Blastocystis colonizes the large intestine and divides by binary fission. In vitro, Blastocystis can adhere to intestinal mucin and secrete cysteine proteases that contribute to pathogenesis through degradation of secretory IgA, Rho/ROCK-mediated tight junction compromise, NF-κB-mediated secretion of inflammatory cytokines and host cell apoptosis. It is currently unknown whether this occurs in vivo. Most gut microbiota studies that include Blastocystis report that Blastocystis is a common constituent of the healthy gut microbiota and associated with higher bacterial richness, and that long-term asymptomatic carriage is common. In contrast, a couple of recent studies have suggested that Blastocystis decreases beneficial gut bacteria, leading to a dysbiotic state. Such discrepant observations have led to confusion on the clinical relevance of the parasite. Blastocystis is relatively rare in patients with inflammatory bowel disease, and its role in irritable bowel syndrome is still controversial.
KEY FACTS:

*Blastocystis* from mammals and birds can be classified into at least 17 subtypes (STs) currently based on SSU rRNA genes. STs are as divergent as species or even genera.

Humans can host ST1–9 and 12; more than 90% of human *Blastocystis* belong to ST1-4.

Reservoir hosts have been identified for all subtypes except ST9; cryptic host specificity exists for at least some of them.

Two genomes: a nuclear genome of 12.9–18.8 Mb (depending on subtypes) encoding 5,713–6,544 proteins, and a mitochondrial genome of 27.7–29.3 Kb.

*Blastocystis* can be cultured easily in Jones’ and other media with faecal bacteria. Genetic manipulation method for ST7 has been described recently.

Subtype nomenclature was introduced when it became clear that previous species names were invalid or represented multiple very distinct entities.

DISEASE FACTS:

Despite more than 1 billion carriers worldwide, the public health significance remains unknown.

*Blastocystis* is recently found more common in gastrointestinal-healthy individuals.

Gut bacterial diversity and richness are mostly higher in *Blastocystis*-positive individuals. ST7 has been shown to decrease levels of beneficial gut bacteria such as *Bifidobacterium* and *Lactobacillus*.

Zoonotic contribution to human *Blastocystis* colonization is probably low.

TAXONOMY AND CLASSIFICATION:

KINGDOM: Sar

PHYLUM: Stramenopiles

CLASS: Bigyra

ORDER: Opalinata

FAMILY: Blastocystidae

GENUS: *Blastocystis*
SPECIES: Currently not applicable
The Rho/ROCK pathway is involved in IgA proteolysis, leading to Cysteine Proteases. NF-κB translocation is mediated by this pathway, resulting in the expression of proinflammatory cytokines (e.g., IL-8, GM-CSF). This contributes to epithelial barrier dysfunction and NF-κB-mediated expression of proinflammatory cytokines. In vitro intestinal culture shows host cell apoptosis.
REFERENCES:


