Research snapshot

November 2021

AutismCRC Biobank

Understanding autism-gut microbiome relationships

Part of the systems genomics of autism project

Background

Gut complaints commonly affect autistic people. Some researchers have even suggested that bacteria within our gut – the gut microbiome – affect the brain and 'cause' autism.

These claims have rapidly progressed to early clinical trials, spin-off companies marketing microbiome-based interventions, and widespread reporting by popular media.

However, the evidence to support these claims is not strong, because studies have been small and have not accounted for important factors such as diet. This means earlier results have been difficult to reproduce.

Aim

To investigate claims of relationships between autism and the gut microbiome, in the largest and richest autism microbiome dataset to date.

Who took part?

247 children from the Australian Autism Biobank and Queensland Twin Adolescent Brain Project, who provided a stool sample and completed a dietary questionnaire.

How we did the research

Microbial DNA in stool samples was sequenced to profile the microbiome.

This microbiome data was combined with dietary, clinical and genetic data.

Importantly, we carefully considered factors that can affect the microbiome, including age, diet, stool consistency, antibiotic and probiotic use.

Who did the research?

mater research

The University Of Queensland AUSTRALIA

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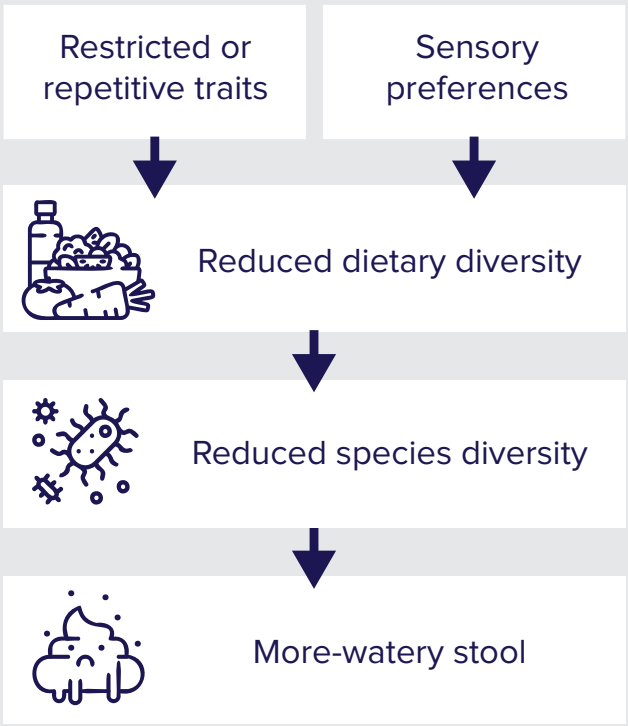
What did we find?

Our study found limited evidence of direct relationships between autism and the stool microbiome.

Instead, we found evidence that autistic traits such as restricted and repetitive interests, and sensory sensitivity are associated with a more restricted diet. This in turn drives microbiome changes, which are associated with more-watery stool.



What does this mean?

Our findings are contrary to suggested causal links between autism and the gut microbiome.

We recommend that research claiming a causal effect of the microbiome on autism or autistic traits be treated with caution. That is, changes to the microbiome appear to be a consequence of being autistic, rather than a cause.

Our findings suggest that **interventions that directly target the microbiome** (e.g., experimental faecal microbiota transplants, and other gut health remedies) are **unlikely to have an effect on autistic traits**.

Our work instead turns the spotlight to diet.

Many autistic people have **restricted diet**. Managing adequate nutrition for autistic individuals is a priority. This requires further study.

Australian Autism Biobank

The Australian Autism Biobank is Australia's largest collection of biological, behavioural, environmental and medical information of children on the autism spectrum and their families. Almost 3,000 autistic and non-autistic children and adults participated from across Australia.

The Australian Autism Biobank is an initiative of Autism CRC, which receives funding from the Australian Government.

For more information, visit **autismcrc.com.au/biobank**