

**Fertilization** → Liberated spermaticum reaches the trichogyne of carpogonia by the water current and stick to it due to the presence of mucilage substance. Then trichogyne wall is dissolve at the point of contact and spermaticum nucleus and cytoplasm enter into the egg cell through the trichogyne and fusion between the egg nucleus and spermaticum takes place and zygote is form. After some time zygote is separated from the trichogyne by a cross wall.

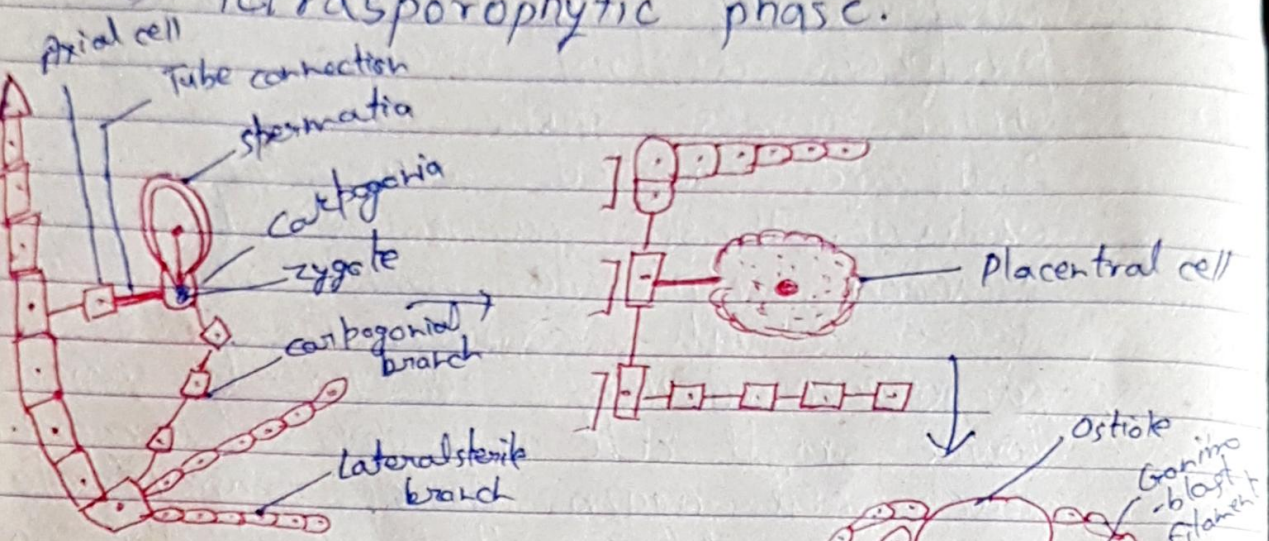
After fertilization some sterile lateral filaments arise from the base of carpogonia which is known as supporting cell also. A cell is cut off from the supporting cell at its upper end. That cell is known as axillary cell. It has a haploid nucleus. A tubular connection is established between the axillary cell and the base of the carpogonium. Mitotic cell division occurs in the diploid nucleus of the carpogonium or zygote and two daughter diploid nuclei are produced. Out of two diploid nuclei one is migrated into the axillary cell and the haploid nuclei of the axillary cell degenerates. Then diploid nucleus of the axillary cell divides meiotically then an out growth formation takes place at the upper end of the carpogonium. And one remaining diploid nucleus migrate into the out growth. The out growth containing diploid nucleus is cut off by a septum ~~nucleus~~ from the axillary cell forming gonimoblast initial. A number of short filaments are developed from the gonimoblast initial named as gonimoblast filament which forms a compact mass and

each cell of the filament has a diploid nuclei. The terminal cell of each gonimoblast filament which forms a compact mass, enlarges and develops into an elongated, pear shaped carposporangium. Diploid protoplast of each carposporium develops into a single diploid carpospore. Then the axillary cell, supporting cell, lateral cell and basal sterile filament fuses together and form an irregular placental<sup>ele.</sup> elements. The carposporial filaments are also fused with the above cell while the above mentioned changes are taking place the pericentral cell of the female trichoblast adjacent to the supporting cell give rise outgrowths which alternately form an envelop around the placental elements. Where a minute opening takes place on the envelops is known as ostiole. The entire structure thus formed is known as cystocarp. It is partially haploid and paritically diploid structure. The diploid portion of the cystocarp is known as carposporophyte. It consist of carposporophyte containing carpospore. It is parasite on the female polysiphonia plant. After sometimes two layered haploid

jacket cells are form around the carposporophyte which is known as pericarp. At maturity carposporophyte produces diploid naked carpospore which comes out to the ostiole. And are carried away by water current. These carpospore becomes attached with the solid object and secret a wall around it. Then the carpospore divides transversely which is lower small cell and upper larger cell. Each cell again divide transversely and form four cell filament. The basal cell of the filament is colourless and elongated and expended into a disc. This cell is known as rhizoidal cell. Upper cell of the filament is globose and coloured it divide transversely and gives rise the central siphon cell. The two remaining intercalary cell divide periclinally and gives rise to pericentral siphon cell and at last the whole structure develops into a polysiphonia plant. At maturity polysiphonia plant produces tetraspores which are Asexual spores. Therefore the plant is known as tetrasporophyte. In the life cycle of polysiphonia it produces three phases into the life cycle. They are the (a) Cramentophytic phase (male and female plants)

(b) Carposporophytic phase (cystocarp)

(c) Tetrasporophytic phase.



FERTILIZATION IN POLYSIPHONIA

