Here, we present an example of an intractable Blastocystis infection despite multiple courses of antibiotic intervention. A 36-year-old female presented with a 9-month history of abdominal pain, diarrhea, and bloating. Blood tests and a sigmoidoscopy with biopsies were normal, and she was diagnosed with irritable bowel syndrome (IBS) according to Rome III criteria [3]. Fecal samples revealed Blastocystis sp. subtype 9 (ST9) and Dientamoeba fragilis. During a period of almost 3 years, she sequentially received antimicrobial treatment (Table 1). Clinical and microbiological effect was systematically evaluated 2 weeks after treatment. Although the patient was cleared of *D. fragilis*, none of these treatments successfully eliminated *Blastocystis* ST9, which was repeatedly isolated from her feces, nor did they alleviate her gastrointestinal symptoms. No further treatment options are available in general in Denmark.

The mechanisms leading to *Blastocystis* eradication are unclear. Using molecular diagnostics, we have come to realize that the parasite colonizes a substantial proportion of any given population [4]. With such a high rate of colonization, we must anticipate that we are all exposed to *Blastocystis* regularly, and therefore the factors influencing successful *Blastocystis* colonization should be explored [4]. Metagenomic studies have led to advances in the understanding of the structure and function of the human intestinal microbiome [5, 6], whereas nonprokaryotic organisms remain much less studied. If *Blastocystis* colonization is dependent on the composition of the bacterial flora as suggested recently [4], it is striking that the parasite could be sustained throughout the many different courses of antimicrobial treatment in this IBS patient. Eradication of *Blastocystis* may happen directly (protistostatic or protistocidal effect) or indirectly (due to perturbations of the intestinal flora). In this case eradication failed, and our study adds to the string of papers

*Blastocystis: To Treat or Not to Treat ... But How?*

To the Editor—In their recent paper, Coyle et al [1] recommend metronidazole as the drug of choice for *Blastocystis* eradication. We have come across multiple cases where high-dose metronidazole treatment does not eliminate *Blastocystis* from the intestine. In fact, it appears that no single drug is capable of eradicating *Blastocystis* [2].
suggesting that metronidazole does not result in *Blastocystis* eradication [2]. This means that *Blastocystis* may be unsusceptible to agents normally used to treat amoebic infections and that *Blastocystis* might possess the ability to adapt to rapid changes in gut microbiome ecology. Future studies should aim at exploring potential differences in the microbiome structure of individuals with and without *Blastocystis* and monitor the microbial changes during treatment by methods such as metagenomics or denaturing gel gradient electrophoresis, and to try to obtain a mechanistic understanding of *Blastocystis* eradication.

It is clear that eradication of some microeukaryotes from the intestinal lumen remains extremely challenging, if possible at all, which certainly complicates the design of randomized controlled treatment studies that could shed further light on the clinical role of *Blastocystis*. However, the *Blastocystis* genome is now available [7], and analysis of metabolic pathways and protein homology modeling will assist us in identifying relevant targets for targeted chemotherapeutic intervention.

### Notes

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### References


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