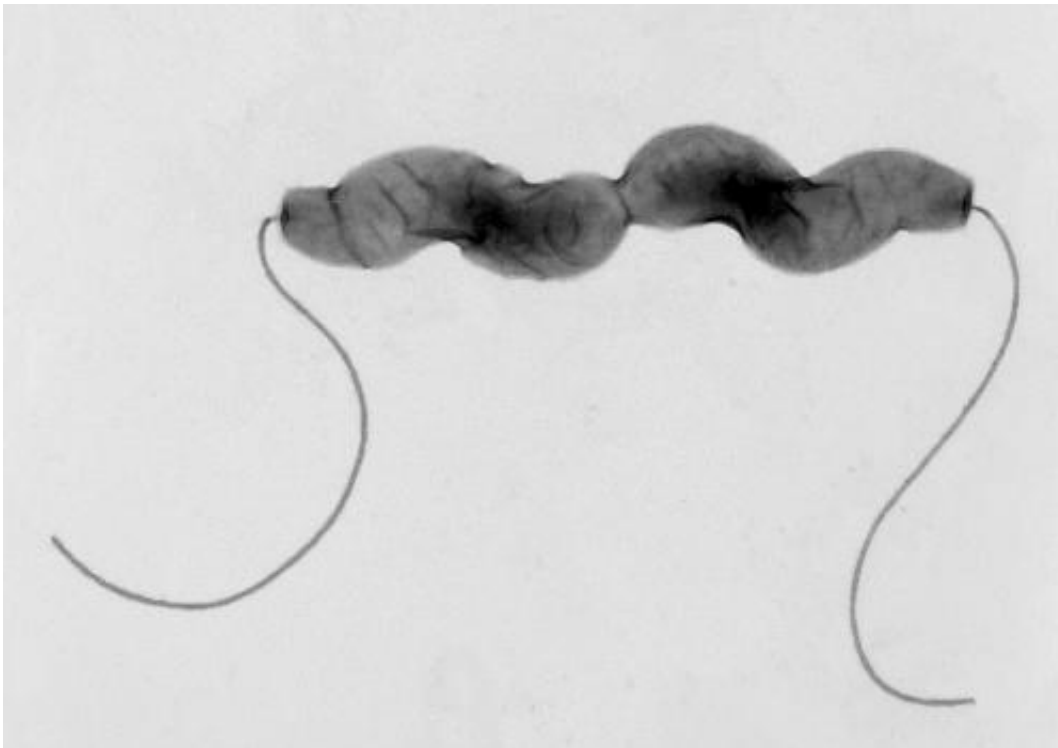


The need to feed programs *Campylobacter*'s 'Sat Nav'

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Campylobacter has long tail-like structures called flagella that it uses for swimming. Credit: Institute of Food Research

A rumbling tummy is our body's way of telling us "it's time for lunch". Likewise, bacteria need to know when it's time to eat.

Researchers at the Institute of Food Research on the Norwich Research Park have uncovered how the food-borne bacterial pathogen

Campylobacter jejuni can change its swimming behavior to find a location with more food.

Campylobacter is the most common cause of bacterial food-borne illness in the UK, with more than 371,000 cases annually. When people get infected, the bacteria need to find their way from the source of contamination, most often undercooked poultry, to the cells lining the gut, passing through thick layers of [mucus](#). In these different locations, *Campylobacter* must find enough food to sustain itself as well as a suitable environment to carry out respiration, the process of generating energy.

Using a newly developed assay, the researchers found that *Campylobacter* balances the directions given by two different systems to either seek out more nutritious locations, or to find places where [respiration](#) is most efficient. [Genetic tools](#) were used to show that the system controlling swimming towards food overrides the other system, suggesting that the "need to feed" is the foremost concern for *Campylobacter*.

Unlike other [food poisoning](#) bugs, such as *E. coli* or [Salmonella](#), *Campylobacter* has a whole range of systems that can detect different chemicals in the environment, and alter swimming behaviour accordingly: the 'Sat Nav' of the bacterial world.

The work is published in the journal [PLOS ONE](#). Dr Mark Reuter, the lead author says "we know that *Campylobacter* can swim, and that this is very important for causing disease, but aimless swimming isn't efficient. The bugs need to know where they want to go".

Discovering how these 'Sat Nav' systems help target the bugs to the site of infection may help prevent future disease, and may be relevant to other food-borne and gut-associated pathogens.

More information: Signal Balancing by the CetABC and CetZ Chemoreceptors Controls Energy Taxis in *Campylobacter jejuni* , Mark Reuter and Arnoud H. M. van Vliet, *PLOS ONE*,
[dx.plos.org/10.1371/journal.pone.0054390](https://doi.org/10.1371/journal.pone.0054390)

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