

LIFE CYCLE

The life cycle of *E. histolytica* is completed in a single host man. The transmission of this parasite from man to man occurs through the cyst. The cyst which is the only stage infective to man is passed out with stool. It gains entry into another host through contaminated food and drink. Once inside the human gut, the cyst wall is ruptured in the small intestine and a multinucleated amoeba with four nuclei is liberated in the lumen of the ileum. This is called excystation. The nuclei divide once forming 8 smaller nuclei and this is followed by cytoplasmic cleavage resulting in eight small *E. histolytica* which gradually pass into colon and develop into fully grown trophozoite. If the parasite belongs to the small race, it stays in colon lumen. The trophozoite of large race gradually erodes the mucosal layer, dissolving it and relying on the liquefied cells and tissues for its nourishment. The parasite pushes deeper as it dissolves the cells, ultimately reaching the submucosa. In the submucosa, they feed and multiply by binary fission leading to formation of characteristic flask-shaped intestinal ulcers opening into the colon lumen.

The parasite often dissolves away endothelial cells and enters the blood vessels in the submucosa. Through portal circulation it is carried to the liver, where it starts the necrosis of liver cells, multiplies and produces amoebic liver abscess. Circulation it is carried to the liver, where it starts the necrosis of liver cells, multiplies and produces amoebic liver abscess. Circulation may possibly carry the parasite to many other organs and tissues like kidney, gonads, spleen, skin, diaphragm and even brain. Except the intestinal ulcer the parasite is in a catabolic condition. Only the amoebae the ulcer and under certain situation return to the lumen of colon and start multiplying rapidly. At a large number of small amoebae are produced which lose all inclusion

but P and Q are tall externally and are hybrid for the trait in the genetic composition because genetically one is pure tall (PP) and the other is hybrid tall (Pq).

→ Phenotype - these only externally visible characters are called and in the genetic composition individuals having similar or characters (without considering their genetic composition) are phenotypic. For example P and Q both are tall externally but genetically differ P is pure tall whereas Q is hybrid tall.

### monohybrid crosses

When only one unit character is considered in a cross it is monohybrid cross. For example, a cross b/w a tall and a dwarf or a cross b/w a coloured and albino animal.

Mendel considered seven pairs of characters in his crossing experiments with garden pea -

- (i) long and short plants
- (ii) Coloured (grey) and colourless (white) seed coat
- (iii) plants with axial and terminal flowers
- (iv) plants with green and yellow pods
- (v) plants with inflated and constricted seeds
- (vi) yellow and green cotyledons
- (vii) plants with round and wrinkled seeds

→ cross b/w a tall plant and a dwarf plant.

Fortunately in all crosses Mendel selected by chance pure tall pure dwarf plants. When they were crossed in  $F_1$ , all were and when plants of  $F_1$  were crossed in the  $F_2$ , 75% are plants and 25% dwarf plants. When these 75% tall plants further examined it was found to have 25% pure tall and hybrid tall. Thus the net result of this cross was 25% tall, 50% hybrid tall and 25% pure dwarf.