

Obesity may be contagious and spread in the same way as bugs

Microbes that cause weight gain survive in air and upset healthy gut bacteria when ingested, say experts

By Sarah Knapton SCIENCE EDITOR

OBESITY could be a contagious condition which spreads in the same way as bugs such as *C.diff*, scientists have suggested.

A huge study of bacteria in the human gut has found that one third of species produce spores which survive in the open air and can potentially move between people. Scientists now believe that many diseases and conditions are triggered or exacerbated by changes in gut bacteria.

A decade ago, Washington University discovered that adding gut microbes from obese mice to thin mice caused huge gains in weight, a finding which has been replicated many times.

But the new research suggests that those microbes can live outside of the body and be ingested, potentially upsetting populations of healthy bacteria in the gut and triggering disease.

It could explain why some illnesses run in families. Far from being simply genetic, family members could be picking up conditions through close contact or sharing bathrooms.

Spores are a form of bacterial hibernation which allow species to remain dormant for long periods of time.

It is the first time that scientists have considered that the transmission of disease might be possible through gut bacteria.

Dr Trevor Lawley, who led the study at the Wellcome Trust Sanger Institute,

Cambs, said conditions such as obesity and inflammatory bowel disease, which includes Crohn's disease and colitis, could be passed on.

"I think there are definitely diseases that are caused by an imbalance in microbiota. If you look at something like inflammatory bowel disease or obesity, that's a possibility.

"People who live in the same house share a similar microbiome. And genetics only really accounts for between 7 to 13 per cent of the risk. There are definitely people who are more susceptible to disease and so it could be a combination of things."

Scientists are confident that by mapping the bacteria in the gut of healthy people they should be able to reset the balance.

Around two per cent of a person's body weight is due to bacteria. Many of these bacteria are sensitive to oxygen and are difficult to culture in the laboratory, so until now it has been difficult to isolate and study them.

But now the team has compiled a library of new bacteria they are hoping to create a pill containing a mix of bugs which could restore healthy levels.

Hilary Browne, based in the Host-Microbiota Interactions Laboratory, at the Wellcome Trust Sanger Institute, said: "It has become increasingly evident that microbial communities play a large role in human health and disease.

"By developing a new process to isolate gastrointestinal bacteria, we were able to sequence their genomes to understand more about their biology. We can also store them for long periods of time, making them available for further research."

The research was published in the journal *Nature*.

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