

© By Hypnospores → In dry condition each cell or Hyphosporangium formed a hypnosporangium. which is thick walled in structure as in *C. nivalis*. It is red in colour. Due to the presence of red pigment called Haematochrome with the return of favourable condition each hypnosporangium formed a new thallus of *Chlamydomonas*.

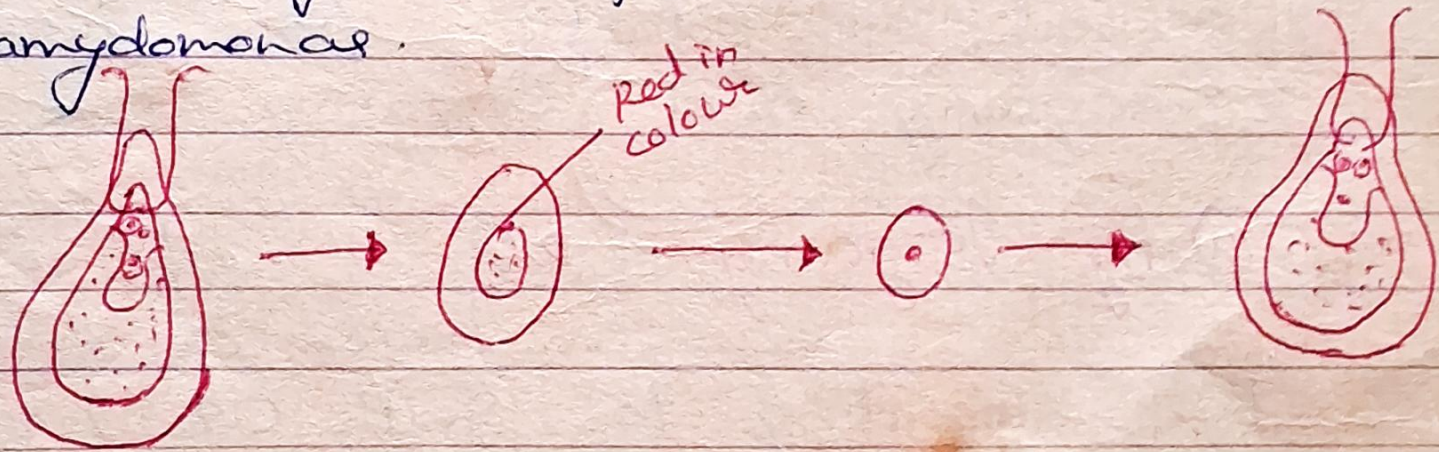


Fig - Repdⁿ in *Chlamydomonas* by Hypnospores.

① By Palmella Stage \rightarrow It is formed when stocks of *Chlamydomonas* is found in damp soil. Each cell divides repeatedly forming 2 to 8 non-motile cells. All these cells remain surrounded by gelatinous matrix. Each cell again divide and produced a group of 2, 4 or 8 cells. And each group of cells surrounded by gelatinous wall of the mother cell. Thus its look like a small colony but it is temporary association. With the return of suitable condition all individual cell are liberated as motile zoospores. After dissolving gelatinous sheath in water each zoospores forms a unicellular plant of *Chlamydomonas*.

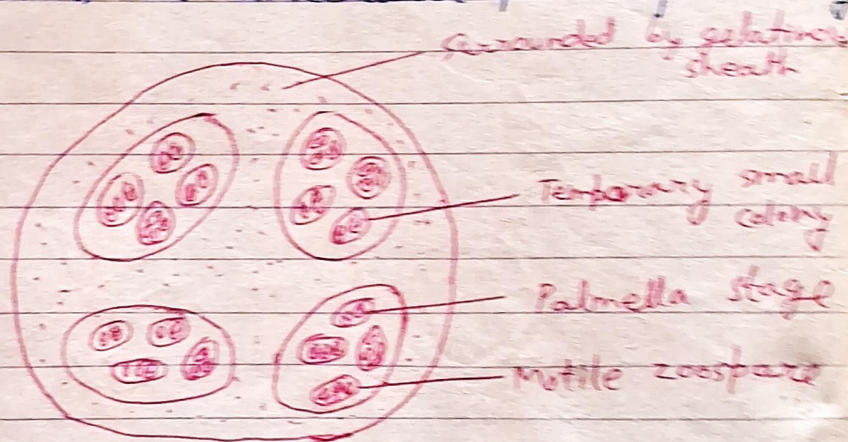
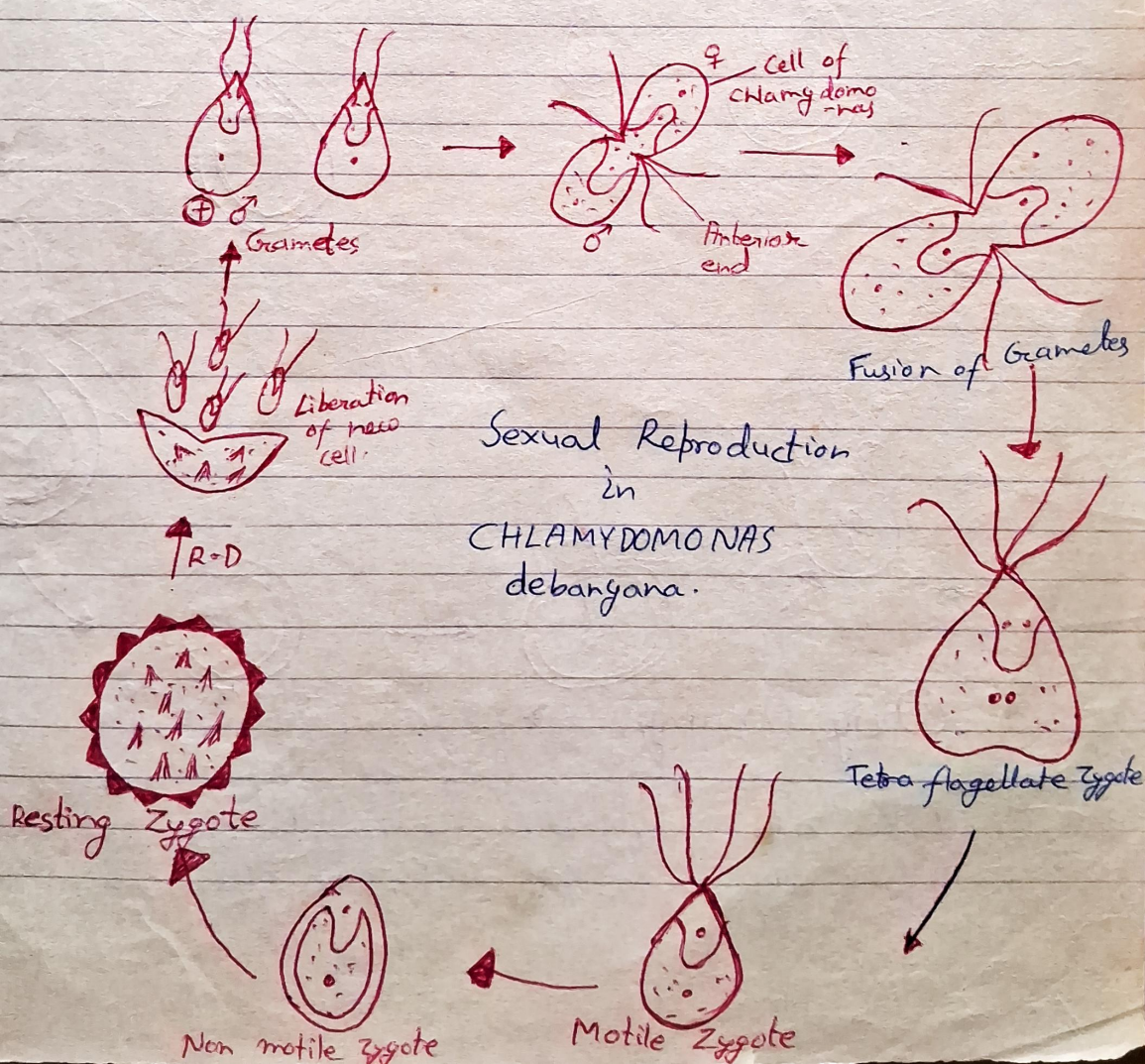


Fig - Repdⁿ in *Chlamydomonas* by Palmella stage

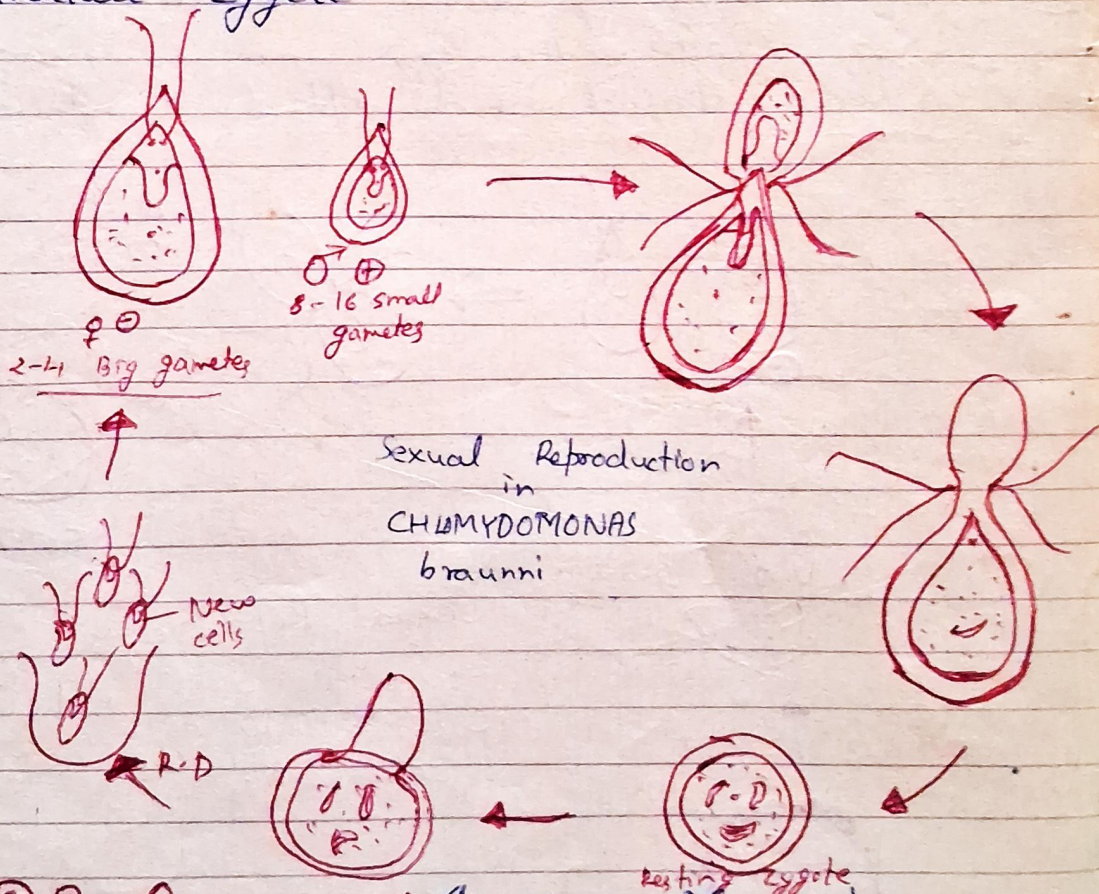
2. Sexual Reproduction \rightarrow It takes place in unfavourable condition in different species of *Chlamydomonas*. The sexual reproduction from Isogamy to Anisogamy and Oogamy are as follows-

① By Isogamy \rightarrow It is most common in all species of *Chlamydomonas*. But according to Smith (1955) most of the isogamy species do not give rise to gametes.

But the vegetative cells of Chlamydomonas behave like gametes. The two cells of Chlamydomonas come near each other and unite by their anterior end laterally. Isogametes may be either naked called gymnogametes (*C. debaryana*) or having a distinct wall called calyptogametes (*C. media*). In this way two similar gametes fuse which is called isogametes or syngamy. Each gametangium produces 16-64 pear shaped, biflagellate isogametes. Isogametes are smaller than the zoospores. The calyptogametes discard their cell wall during syngamy which results in the formation of zygote. The zygote is a quadriflagellate pear shaped and diploid in structure.



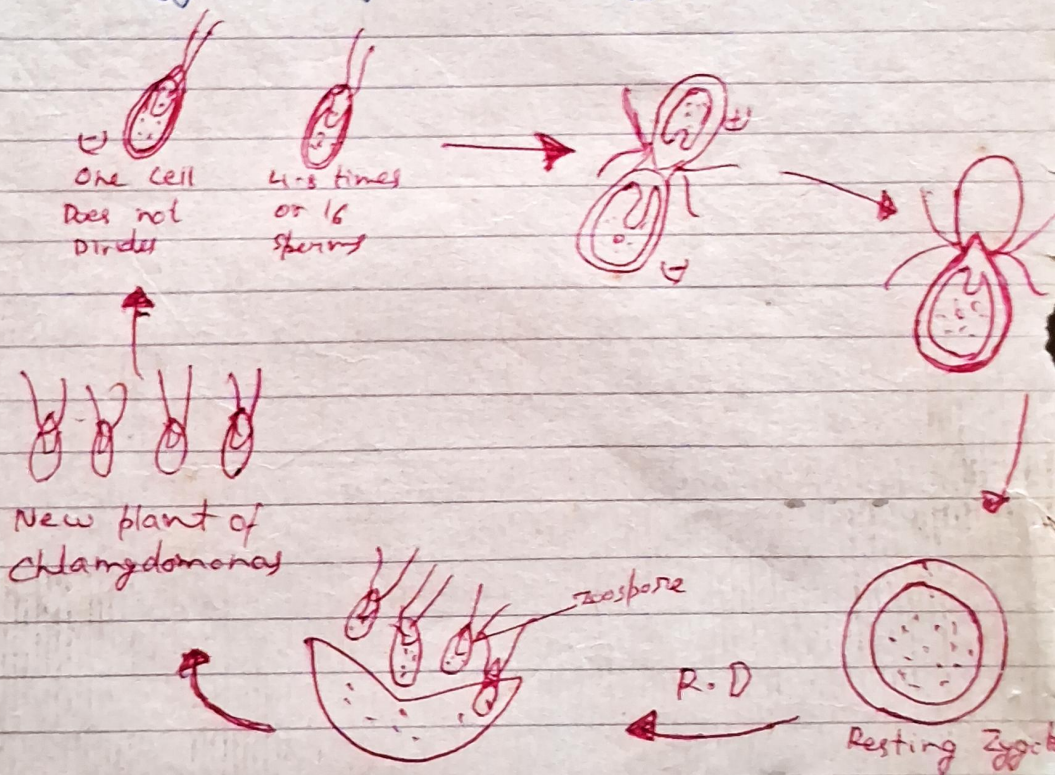
⑥ By Anisogamy → In *C. braunii* species shows Anisogamy type of reproduction. Which occurs in dioecious thallus and two types of gametes mainly microgametes and macrogametes are form in the microgametangium and macrogametangium respectively. Microgametangium are smaller in size which form 8 to 16 pear shaped microgametes. In each microgametangium. And macrogametangium form 2 to 4 macrogametes in each cell which is bigger in size. These anisogametes fuse by their anterior end and forms a diploid structure zygote.



⑦ By Oogamy → In *C. coccifera* shows oogamy type of reproduction. In this type one cell does not divide at all and acts as a female gametes or Oogonium.

The cells give up their flagella and directly become non motile and form as egg cell or ovum.

Some cell of Chlamydomonas divides again and again and give rise to 16 small biflagellate, pear shaped sperms or antherozoids. Oogamy always occurs in dioecious thallus with distinct cell wall. After liberation of antherozoids from the mother cell one of them fuses by their anterior end with the egg cell form a zygote.



Germination of Zygote → The zygote is spherical in structure having 2x. It is surrounded by a thick, smooth or spiny cell wall which lastly becomes orange or red in color. Each zygote germinates with the onset of favourable conditions. At first zygote

by meiotically and form 4 haploid zoospores. After maturity zoospore liberated by the rupture of the zygote wall. And after some time each zoospore form a new Chlamydomonas plant. In this way a zygote formed 4 new plants.