

## The gut microbiome: when autism makes a connection to cancer!

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**Abstract:** Gut microbiota plays a key role in regulating intestinal and brain function.[1,2] Gastrointestinal turbulences are generally reported in children with autism spectrum disorder and found a deficit of the expression levels of genes encoding disaccharidases and hexose transport enzymes that may be controlled by the transcription factor CDX2 (caudal type homeobox 2). The dysbiosis in gut Firmicutes: Bacteroidetes ratio including greater abundance of Clostridium clusters I, II, XI was associated with the deficiencies in host disaccharidase and hexose transporter messenger RNA expression.[3] On the other hand, accumulating evidence indicates that altered gut microbiota profiles may be related to the etiology of certain types of cancer and the severity of side effect.[4] Biotransformation of cholic acid through a small population of intestinal species in the genus Clostridium bacteria including *Clostridium sordellii* (Clostridium cluster XI) by 7 $\alpha$ -dehydroxylation results in formation of the secondary bile acids, deoxycholic acid (DCA).[5] Indeed, increased level of DCA in feces, serum, and bile of colon cancer patients has been reported by numerous investigators.[6] Secondary bile acids as cytotoxic compound may cause DNA damage by increasing intracellular production of reactive oxygen and reactive nitrogen species due to increased oxidative stress.[7] In this opinion article, the possible roles of *C. sordellii* (Clostridium cluster XI) in the gut microbiota of autistic children and their susceptibility to colon cancer has been reviewed. In conclusion, this close relationship may carries risks for disease development.

**Keywords:** Autism; Cancer; Clostridium; Microbiome

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