEGETATIVE STRUCTURE

- Erect, flat, ribbon shaped and branched.
- Branching may be dichotomous or pinnate.
- Thalli are macroscopic and height is 10-20 cm
- Basal portion is stalk like and upper portion (frond) is flat and ribbon shaped with dentate margin and membranous or leathery texture.

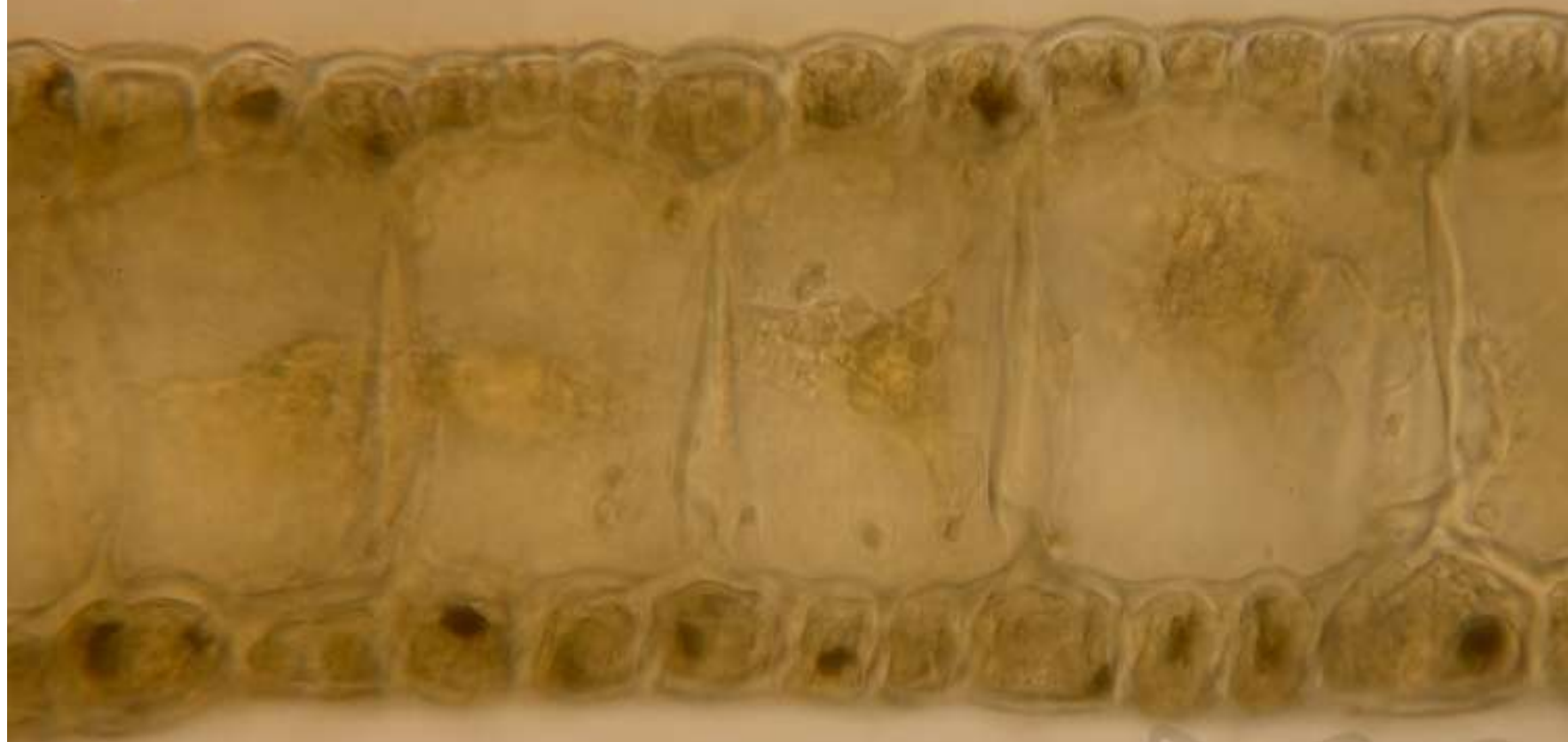


## INTERNAL STRUCTURE

- Thallus is made up of 3 layers.
- Upper and lower layers are called upper epidermis and lower epidermis resp.
- Middle layer is called medulla.
- Cells of upper and lower layers are small, thin-walled, compact and photosynthetic.
- Cells of medulla are large, thick-walled and colourless.
- Store reserve food material in the form of oil globules.

## GROWTH

- It takes place by the activity of terminal cell present at the apex.
- It cuts off longitudinal series of segments at posterior face.
- Each segment then divides by curved wall in a plane parallel to flat surface of thallus.
- Result in the formation of two unequal cells (larger & smaller)



50  $\mu\text{m}$



- Larger segment again divide in the same manner.
- Forms two small peripheral or epidermal cells Enclosing large central meduallary cell.
- How Dichotomous branching formed ?

## REPRODUCTION

by asexual and sexual methods.

**ASEXUAL METHOD** :-occurs by the formation of **Aplanospores (tetraspores)**formed on  $2n$  body.

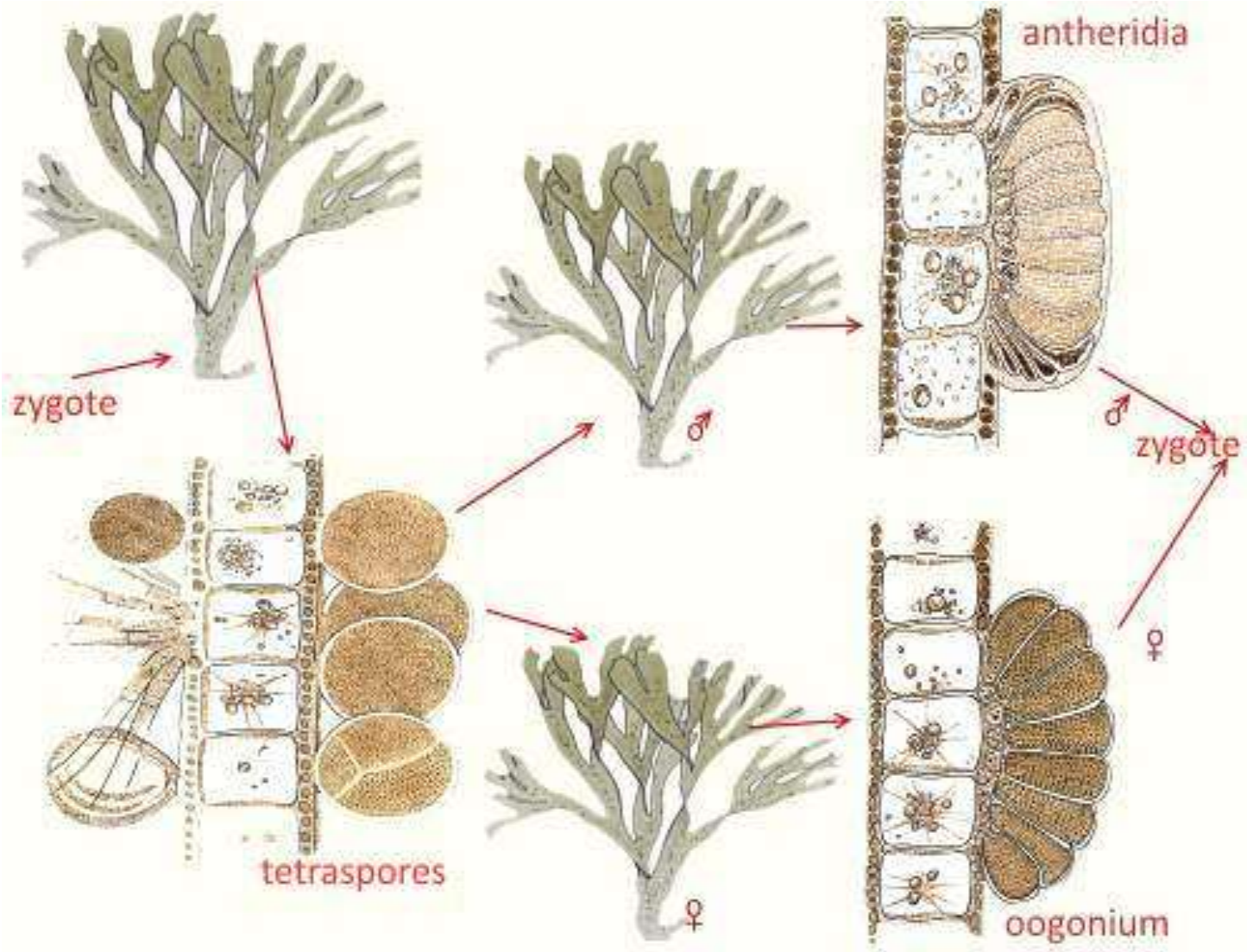
- any surface cell of thallus enlogates 2-3 times of its original size.
- Divides by transverse division- upper and lower cells.
- Upper cell enlarges further to become **sporangium**
- Lowercell become **single cell stalk.**
- Then diploid nuclei divides by meiosis and form 4 haploid nuclei.
- Segregation of sex takes place . 2 – male and 2- female cells
- At last wall of sporangium rupture and released these 4 spores.

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100  $\mu$ m







- Released spores germinate on a suitable substratum and form new GAMETOPHYTIC PLANTS.

## SEXUAL REPRODUCTION

- It is oogamous.
- They are formed in superficial groups called SORI.

### **Development of oogonia :-**

- Any superficial cell starts behaving as Oogonial initial.
- Elongates 3-4 times of its original shape.
- Then asymmetric transverse division takes place and forms small basal STALK CELL and upper PRIMARY OOGONIAL CELL.
- This latter cell on maturity forms 20-25 oogonia which remain enclosed in rudimentary involucre.
- Each oogonium consists of single basal unicellular stalk and a large oval body.

## Development of ANTHERIDIUM

- Any superficial cell start behaving as antheridial initial.
- Divides by asymmetric transverse division to form stalk cell and large primary antheridial cell.
- Later divides by vertical division followed by another vertical division at RIGHT ANGLE to first to form 4 celled stage.
- More vertical and transverse divisions occur to form multicellular str.
- In this way , about 1500 antheriozoids are formed in each antheridium.

## DEHISCENCE

- At maturity, walls, septa, cells of antheridium get dissolved and mucilaginous.
- Then masses get liberated.

## FERTILIZATION

- Antherozoids get chemotactically attracted towards the egg.
- Finally one get fuse with egg to form Zygote ( $2n$ )

## GERMINATION OF ZYGOTE

- Zygote enlarges in size, secretes its cell wall and finally divides by MITOSIS to form two cells.
- One cell divides to form rhizoidal cell
- Other cell divide and redivide to form **ribbon shaped plant body.**

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