

## Child with autism improves with antibiotic; prompts new investigations into autism

March 24 2015

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Quinn, an autistic boy, and the line of toys he made before falling asleep. Repeatedly stacking or lining up objects is a behavior commonly associated with autism. Credit: Wikipedia.

John Rodakis, the parent of a child with autism was not looking to launch an international investigation into the microbiome (the collection of microorganisms that live on and in us) and autism, but, as he describes in his newly published article in the scientific journal *Microbial Ecology*

*in Health and Disease*, when his young son's autism unexpectedly and dramatically improved while taking an antibiotic for strep throat, he began a quest to understand why.

Following the surprise improvement, Mr. Rodakis, who in addition to being a parent is also a medical venture capitalist with a background in molecular biology and a Harvard MBA, began to examine the medical literature where he found a lone study from 1999 conducted at Chicago Rush Children's hospital that documented a similar phenomenon in autistic children. After speaking with other parents and clinicians he discovered that improvements on antibiotics such the one his son experienced were frequently observed, but not well studied. "I was determined to understand what was happening in the hope of helping both my son and millions of other children with [autism](#)."

The Father's quest led him to world-renowned autism researcher Dr. Richard Frye, head of the Autism Research Program at Arkansas Children's Hospital Research Institute and his team and together they began a collaboration that grew to include other researchers from many different medical disciplines from all parts of the world. As the parent/researcher collaboration intensified, two ideas emerged: that the group should design a research trial to try to understand this unusual phenomenon and to hold a scientific conference on autism and the [microbiome](#). "Careful parental observations can be crucial. In science we take these observations, put them through the scientific method, and see what we find. This is what can lead to ground breaking scientific discoveries and breakthroughs in the field", said Dr. Frye.

This past June, the group held a first-of-its-kind conference: The First International Symposium on the Microbiome in Health and Disease with a Special Focus on Autism which was co-sponsored by Mr. Rodakis' newly formed non-profit N of One: Autism Research Foundation. As a result of that conference, a special issue on Autism and The Microbiome

is being published in the peer-reviewed scientific journal, *Microbial Ecology in Health and Disease*. The issue features articles from conference presenters and others including an article by Mr. Rodakis, titled "An n=1 case report of a child with autism improving on antibiotics and a father's quest to understand what it may mean."

New evidence for the microbiome's involvement in [autism spectrum disorder](#) has been rapidly accelerating in recent years. Fifteen years ago, another autism parent, Ellen Bolte, had what at the time was a far-fetched hypothesis: that gut bacteria played a role in some cases of autism. Her efforts resulted in the 1999 small, but ground-breaking clinical trial conducted at Chicago Rush Children's hospital that Mr. Rodakis found while doing his research. Today, that hypothesis has grown into a large body of evidence demonstrating a link between the microbiome and autism, also called the "gut-brain" connection. Just this summer a team at Arizona State University led by Dr. Rosa Krajmalnik-Brown published findings repeating what others have documented that showed that children with autism exhibited less bacterial diversity in their guts than typically developing children. Dr. Krajmalnik-Brown, was also a speaker at the conference and also has a paper appearing in the special issue.

In the article out this month, Mr. Rodakis outlines the personal story of how his child's autism symptoms improved while taking a common antibiotic and then goes on to summarize recent human and animal-model research into possible biological mechanisms at work. Mr. Rodakis does not suggest that antibiotics are a treatment for autism, but rather may be useful as a research tool. Mr. Rodakis adds, "Current research is demonstrating that gut bacteria play previously undiscovered roles in health and disease throughout medicine. The evidence is very strong that they also play a role in autism. It's my hope that by studying these antibiotic-responding children, we can learn more about the core biology of autism."

Mr. Rodakis argues that that the microbiome's role in autism is a promising area for further research, though under-funded by the current major public and private organizations that fund [autism research](#). Mr. Rodakis' active efforts to shape and encourage research into promising areas is part of a broader trend of patients and affected families playing an increasing role in driving promising medical research. Mr. Rodakis argues that the link between the microbiome and autism is not just plausible, but given recent research, likely.

**More information:** *Microbial Ecology in Health and Disease*, [www.microbecolhealthdis.net/index.php/medecol/article/view/26382](http://www.microbecolhealthdis.net/index.php/medecol/article/view/26382)

Provided by Autism Research Foundation

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