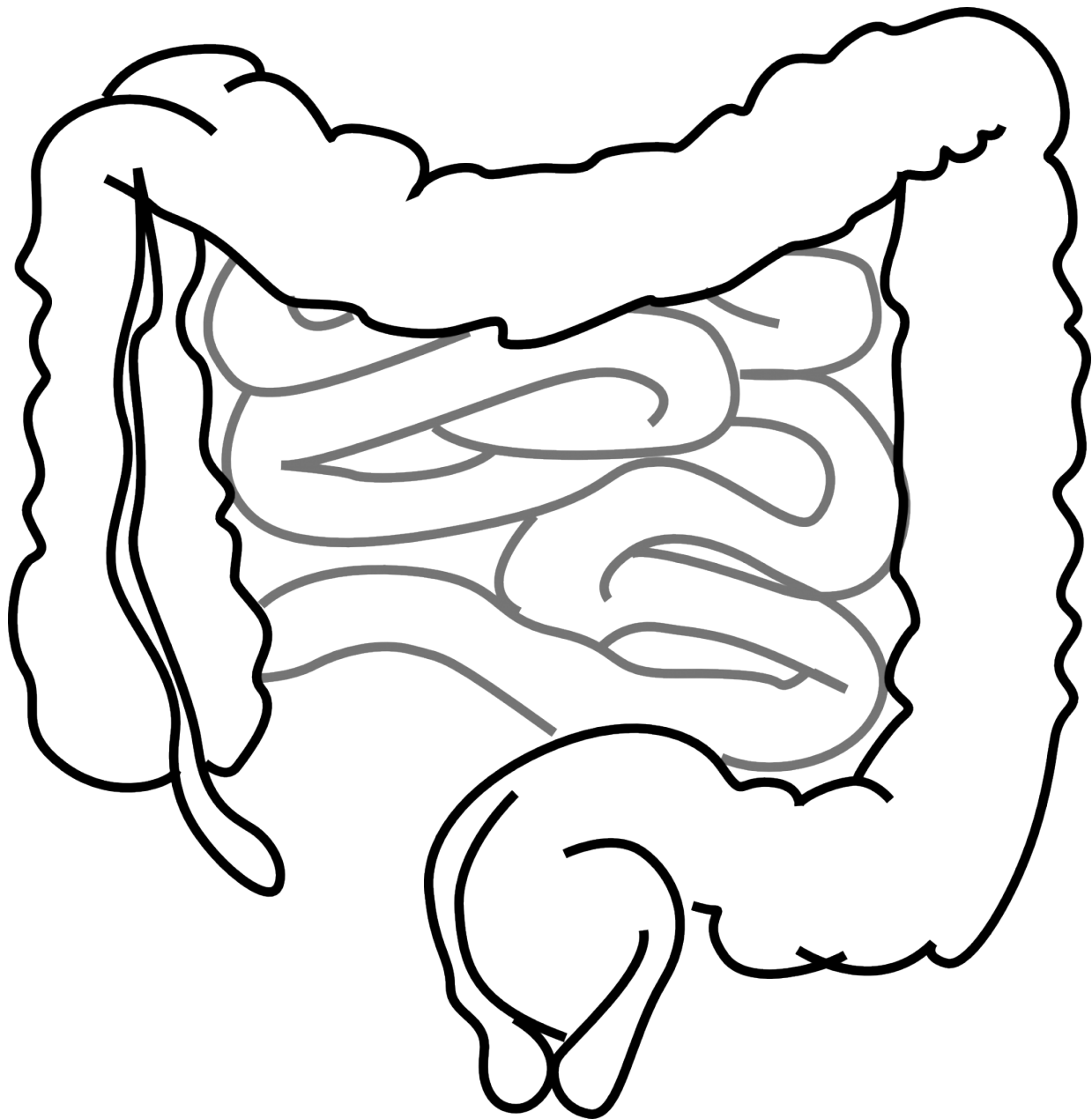


New gut-brain link: how gut mucus could help treat brain disorders

May 28 2020



Credit: CC0 Public Domain

Mucus is the first line of defence against bad bacteria in our gut. But could it also be part of our defence against diseases of the brain?

Bacterial imbalance in the gut is linked with Alzheimer's disease, autism and other [brain disorders](#), yet the exact causes are unclear.

Now a new research review of 113 neurological, gut and microbiology studies led by RMIT University suggests a common thread—changes in gut mucus.

Senior author Associate Professor Elisa Hill-Yardin said these changes could be contributing to bacterial imbalance and exacerbating the core symptoms of neurological diseases.

"Mucus is a critical protective layer that helps balance good and [bad bacteria](#) in your gut but you need just the right amount—not too little and not too much," Hill-Yardin said.

"Researchers have previously shown that changes to intestinal mucus affect the balance of bacteria in the gut but until now, no-one has made the connection between gut mucus and the brain.

"Our review reveals that people with autism, Parkinson's disease, Alzheimer's and Multiple Sclerosis have different types of bacteria in their gut mucus compared with healthy people, and different amounts of good and bad bacteria.

"It's a new gut-brain connection that opens up fresh avenues for

scientists to explore, as we search for ways to better treat disorders of the brain by targeting our 'second brain' – the gut."

Gut mucus is different depending on where it's found in the [gastrointestinal tract](#)—in the small intestine it's more porous so nutrients from food can be easily absorbed, while in the colon, the mucus is thick and should be impenetrable to bacteria.

The mucus is full of peptides that kill bacteria, especially in the small intestine, but it can also act as an energy source, feeding some of the bacteria that live inside it.

Gut neurons and brain disorders

Scientists are learning that brain disorders can affect neurons in the gut. For example, RMIT researchers have shown that neurons in both the brain and the gut nervous systems are affected in autism.

The new review suggests that reduced gut mucus protection may make patients with [neurological diseases](#) more susceptible to gastrointestinal problems.

Hill-Yardin said severe gut dysfunction could exacerbate the symptoms of brain disorders, significantly affecting quality of life for patients and their families.

"If we can understand the role that gut mucus plays in brain disease, we can try to develop treatments that harness this precise part of the gut-[brain](#) axis," she said.

"Our work shows that microbial engineering, and tweaking the gut mucus to boost good [bacteria](#), have potential as therapeutic options for neurological disorders."

'The role of the gastrointestinal [mucus](#) system in intestinal homeostasis: implications for neurological disorders' is published in *Frontiers in Cellular and Infection Microbiology*.

More information: Madushani Herath et al. The Role of the Gastrointestinal Mucus System in Intestinal Homeostasis: Implications for Neurological Disorders, *Frontiers in Cellular and Infection Microbiology* (2020). [DOI: 10.3389/fcimb.2020.00248](https://doi.org/10.3389/fcimb.2020.00248)

Provided by RMIT University

Citation: New gut-brain link: how gut mucus could help treat brain disorders (2020, May 28) retrieved 11 May 2024 from <https://medicalxpress.com/news/2020-05-gut-brain-link-gut-mucus-brain.html>

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.