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((Parasites))

2 stage

Lab 2

Giardia

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Giardia

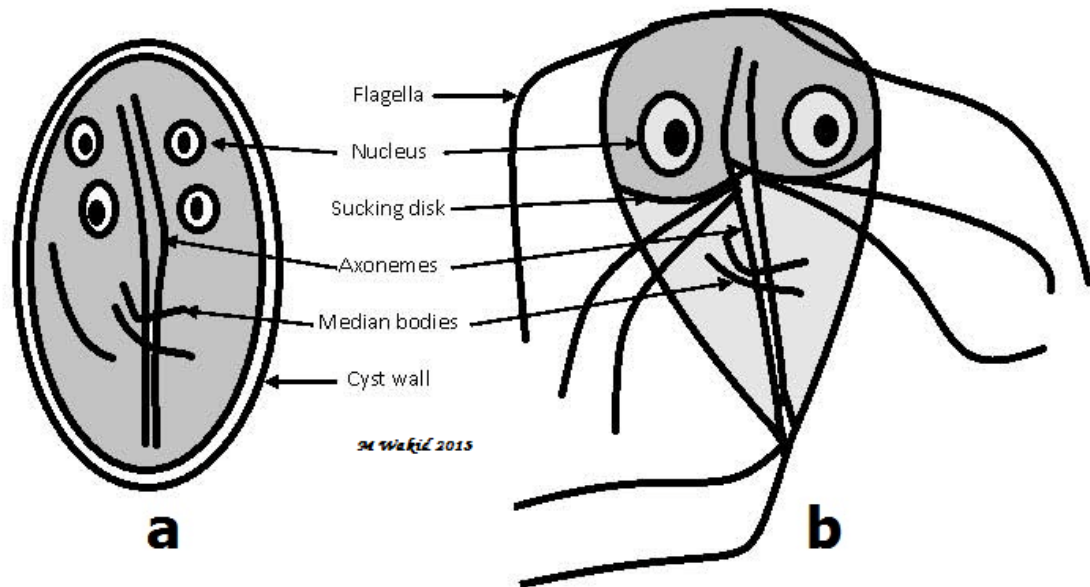
is a genus of anaerobic flagellated protozoan parasites of the phylum protozoa \ class Flagellates or Mastigophora that localized and reproduce in the small intestines (duodenum) of several vertebrates, causing the disease giardiasis. Their life cycle alternates between a swimming trophozoite and an infective, resistant cyst.

Like other diplomonads, Giardia have two nuclei, each with four associated flagella, and were thought to lack both mitochondria and Golgi apparatuses. However, they are now known to possess a complex, called mitosomes, through mitochondrial endomembrane system reduction. The mitosomes are not used in ATP synthesis the way mitochondria are, but are involved in the maturation of iron-sulfur proteins.

The phylogeny of Giardia is unclear, but two main theories exist.

_ Firstly, Giardia may be extremely primitive eukaryotes that branched off early from other members of their group. This theory is supported by several features: their lack of complete mitochondria (see Characteristics) and other organelles, their primitive metabolic pathways, and their position on a phylogenetic tree. However, many of these differences have been refuted in recent years, and many researchers are supporting a

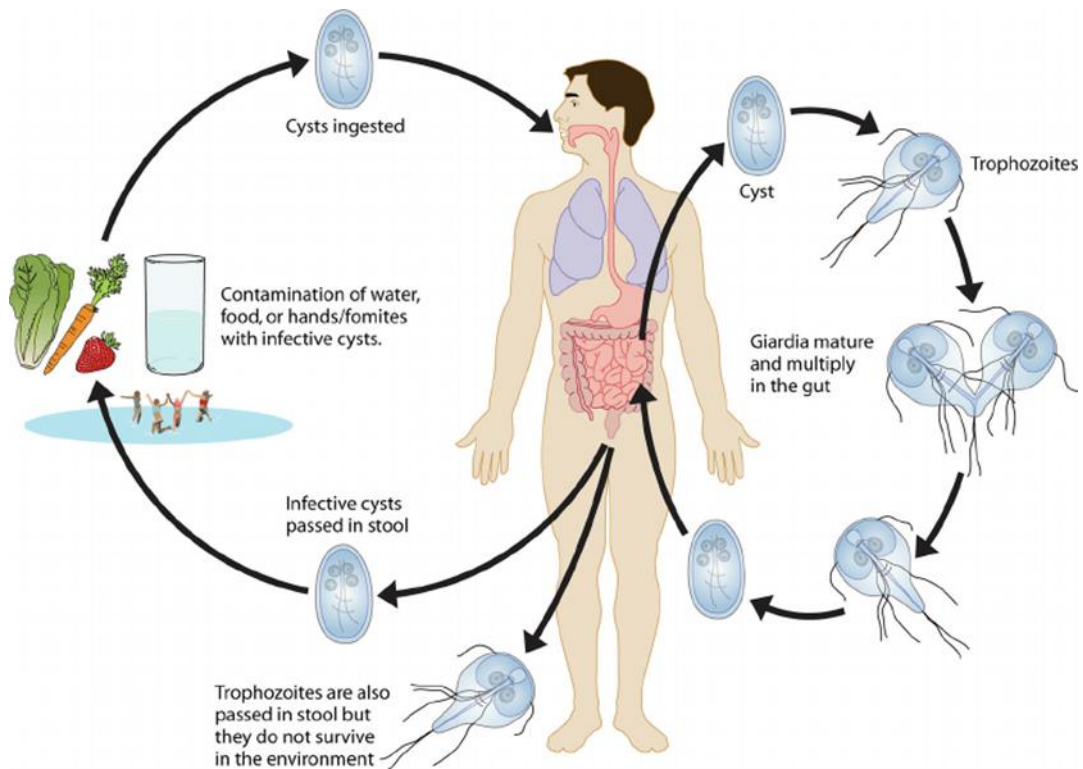
_ second theory: that Giardia are highly evolved parasites, which have lost ancestral characteristics



Giardia (a-Cyst, b –Trophozoite)

The life cycle of *G. duodenalis* consists of two stages, the trophozoite (pathogenic) and cyst(Infection). The trophozoite is the vegetative form and replicates in the small intestine of the host, The cystic phase is the infectious phase that exists outside the host

Life cycle of giardia



Giardia sp. life cycle. *Giardia* cysts shed in the feces are infectious. Infection occurs after the ingestion of cysts either through the fecal-oral route or through the ingestion of contaminated water or food. Cysts are environmentally resistant and can persist for months in soil or water (50). Excystation occurs within the small intestine. Trophozoites remain either free in the intestinal lumen or attached to villous enterocytes, causing clinical signs. Trophozoites encyst upon movement toward the colon, becoming infectious oocysts, and are shed in the feces.



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