Breeding Ground
Pseudoscience, Voodoo Science, and Junk Science in Autism Research and Treatment
“That which can be asserted without evidence, can be dismissed without evidence.”
— Christopher Hitchens
According to David Hume...

We should accept no claim as true unless the evidence available makes the non-existence of the thing claimed more miraculous than its existence.
In science, keeping an open mind is a virtue – just not so open that your brains fall out.

James Oberg
char·la·tan  
/ˈSHärələtən, ˈSHärəltən/  
noun  
1. a person falsely claiming to have a special knowledge or skill; a fraud.  
synonyms: quack, sham, fraud, fake, impostor, hoaxer, cheat, deceiver, double-dealer, swindler, fraudster, mountebank;  
More
Heavy Metal?

Mercury Rising
Exposing the Vaccine-Autism Myth

By Matthew P. Normand and Jesse Dallery

On June 11, 2007, nearly 5,000 parents of autistic children filed a lawsuit against the federal government, claiming that childhood vaccines (specifically the mercury-containing thimerosal in the vaccines) caused their children’s autism. The previous year The New York Times ran a column that was skeptical of the claimed link between autism and vaccines, which generated this comment on an internet message board that is typical of the anecdotal thinking that perpetuates this myth:

You say, ‘There is no proven link’ between mercury and autism. There also is ‘no proven link’ between going outside in the rain and cold without a hat or coat and getting the sniffles. Look at the data: the epidemic of autism mirrors the administration of vaccines with mercury. Now that they are off the shelves (more or less), the cases are going down.
“We’ll be relying on three sources of raw data – direct mail, phone survey, and Eddie from the mail room.”
EXCLUSIVE DETAILS
Why Jen Took John Back!
Her flip-flop on babies
'They can't deny the chemistry'

BEATING AUTISM
HOW I SAVED MY SON
Battling doctors, a failed marriage and her own guilt, Jenny McCarthy tells how son Evan recovered from autism

SHANNA EXCLUSIVE
DRAMA AT TRAVIS’ BEDSIDE

Zac Efron: Us’ Hot Hollywood Star of the Year

“‘When he finally hugged me I prayed, ‘Please God don’t let this be the only time’”
If only SOME get vaccinated...

...the virus spreads.

Healthy, non-vaccinated  Healthy, vaccinated  Not-vaccinated, sick, contagious

If MOST get vaccinated...

...spreading is contained.

"MY SON, JACK, IS AUTISTIC. WE CALL HIM THE CHELATION KID. CHELATION IS A METHOD OF REMOVING HEAVY METALS FROM THE BODY, INCLUDING MERCURY."

"THE SICK THING IS - WE TOOK JACK TO GET VACCINATED -"

"YOU'LL HEAR "EXPERTS" SAYING THE VACCINES WERE SAFE AND THAT CHELATION WON'T WORK. THEY'LL DISMISS US AS KOOKS OR POOR SOULS WHO'LL BUY ANY QUACK SOLUTION."

"NEVER REALIZING THAT THE VACCINES CONTAINED HIGH LEVELS OF A FORM OF MERCURY CALLED THIMEROSAL."

"FOR THE RECORD - I DON'T BELIEVE IN BIGFOOT OR NESSIE, OR THAT ELVIS IS ALIVE."

"BUT I DO BELIEVE WITH ALL MY HEART THAT MY SON WAS POISONED BY THE MERCURY IN HIS VACCINATIONS."

"AND, UH, I THINK THERE MIGHT BE UFOS."

* PRONOUNCED KEY-LAY-SHUN

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Chelation treatment for autism spectrum disorders: A systematic review

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ABSTRACT

Chelation treatment is used to eliminate specific metals from the body, such as mercury. It has been hypothesized that mercury poisoning may be a factor in autism and data suggest that perhaps 7% of individuals with autism spectrum disorder (ASD) have received chelation treatment. It would therefore seem timely to review studies investigating the effects of chelation treatment for individuals with ASD. To this end, we conducted a systematic search to identify studies that have evaluated the effects of chelation on autism symptomatology. Our search identified five studies, which were analyzed in terms of (a) participant characteristics, (b) dependent variables, (c) study outcomes, and (d) certainty of evidence. Four of the five studies found mixed results and only one study reported positive results. However, given the significant methodological limitations of these studies, the research reviewed here does not support the use of chelation as a treatment for ASD.

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JUST THE LITTLE FITS OF HISTORY REPEATING...
It is sad that hundreds of millions of dollars have gone into studies that never had much promise of finding a way to prevent the tragedy of cancer in children. The many inconclusive and inconsistent studies have generated worry and fear and have given peace of mind to no one. The eighteen years of research have produced considerable paranoia, but little insight and no prevention. It’s time to stop wasting our valuable resources. We should redirect them to research that will be able to discover the true biologic causes of the leukemic clones that threaten the lives of children.
It is sad that hundreds of millions of dollars have gone into studies that never had much promise of finding a way to prevent the tragedy of autism in children. The many inconclusive and inconsistent studies have generated worry and fear and have given peace of mind to no one. The eighteen years of research have produced considerable paranoia, but little insight and no prevention. It’s time to stop wasting our valuable resources. We should redirect them to research that will be able to discover the true environmental causes of the ASD that threaten the lives of children.
Everybody who went to the moon has eaten chicken!

Good grief. Chicken makes you go to the moon!
I used to think correlation implied causation.

Then I took a statistics class. Now I don’t.

Sounds like the class helped.
Well, maybe.
Benjamin Disraeli said there are three kinds of lies: lies, damn lies and statistics.

Nine out of ten people say that was Mark Twain.

There are three kinds of punchlines: obvious, painfully obvious...

I thought the Twain bit added an extra layer.
Conceive or Die?

In October 1995, the U.K. Committee on Safety of Medicines issued a warning that third-generation oral contraceptive pills increased the risk of potentially life-threatening blood clots in the legs or lungs twofold.
Relative Risk = 100%
increase in risk

Absolute Risk = 2 in 7,000 women

Gernsbacher et al. (2005)

An Autism Epidemic?

Fig. 1. Distribution of male height in McClennan County, Texas. Shaded areas represent segments of the population defined as “tall” according to two standards: men over 74.5 in. (2,778) versus men over 72 in. (10,360).
“Has vitamin C been used in the treatment of autism? I am aware of only two studies in which vitamin C was specifically evaluated as an intervention in autism...But what is the right dose for autism? Nobody knows. But vitamin C is extremely safe, even in massive doses, so it would be well to find out what the optimal dose for autism might be.”

(B. Rimland)

The review and critique has examined the literature produced by megavitamin proponents and by those who have attempted to replicate their basic and clinical work. It concludes in this regard that the credibility of the megavitamin proponents is low. Their credibility is further diminished by a consistent refusal over the past decade to perform controlled experiments and to report their new results in a scientifically acceptable fashion. Under these circumstances this Task Force considers the massive publicity with which they promulgate...to be deplorable.

(from 1973)
The most airtight study in psychiatry?

Rimland et al. 1978

16 children who had responded most to B6 participated in a 1974 investigation of the effects of B6 alone. All children continued to receive all other forms of intervention (e.g., drugs or therapy) that were on-going prior to the study.

The authors concluded that a worsening of autistic symptoms was causally related to the systematic withdrawal of B6 and, therefore, that B6 was implicated in the improvement of autistic symptoms.

EATING for AUTISM

THE 10-STEP NUTRITION PLAN TO HELP TREAT YOUR CHILD’S AUTISM, ASPERGER’S, OR ADHD

Elizabeth Strickland, MS, RD, LD

INCLUDES 75 GLUTEN-FREE, CASEIN-FREE RECIPES
Gluten-free and casein-free diets in the treatment of autism spectrum disorders: A systematic review

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Abstract

This paper systematically reviews research on the effects of gluten-free and/or casein-free (GFCF) diets in the treatment of ASD. Database, hand, and ancestry searches identified 15 articles for review. Each study was analyzed and summarized in terms of (a) participants, (b) specifics of the intervention, (c) dependent variables, (d) results, and (e) certainty of evidence. Critical analysis of each study’s methodological rigor and results reveal that the current corpus of research does not support the use of GFCF diets in the treatment of ASD. Given the lack of empirical support, and the adverse consequences often associated with GFCF diets (e.g., stigmatization, diversion of treatment resources, reduced bone cortical thickness), such diets should only be implemented in the event a child with ASD experiences acute behavioral changes, seemingly associated with changes in diet, and/or medical professionals confirm through testing the child has allergies or food intolerances to gluten and/or casein.
Hyperbaric Oxygen Therapy (HBOT)
Lerman et al. (2008)
Granpeesheh et al. (2009)
Jepson et al. (2011) *
Fig. 1 Rates of stereotypy, aberrant behaviors, and adaptive behaviors for Group 1 (Participants 011, 008, and 015)
Fig. 2 Rates of stereotypy, aberrant behaviors, and adaptive behaviors for Group 2 (Participants 007, 010, 014)
Fig. 3 Rates of stereotypy and aberrant behaviors for Group 3 (Participants 019, 004, 018, and 005)
PERSUASION VS. ARGUMENT

What is the difference?
Why does it matter?

YOU WANT PROOF?
I'LL GIVE YOU PROOF!
The Struggle for Rationalism

- Discoverers make their claims directly to the popular media, rather than to fellow scientists and avoid the peer-review process.

- Anecdotal rather than experimental evidence is used to support the claim.

- Various “authorities” are presented to bolster the claim, often from unrelated fields.

- The discoverer or discoverers work in isolation from the mainstream scientific community.

- The claim, if true, would require a change in the understanding of the fundamental laws of nature.

- Discoverers claim that a conspiracy has tried to suppress the discovery or that the work is so cutting-edge that it is not appreciated by the dinosaurs of the mainstream.
They laughed at Copernicus. They laughed at the Wright brothers. Yes, well, they laughed at the Marx brothers.

Shermer, 1997, p. 50
“I have the advantage of having found out how hard it is to get to really know something...I know what it means to know something...I see how they get their information and I can’t believe that they know it. They haven’t done the work necessary...” — Richard Feynman
FIRST DO NO HARM