

Structure of Antheridium

- Each antheridium is distinguishable into stalk and body.
- The stalk is multicellular and biseriate.
- The body is club shaped with single layered jacket.
- One, two or more terminal cells of jacket form the cover cells.
- The jacket encloses a mass of androgonial cells or androcyte mother cells.
- Each androcyte mother cell divides obliquely to form two androcytes.
- The androcytes metamorphoses into sickle shaped biflagellate antherozoids (spermatozoids). Flagella are present towards anterior side
- At maturity the cover cells rupture and the antherozoids are liberated en-masse through the perforation.
- They spread out into surrounding water and reach female branch by tricking of water droplets and swim in water.

Archegonial branch or Archegoniophore

- Archegoniophore has a cluster of Archegonia intermixed with paraphyses and surrounded by perichaetial leaves.
- The archegonial cluster with perichaetial leaves constitute 'Perichaetium'.
- The paraphyses are multicellular, uniseriate, filamentous and sterile hair like structures.
- The archegonia in the cluster are at different stages of development.

Structure of Archegonium

- The archegonium is flask shaped and distinguishable into stalk, venter and neck.
- The stalk is multicellular and multiseriate.
- The venter of the archegonium is the basal swollen part and enveloped by double layered jacket.
- The venter contains an egg and a ventral canal cell above it.
- The neck is a long twisted terminal part of the archegonium.
- The neck is several cells in height and with single layered jacket.
- The jacket of the neck has six vertical rows of cells.
- Inside the neck six or more neck canal cells are present.
- The neck is capped by four cover cells or cap cells.
- In a mature archegonium the ventral canal cell and neck canal cells disintegrate to form a mucilagenous substance, the cap cells are separated and thrown away.

- Thus a passage or cavity is formed in the archegonium.

Fertilization

- The mucilagenous secretion of archegonium contains sugar to attract the - antherozoids.
- The antherozoids get attracted by the sugar and therefore their movement into the archegonium is considered to be chemotactic.

Sporophyte (Sporogonium)

- Zygote is the starting cell for sporophytic phase.
- The sporophyte represents the asexual phase and it is a partial parasite.
- As the zygote is developing into embryo, the archegonial venter forms a protective covering called calyptra.
- The sporophyte of *Funaria* is differentiated into (i) Foot (ii) Seta (iii) Capsule.
- Foot, embedded in the gametophore absorbs water and minerals and supplies them to capsule.
- Seta is hygroscopic and by means of its twisting movements it helps in the dispersal of spores.
- Capsule is a highly organised pear shaped structure.
- The basal part of the capsule is called Apophysis.
- The apophysis region has a conducting tissue called "central strand".
- Central strand is surrounded by chlorenchymatous cells.
- The central part of the capsule is the Theca.
- Epidermis of theca consists of fewer stomata.
- Below the epidermis is colourless, two layered hypodermis.
- Hypodermis is followed by chlorenchymatous layers.
- Air space is traversed by - 'trabeculae'.
- Solid cylinder in the centre of theca is called columella.
- Inner spore sac is one cell in thickness and outer spore sac is 3-4 cell in thickness.
- The spore sac contains sporogenous cells which divide and form spore mother cells.
- Each spore mother cell forms a spore tetrad through meiotic division.
- The terminal part of the capsule is the operculum.
- Operculum region is separated from the theca region by two rings called rim or diaphragm and annulus.
- The most important part of operculum is the peristome.
- Triangular Peristomial teeth numbering 32 are arranged in two whorls of 16 each.