



Global Water Pathogen Project

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The GWPP mission is to be a knowledge resource and hub on water pathogens which will guide the goals for sanitation and achieving safe water around the world using the power of new information technology and tools.

## What's new with GWPP

### ***Blastocystis***

*Blastocystis* is possibly the most prevalent micro-eukaryotic parasite colonizing and/or infecting the large intestine of at least one billion people worldwide. To date, 17 different subtypes (STs)—arguably separate species—have been identified using molecular techniques. At least eight subtypes (ST1–ST8) are shared by human and non-human hosts, suggesting potential zoonotic and anthroponotic transmission.

Similar to most protozoal agents implicated in diarrheal disease, *Blastocystis* is transmitted via the fecal-oral route through human-to-human or animal-to-human transfer. In places where sanitation and/or hygiene practices are poor, the infective cysts may also be acquired through direct encounter with an infected person or contact with objects contaminated with faeces (up to  $7.4 \times 10^5$  cysts per gram of feces).

In humans, infection is most likely initiated upon accidental ingestion of fecally excreted cysts via contaminated water and food.

Symptoms that have been linked to carriage are usually non-specific and may include diarrhea, constipation, abdominal pain, nausea, flatulence, fatigue, weight loss, and sometimes, skin manifestations, and intestinal inflammation. The severity of symptoms may be influenced by factors innate to the host such as age and immune status.

A few facts about *Blastocystis*:

- Subtypes 1 to 4 appear to account for more than 95% of *Blastocystis* in humans, and subtypes such as 1, 2, and 3 appear to have a global distribution.
- *Blastocystis* has been suspected of being associated with irritable bowel syndrome (IBS). It is possible that *Blastocystis* becomes an opportunistic pathogen when the host's immune system is negatively impacted.
- State-of-the-art detection of *Blastocystis* now relies on real-time PCR using genomic DNA extracted from faeces.
- *Blastocystis* has been recovered from drinking water, sewage/wastewater, and river systems suggesting that water can serve as a source of human infection.

- Studies from Scotland and Malaysia detected viable cysts in sewage treatment plants. In vitro cultivation revealed that 50% of influent samples and 28% of effluents contained viable cysts.
- Studies indicate a highly resistant nature of *Blastocystis* cysts relative to those of other intestinal protozoa.

Scientists involved with the Global Water Pathogen Project (GWPP) have compiled the most up to date information on *Blastocystis* for the purpose of providing a key reference point in the development of quantitative guidance for sanitation practices worldwide. For additional resources, and the complete [Blastocystis](#) scientific paper, visit the GWPP website at [waterpathogens.org](http://waterpathogens.org).

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Read additional publications at  
[www.waterpathogens.org](http://www.waterpathogens.org)

## Upcoming Events

**August 26-31, 2018**

[SIWI World Water Week](#)

**November 19, 2018**

[World Toilet Day](#)





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