

### Process of conjugation

- It differs slightly in different species of paramecium. The following is related to *P. caudatum*.
- In conjugation (sexual reproduction) the two paramaecia or **preconjugates** from 2 different mating types of the same variety come in contact ventrally and unite through the edges of their oral groove.
- Their cilia produce a substance on the surface of the body which causes the adhesion of 2 conjugating paramaecia.
- They then stop feeding and their buccal structure disappears.
- The pellicle and ectoplasm, all along with the union of two forms, are disintegrated and a **protoplasmic bridge** is formed between 2 individuals.
- Now, at this stage, they are called gametocytes or conjugant.
- The conjugating pair continues to swim actively, and a series of nuclear changes take place in each conjugant.
- The macronucleus simply breaks up into fragments, which are later absorbed by the cytoplasm.
- And diploid micronucleus of each conjugant first grows in size and divides by meiosis.
- And forms 4 haploid daughter micronuclei.
- Out of these four micronuclei, three daughter micronuclei disintegrate or become pyknotic and disappear in each conjugant, while the remaining one divides into two unequal daughter **pronuclei** or **gamete nuclei**.
- Of these, the smaller one is the active **male migratory pro-nucleus**, whereas the larger one is the **stationary female pro-nucleus**.
- The migratory male pro-nucleus of each conjugant moves through the protoplasmic bridge into the other conjugant and ultimately fuses with stationary female pro-nucleus forming a **zygote nucleus** or **syngaryon** in which the diploid number of chromosomes is restored and there has been exchanged of hereditary material.
- The nucleus of the zygote is diploid and is called **amphinuclous** and this type of mixing of two nuclei from different individuals is called amphimixis.
- The 2 pairing paramaecia, after a union of 12 to 48 hrs. separate and now called **exconjugants**.