

**E Content for student of Patliputra University, Patna**

**B.Sc. Part I Paper –I**

**Subject:-** Zoology Hons.

**Topic:-** Give an account of structure and reproduction in paramoecium

**Anil Kumar**

Associate Professor

Department of Zoology

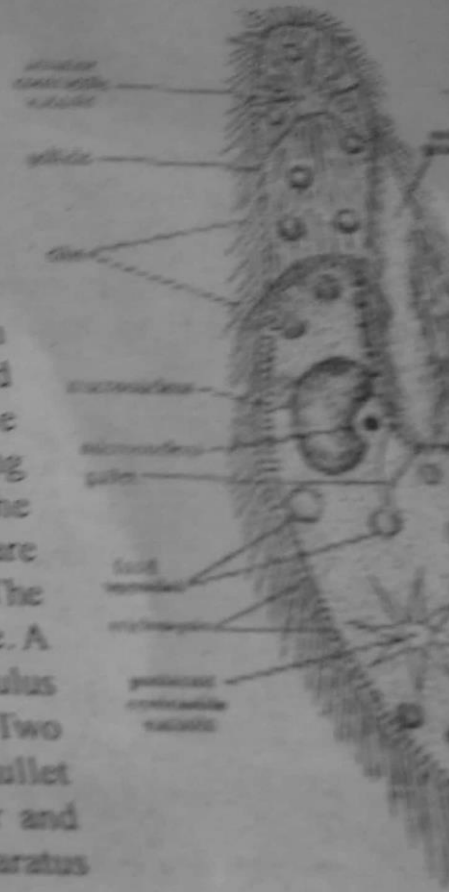
R.R.S. College, Mokama, Patliputra University, Patna

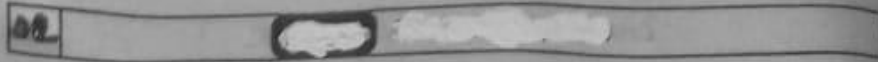
pellicle  
absent.

Q. 3. Give an account of structure and reproduction in Paramecium.  
Ans. Paramecium, popularly known as the slipper animalcule for its peculiar shape, is found in abundance in stagnant ponds and organic infusions.

Structure : It measures about 0.25 mm. in length. Body is somewhat cylindrical but flattened. One end of the body is slender and blunt and remains foremost during locomotion. Obviously this is the anterior end. The other end or the posterior end is thick and pointed.

Body is covered with a distinct, tough and flexible pellicle. The pellicle is sculptured into hexagonal depressions are provided with holes at the centre through which the cilia project. Each cilia originates from basal granule situated in the cortex. Beneath the pellicle the protoplasm is differentiated into cortex and medulla. The cortex or ectoplasm is clear, non-granular and contains Trichocysts. Trichocysts are filled with homogeneous, refractive and semi-fluid substances. On being stimulated the content comes out through small opening on the ridges of the pellicle. In the anterior side of the body the cilia are arranged in a spirally twisted course. The cilia lining the gullet are larger in size. A special ciliary structure called penniculus is formed by the fusion of four cilia. Two such penniculi are seen in the gullet region. The endoplasm is granular and bears at the centre the nuclear apparatus

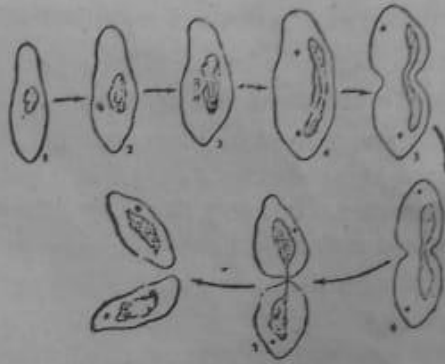




consisting of a large kidney shaped macronucleus is placed in the concavity of the macronucleus. There are two star-shaped contractile vacuole situated one on either end of the body on the ventral side of the body is situated the oral groove which runs obliquely backward and opens into a funnel-shaped depression called the gullet through an apperture called cytostome. Undigested food particles are eliminated through cytopyge.

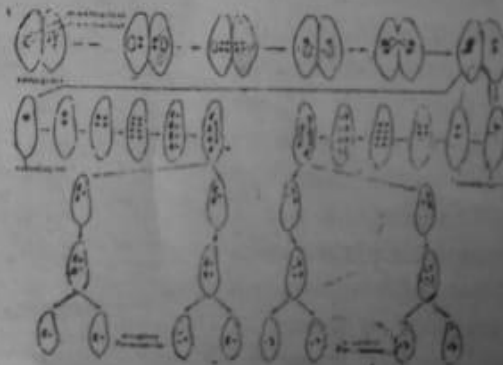
**Reproduction :** Paramecium reproduces both by asexual and sexual methods.

(a) **Asexual reproduction :** It takes place by transverse binary fission and is the common mode of reproduction. During binary fission the micronucleus divides eumitotically and the macronucleus divides amitotically,



a constriction appears in the middle of the body of the animal and two daughter at the anterior end. However, in both of them the division is always followed by reorganisation of lost parts. The whole process of division normally takes about 2 hours.

(b) **Sexual reproduction :** Paramecia make a nuclear reorganisation by conjugation. During conjugation two individuals called conjugants come close together and pair by the ventral surface. Soon a series of changes occur



in the nuclei of both the conjugants which are to some extent comparable to gametogenesis of higher animals. The macronucleus undergoes gradual disintegration and ultimately disappears.

The micronucleus undergoes two successive divisions forming four micronuclei in each of the conjugants one of the division is probably meiotic in nature. Three of these four micronuclei in each conjugant degenerate and the remaining one undergoes an unequal division to form two gamete nuclei. One of the nuclei is called the stationary nucleus the small one is called the migratory nucleus. The migratory nucleus of one conjugant ultimately unites with the stationary nucleus of the other end forms the zygote nucleus. In each exconjugant the zygote nucleus undergoes three successive divisions forming eight nuclei. Of these eight nuclei four become macronuclei and four become micronuclei degenerate leaving behind one active micronucleus. The micronucleus divides again, followed by the cytoplasmic division, resulting four paramoecia each with one micro and one macronucleus. Thus from each exconjugant four paramoecia are formed.