

# New study finds vitamin D helps to regulate 3 genes involved in autism.

When a member of the National Academy of Sciences speaks, most people listen. Professor Bruce Ames spoke on a subject close to Dr Cannell's heart recently, autism. He & Rhonda Patrick, discovered several of vitamin D's potential mechanisms of action in preventing and treating autism. Patrick, R. P., & Ames, B. N. Vitamin D hormone regulates serotonin synthesis. Part 1: relevance for autism. The FASEB Journal, 2014.

Using the University of California–Santa Cruz's genome browser, the authors identified 3 genes that are abnormally expressed in autism. They report that all three genes are directly regulated by vitamin D. That is, the three genes have a vitamin D response element on the gene. This means that vitamin D is one of the hormones that controls expression of that gene.

The authors also solved some of the mysteries surrounding autism. One mystery is why autistic individuals have low levels of serotonin in their brain but elevated serotonin levels in their peripheral blood. The authors discovered that there are two genes involved in turning tryptophan into serotonin, a central gene and a peripheral gene.

Vitamin D up-regulates the central serotonin gene and down-regulates the peripheral serotonin gene. That may explain why autistic kids have elevated blood serotonin but decreased brain serotonin when their vitamin D levels are low. To date, many studies of vitamin D levels in autism show autistic kids are vitamin D deficient.

Vitamin D deficiency to show a risk factor for autism was Professors John McGrath, Darryl Eyles. In 2001, they first theorized that "vitamin D deficiency is a candidate risk factor for the neurodevelopmental disorders." mechanism by which it works.

Drs Patrick and Ames may have solved another mystery of autism: why autistic children have low levels of oxytocin. Oxytocin is a hormone that does a lot of things, such as promote socialization. The authors explain that oxytocin is also directly controlled by vitamin D. If children are deficient in vitamin D, they will also have low levels of oxytocin.



The authors also may have explained why autism is five times more common in boys than in girls. It turns out that oestrogen greatly increases expression of the central serotonin gene, thus protecting girls from autism caused from vitamin D deficiency but exposing boys.

Finally, tryptophan, the amino acid that is metabolized into serotonin, is also metabolized into a protein called kynurenine. Kynurenine is intimately involved in immunity. In the placenta, it is required during pregnancy to prevent a general autoimmune response by generating regulatory T cells, which maintains immunological tolerance to the foetus. This paper is, in my opinion, ground breaking. Just as John McGrath and Darryl Eyles used animal models to show relationships between vitamin D deficiency and neurodevelopmental disorders, Rhonda Patrick and Bruce Ames are the first to explain the biochemical mechanism by which it works.

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## *Autism Causes, Prevention & Treatment.*

The potential enemy to the acceptance of VitD being utilized as proposed by Dr Cannell is that the health care systems does what it can to discourage competition from alternative approaches. The profit oriented health care system appears to view VitD as strong competition because it is known to effectively reduce risks of disease & it is cheap. One way has been to treat VitD as a pharmaceutical drug, demanding expensive RCT's They forget the history of the most effective way to prevent *spina bifida* is to take folic acid supplements before and during pregnancy.

VitD is not a drug but a molecule mainly manufactured in the body or obtained from supplements. Most food has very little. Absolutely proven for health care outcomes such as breast & colorectal cancers, CVD, dental caries & all-cause mortality. Just as folic acid was accepted it is up to those with the greatest need to implement change & accept one of medicines greatest researchers, Dr Cannell's finding. We know resistance will be forthcoming from the medical profession, it will likely be considered akin to letting the camel get it nose under the tent, opening the door to widespread acceptance of VitD. Children deserve better...

Agent

From VitaminDwiki.com.

Did you know?

· **Rickets – 26 % had autism: no rickets, no autism (both associated with low vitamin D) – June 2015**

· **Autism decreased in 8 out of 10 children supplemented with vitamin D – April 2015**

· **Autism and lack of D3 vitamin – review Sept 2014**

· **Autism – healthy siblings had higher vitamin D levels at birth – Jan 2015**

**The Role Of Vitamin D In Autism**

· Vitamin D inhibits the synthesis and biological actions of pro-inflammatory prostaglandins, which are elevated in autism.

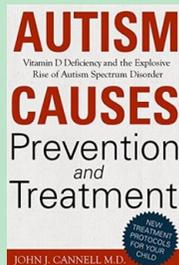
· A number of autoantibodies to the brain have been identified in autistic children, causing some to believe that many cases of autism are autoimmune.

· Research has shown that high levels of certain brain antibodies are associated with low vitamin D status.

· Vitamin D up regulates neurotrophins, the family of proteins that induce the development, function, and survival of nerve and brain cells, up to 5-fold.

· Vitamin D stimulates production of glutathione and several other antioxidant and detoxification enzymes. Vitamin D has been shown to have a beneficial effect on many of the mechanisms of action that underlie autism, make vitamin D a smart option for children with autism.

**Buy this book, Dr John Cannell has many answers on Autism. Amazon has it...**



## Vit D3 Deficiency & Autism Epidemic:

Each year for the past 20 years, the number of children with autism spectrum disorder has increased 12%. The autism epidemic is a tragedy on a scale that is unlike any the Western world has faced in modern times. Families with autistic children are under enormous stress. They pay \$20,000 to \$100,000 per year for care of their child; lifetime costs may total more than \$3 million. The divorce rate for families with an autistic child is double that for families without one. The billion-dollar question, then, is "What causes autism?" Why has it reached epidemic proportions?

Studies by the Vitamin D Council has

found a major connection between "D" & Autism. The great thing about this discovery is that utilising "D" can have no downsides, only benefits.



## Taking Vitamins: Capsules or Topical Application?

### Juventus for Transdermal D absorption.

**Research on transdermal vitamin D3 absorption shows it's very advantageous but it's not a new way to get vitamin D into the body, nature has done this from the beginning, using the sun. Trials shows that transdermal vitamin D3 absorption is just over 5 times more absorbable than oral vitamin D3. This method of vitamin D3 absorption, using a combo of powerful cosmetic compounds makes your beauty & skin care regime. an integral component of your health protection regime.**

**Topical vitamin D raised blood level to 38 ng (better compliance than oral) – RCT March 2014**

## Autism decreased in 8 out of 10 children supplemented with vitamin D – April 2015

Vitamin D status in autism spectrum disorders and the efficacy of vitamin D supplementation in autistic children. Collectively, 80.72% (67/83) of subjects who received vitamin D3 treatment had significantly improved outcome, which was mainly in the sections of the CARS and aberrant behaviour checklist subscales that measure behaviour, stereotypy, eye contact, and attention span.

For the last year, I have been helping parents of autistic children correct their child's vitamin D deficiency. My very preliminary impressions are that if the child takes enough vitamin D about 25% of the parents report *dramatic* improvements in their child's autistic symptoms, about 50% of parents report *significant* improvements, and 25% of parents report no change. How could vitamin D help autism, a condition that is highly genetic? Research has demonstrated that vitamin D has multiple mechanisms of action, many of which have been demonstrated to play a role in autism.

How could vitamin D help autism, a condition that is highly genetic? Research has demonstrated that vitamin D has multiple mechanisms of action, many of which have been demonstrated to play a role in autism. Some believe that autism is a disease of neuro-inflammation. According to scientific research vitamin D has profound anti-inflammatory actions.<sup>13</sup> Experimental models show both direct and indirect anti-inflammatory effects of vitamin D involving both arms of the immune system (innate immunity and adaptive immunity). Recent research reveals that activated vitamin D exhibits multiple anti-inflammatory effects.

"I arrived at my conclusion using a simple risk-benefit analysis. What's the risk of having high-normal vitamin D levels, the levels lifeguards have in summer? What are the potential benefits? Studies suggest that the benefits of higher VitD levels are enormous while the risk is almost none"

