

# Scientists develop first vaccine to help control autism symptoms

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A first-ever vaccine created by University of Guelph researchers for gut bacteria common in autistic children may also help control some autism symptoms. The groundbreaking study by Brittany Pequegnat and Guelph chemistry professor Mario Monteiro appears this month in the journal *Vaccine*.

They developed a carbohydrate-based vaccine against the gut bug, *Clostridium bolteae*.

*C. bolteae* is known to play a role in [gastrointestinal disorders](#), and it often shows up in higher numbers in the GI tracts of [autistic children](#) than in those of healthy kids.

More than 90 per cent of children with [autism spectrum disorders](#) suffer from chronic, severe [gastrointestinal symptoms](#). Of those, about 75 per cent suffer from diarrhea, according to current literature.

"Little is known about the factors that predispose autistic children to *C. bolteae*," said Monteiro. Although most infections are handled by some antibiotics, he said, a vaccine would improve current treatment.

"This is the first vaccine designed to control constipation and diarrhea caused by *C. bolteae* and perhaps control autism-related symptoms associated with this microbe," he said.

Autism cases have increased almost sixfold over the past 20 years, and

scientists don't know why. Although many experts point to environmental factors, others have focused on the [human gut](#).

Some researchers believe toxins and/or metabolites produced by [gut bacteria](#), including *C. bolteae*, may be associated with symptoms and severity of autism, especially regressive autism.

Pequegnat, a master's student, and Monteiro used bacteria grown by Mike Toth, a Guelph PhD student in the lab of microbiology professor Emma Allen-Vercoe.

The new anti- *C. bolteae* vaccine targets the specific complex [polysaccharides](#), or carbohydrates, on the surface of the bug.

The vaccine effectively raised *C. bolteae*-specific antibodies in rabbits. Doctors could also use the vaccine induced antibodies to quickly detect the bug in a clinical setting, said Monteiro.

The vaccine might take more than 10 years to work through pre-clinical and human trials, and it may take even longer before a drug is ready for market, Monteiro said.

"But this is a significant first step in the design of a multivalent vaccine against several autism-related gut bacteria," he said.

Monteiro has studied sugar-based vaccines for two other gastric pathogens: *Campylobacter jejuni*, which causes travellers' diarrhea, and *Clostridium difficile*, which causes antibiotic-associated diarrhea.

Provided by University of Guelph

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