

# Entamoeba histolytica

[Science](#), [Biology](#)



E. olytica is a pathogenic amoeba. There are trophozoite and cyst stages in its life cycle. Only the mature cyst (with 4 nuclei) is infective. Men get infection by mouth. The amoebae inhabit the colon. They multiply by binary fission. The cysts pass out with The life cycle of E. histolytica is cyst--trophozoite--cyst. The trophozoites may invade the intestinal wall or even liver and lung tissues by blood dissemination and induce pathological changes.

I. Morphology. There are 4 distinct stages in its life cycle; trophozoite, precyst, cyst, and metacyst, but only the morphology of trophozoite and cyst possess morphologic characteristics that have diagnostic value. A. Trophozoite - active form. a. Size trophozoites vary in size from 10-60 micrometers in diameter. b. Movement is by means of a pseudopodium, which is a cytoplasmic protrusion. The characteristics of pseudopodia of Entamoeba histolytica are: (1) broad or finger-like in form (2) thrust out quickly (3) pseudopodium first formed with hyaline ectoplasm, then the granular endoplasm flows slowly into pseudopodium when amoeba move (so called amoeba movement). 4) motility is progressive and directional c. Red blood cells may be found in the endoplasm. d. Nucleus, vesicular type: The nucleus is not visible in an unstained specimen, but when stained with hematoxylin, the nuclear structure will be clear. (1) Nuclear membrane is a delicate but distinct line.

(2) Peripheral chromatin granules are fine and uniformly arranged on the inner surface of the nuclear membrane. (3) Karyosome is small and centrally located. The characteristics of the nucleus of E. histolytica are useful in differentiation of the pathogenic amoeba from the other non-pathogenic species. B. Cyst-Non-Motile (has no movement) Before encysting,

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trophozoites round up, cease ingesting food, and secrete a cyst wall, thus becoming a precyst, and then an immature and mature cyst. a. Immature cyst - spherical in shape, 10-20 Nm in size, and consists of 1-2 nucleus or nuclei. b. Mature cysts: 4 nucle. The characteristics of the cyst nucleus are similar to that of the trophozoite.

Besides nuclei, there are two other inclusions: the glycogen vacuole and the chromatoid bodies (bars). Both the glycogen and chromatoid bars become smaller and smaller as the cyst ages, so sometimes they cannot be seen in the mature cysts. The glycogen acts as a food reservoir, but the function of the chromatoid bar is not known. When the cyst is stained with iodine, the glycogen appears brown or dark yellow brown in color, but the chromatoid bar can not be stained and has a refractory appearance.

In iron-hematoxylin stained specimens, the chromatoid bar is rod shaped with two rounded ends and dark blue in color. The glycogen vacuole has been dissolved during the process of staining, so it appears as a clear space. II. Life cycle The normal life cycle of *E. histolytica* is cyst-trophozoite-cyst III.

Diagnosis (1) trophozoite (living): fecal examination (direct smear with normal saline) for the diagnosis of amoebic dysentery. One must pay attention to: a. The container must be clean and free of acid or alkaline. b. Trophozoites should be examined soon after they have been passed c. Keep specimen warm in order to keep the trophozoite's activity. d. Select the bloody and mucous portion for examination. e. If Charcot-leyden crystals are present, the stool must be carefully examined for the trophozoites of *Entamoeba histolytica* (Charcot-leyden crystals may be derived from

eosinophiles). (2) Cyst: fecal examination (direct smear with iodine stain) for the chronic intestinal amoebiasis or carriers. Immature and mature cysts of *E. histolytica* may be found in the formed stool.