

Healthy mouth bacteria provide ideal conditions for gum disease

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Gum disease leads to painful gums and the loosening of teeth

Normal bacteria which live in our mouths provide the catalyst for the development of gum disease, a debilitating condition which leads to painful gums and the loosening of teeth, new research from Queen Mary, University of London has found.

The unexpected finding could pave the way for the development of [preventative measures](#) in tackling gum, or periodontal disease*, by manipulating the normal bacteria in the same way that probiotic yoghurt works to protect the [intestine](#).

Researchers at Queen Mary's Blizard Institute, including Medical

Research Council Clinical Research Training Fellow Mark Payne, worked with scientists in the US; they published their findings in the journal [Cell Host and Microbe](#) today (Oct. 27).

The scientists introduced the oral bacterium *Porphyromonas gingivalis* to mice living in two different test conditions. The mice with normal bacteria in their mouths developed periodontal [bone loss](#) but the mice raised under germ-free conditions, in the absence of any normal bacteria, remained disease-free.

Professor Mike Curtis, Director of the Blizard Institute and co-author on the paper, said when the oral bacterium *P. gingivalis* was introduced under normal conditions "it stimulated the growth of normal bugs leading to a large increase in the number of those organisms already there".

"*P. gingivalis* was introduced at very low levels yet it had a major affect on both the immune system and the inflammatory system," he said.

"This oral [bacterium](#) only appears in small numbers but appears to have a major influence on the overall ecology. It has a keystone effect in a community – working in the same way that starfish, which have relatively small numbers, control the shell fish communities in the sea.

Professor Curtis said although the findings were encouraging in terms of understanding the way [gum disease](#) develops, there was still "some way to go" before there was a similar product on the market for gum disease as a probiotic [yoghurt](#) is available for the intestine.

"Now we know that [periodontal disease](#) only develops through *P. gingivalis* interacting with the existing bacteria in our mouths, we need to understand the role played by our normal bacteria in both the development of disease and protection from it," he said.

"This may then provide the means to develop preventative measures for the disease."

Professor Farida Fortune, Dean for Dentistry at Queen Mary said the research was encouraging for people who suffer from gum disease which results in bleeding gums and ultimately loose teeth which cause difficulty in both speaking and eating.

"The public still need to be mindful of the way they look after their teeth and gums," she said.

"People need to pay more attention to their oral hygiene. Their local hygienist, dental therapist and dentist can all assist in teaching them effective cleaning techniques. Just these simple preventative measures, as well as not smoking, will go some way to helping them avoid developing gum disease."

Provided by Queen Mary, University of London

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