



A weirder than weird story, and yet...

At first, the idea of collecting feces, putting it in a blender, and then transferring it into the gastrointestinal (GI) tract of another person might seem to be the creation of a third-grade boy writing a composition on the grossest thing he could think of. And yet, as Agito et al describe on page 101 of this issue, this very procedure may hold promise for some patients suffering from recurrent and recalcitrant *Clostridium difficile* infection—and may help open the book on a new area of clinical biology.

The complete story on the biology of primary and recurrent *C difficile* infection has yet to be fully elaborated. For most patients, the plotline involves an alteration of their resident bacteria by an antibiotic that permits the overgrowth of *C difficile*, including spore-forming strains that can generate a significant amount of toxin. If the depletion of competitive intestinal bacteria allows for unfettered growth of this toxic bacterium, then it is predictable that replenishing the intestinal microbiome will permit balanced bacterial growth and control of *C difficile* multiplication.

But the *C difficile* story is only part of a biologic anthology that is still being written. The microbial biome accounts for probably 90% of the DNA that each of us carries. This microbial DNA, although diverse since it represents nuclear material from many species of bacteria, is not distributed randomly among individuals. There are at least several enterotypes (patterns of gut bacterial ecosystems) that can be identified by molecular techniques. The GI microbiome patterns of couples and household contacts are more similar than would be expected by chance alone, and patterns are seemingly influenced by dietary intake (carnivores differ from vegans) and perhaps by the host's unique immune responsiveness. Our intestinal microbiome may exert a greater influence on our overall health than we previously thought.

The gut microbiome not only participates in digestion of what we eat and synthesizes some necessary nutritional factors, it also generates small molecules capable of regulating aspects of our systemic immune response. Altering the microbiome, by fecal transplantation or other means, may well contribute to the development or suppression of inflammatory disorders as diverse as spondylitis, atherosclerosis, immune thrombocytopenia, and allergies.

Soon, peptic ulcer disease may not be the only condition treated by therapies directed at bacteria within our GI tract. This is an evolving story that may seem weird but is worth following.

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