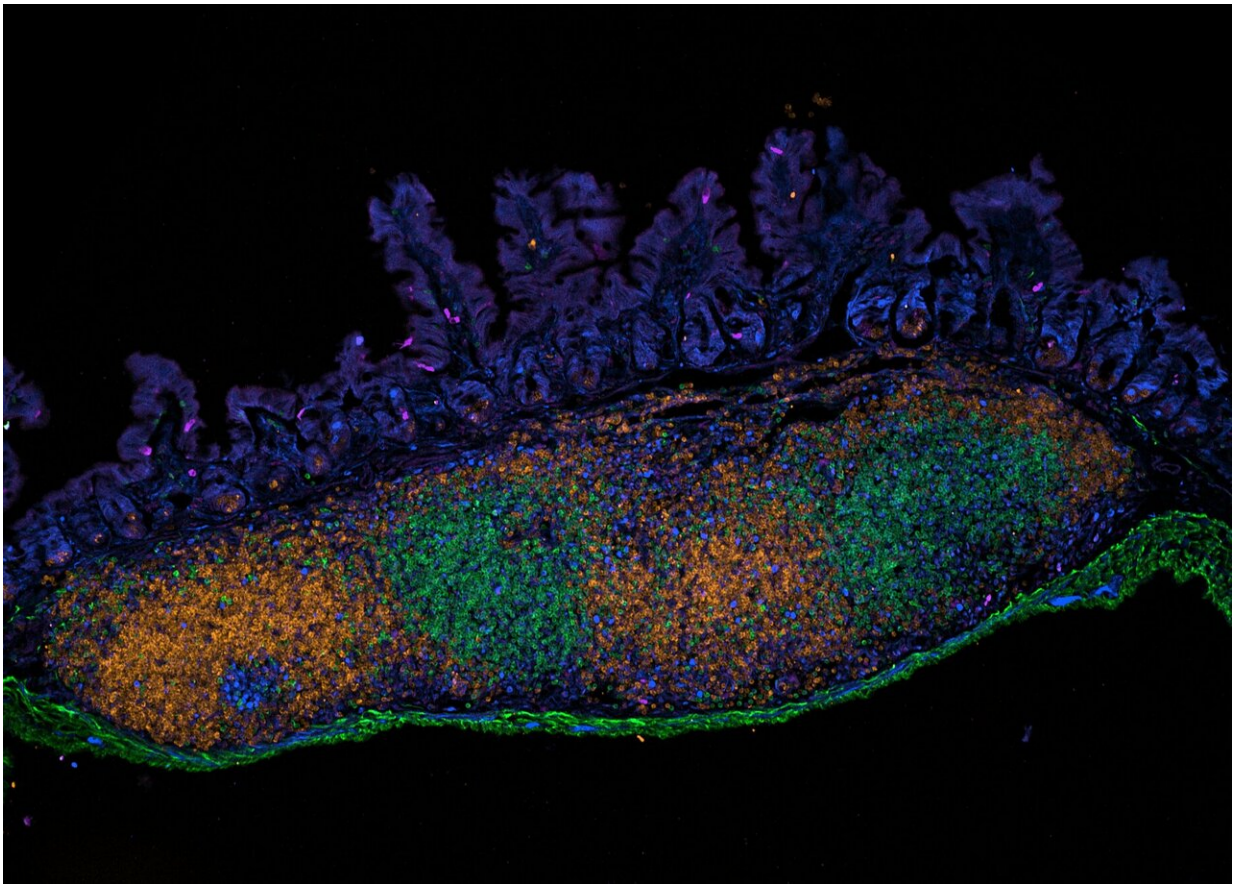


Could boosting the gut microbiome be the secret to healthier older age?

June 4 2019



A confocal microscope image of immune cells in the epithelial lining of the intestine of a young mouse. The cells are localised within specialised lymphoid tissue in the epithelial lining of the intestine called a Peyer's patch. Here, B and T cells interact to mediate an effective antibody response against the gut microbiota. Naïve B cells are shown in orange, while proliferating cells - including germinal centre B cells - are blue. All T cells are stained green and regulatory Foxp3⁺ T cells can be recognised by their purple centre. Credit:

Marisa Stebegg, Babraham Institute.

Faecal transplants from young to aged mice can stimulate the gut microbiome and revive the gut immune system, a study by immunologists at the Babraham Institute, Cambridge, has shown. The research is published in the journal *Nature Communications* today.

The gut is one of the organs that is most severely affected by ageing and age-dependent changes to the human [gut microbiome](#) have been linked to increased frailty, inflammation and increased susceptibility to intestinal disorders. These age-dependent changes to the gut microbiome happen in parallel with a decrease in function of the gut [immune system](#) but, until now, it was unknown whether the two changes were linked.

"Our gut microbiomes are made up of hundreds of different types of bacteria and these are essential to our health, playing a role in our metabolism, [brain function](#) and immune response," explains lead researcher Dr. Marisa Stebegg. "Our immune system is constantly interacting with the bacteria in the gastrointestinal tract. As immunologists who study why our immune system doesn't work as well as we age, we were interested to explore whether the make-up of the gut microbiome might influence the strength of the gut immune response."

Co-housing young and aged mice (mice naturally like to sample the faecal pellets of other mice!) or more directly performing faecal transfer from young to aged mice boosted the gut immune system in the aged mice, partly correcting the age-related decline.

"To our surprise, co-housing rescued the reduced gut immune response in aged mice. Looking at the numbers of the immune cells involved, the aged mice possessed gut immune responses that were almost

indistinguishable from those of the younger mice." commented Dr. Michelle Linterman, [group leader](#) in the Immunology programme at the Babraham Institute.

The results show that the poor gut [immune response](#) is not irreversible and that the response can be strengthened by challenging with appropriate stimuli, essentially turning back the clock on the gut immune system to more closely resemble the situation in a young mouse.

The results of the study have relevance for treating age-related symptoms, confirming a link between the effects of the ageing immune system and age-associated changes in the gut microbiome. By demonstrating the effectiveness of interventions that have a [positive impact](#) on the composition of the gut microbiome, this research suggests that faecal transplants, probiotics, co-habitation and diet might all prove to be ways to facilitate healthy ageing.

More information: *Nature Communications* (2019). [DOI: 10.1038/s41467-019-10430-7](#)

Provided by Babraham Institute

Citation: Could boosting the gut microbiome be the secret to healthier older age? (2019, June 4) retrieved 20 April 2024 from <https://medicalxpress.com/news/2019-06-boosting-gut-microbiome-secret-healthier.html>

<p>This document is subject to copyright. Apart from any fair dealing for the purpose of private study or research, no part may be reproduced without the written permission. The content is provided for information purposes only.</p>
--