

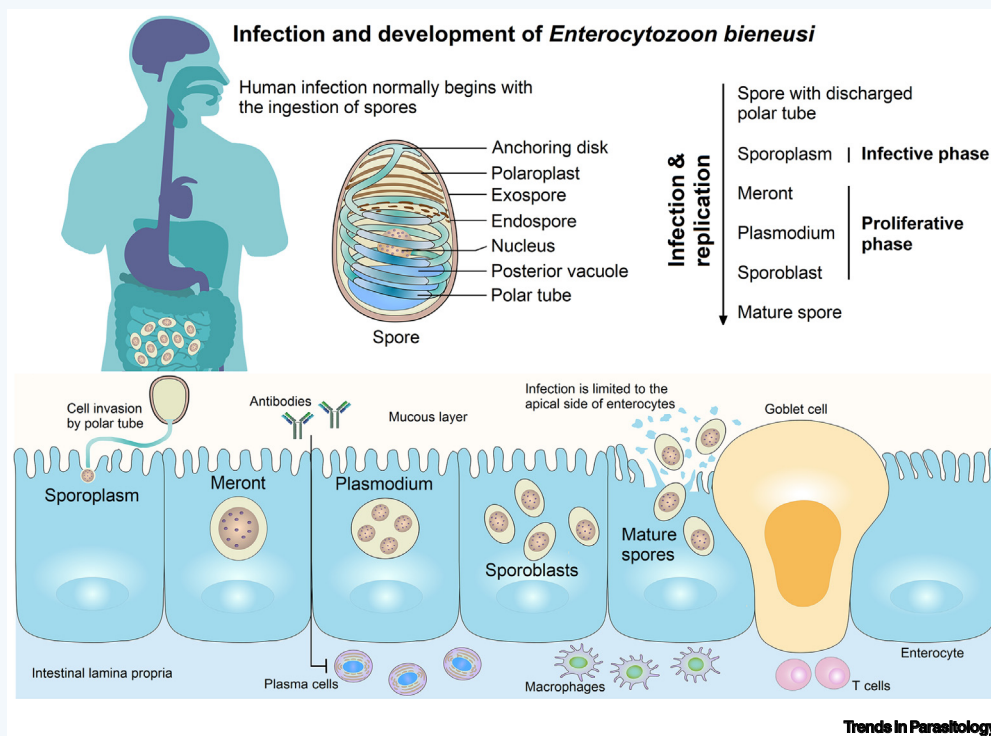
# Enterocytozoon bieneusi

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**KEY FACTS:**

*E. bieneusi* has a compact genome of ~6 Mb and relies on the host for basic nutrients and energy metabolism.

Effective cultivation methods and animal models are not yet available, leading to poor understanding of its biology and pathogenesis.

The small, hardy environmental spore (~1 μm) facilitates waterborne and foodborne transmission.

There is a high genetic diversity of isolates, with over 500 genotypes; they form 11 groups in phylogenetic analysis, with genotypes in Group 1 of major zoonotic concern. Multilocus genotyping of isolates generates discordant results, indicating the occurrence of genetic recombination.

**DISEASE FACTS:**

Microsporidiosis by *E. bieneusi* is most severe in immunocompromised persons. Heavy infection causes villus atrophy and crypt hyperplasia of the small intestine, leading to malabsorption.

*Enterocytozoon bieneusi* is a microsporidium, related to Cryptomycoota and fungi, which has been reported globally in a wide range of mammalian and avian hosts. It is responsible for over 90% of documented cases of human microsporidiosis and causes varying clinical symptoms, typically diarrhea and wasting. Infection begins with ingestion of spores in contaminated water and food. Spores deliver the infective sporoplasm into host enterocytes via the discharged polar tube. Meronts form and develop into multinucleated plasmodia, which undergo sporogony to form sporoblasts and then mature spores. Spores released from infected cells are shed with the stool. Sequence analysis of the ribosomal internal transcribed spacer (ITS) has identified over 500 genotypes, some of which are generalists of zoonotic importance and pose a threat to public health. Population genetic data uphold the zoonotic nature and host specificity of the parasite. Knowledge of its pathogenicity, immune responses, and expanded treatment options are urgently needed.

Diarrhea and wasting are the most common clinical manifestations, but the infection can be asymptomatic in immunocompetent individuals.

Foodborne, waterborne, and nosocomial outbreaks have been reported in industrialized nations.

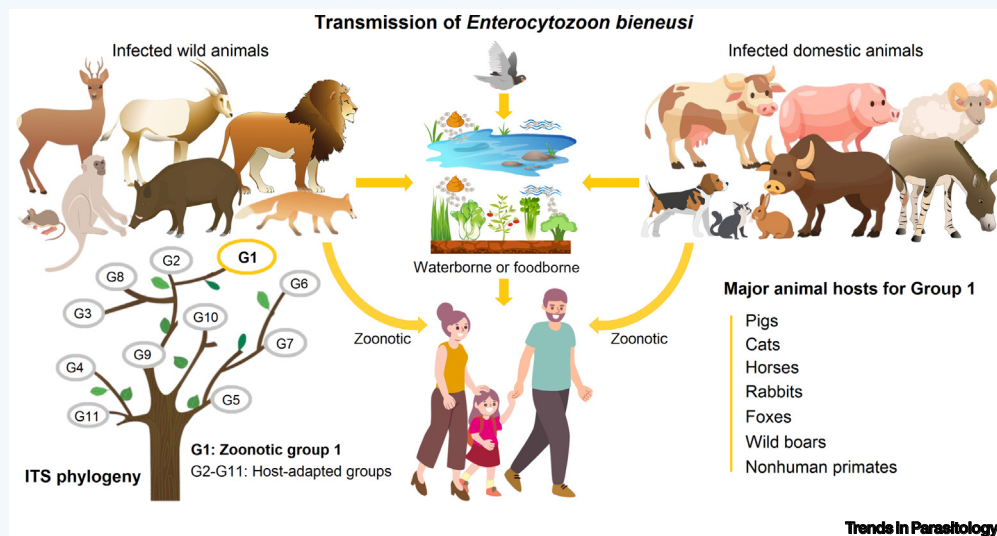
Infection is mostly diagnosed by detecting spores or DNA in stools through microscopy or PCR.

Treatment with oral fumagillin is effective, but causes thrombocytopenia, and better commercially available therapeutic agents are needed.

**TAXONOMY AND CLASSIFICATION:**

- PHYLUM:** Microsporidia
- CLASS:** Microsporea
- ORDER:** Chytridiopsida
- FAMILY:** Enterocytozoonidae
- GENUS:** *Enterocytozoon*
- SPECIES:** *E. bieneusi*

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## Declaration of interests

The authors declare no competing interests.

## Resources

[www.cdc.gov/dpdx/microsporidiosis](http://www.cdc.gov/dpdx/microsporidiosis)

<https://clinicalinfo.hiv.gov/en/guidelines/adult-and-adolescent-opportunistic-infection/microsporidiosis>

<https://microsporidiadb.org/micro/app>

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