The List That Won't Die

A Fact-Check of the “24 Studies Prove Vaccines Cause Autism” Claim

Contents

Introduction

A claim keeps circulating, usually with the same tone of gotcha triumphalism: scientists say there's no evidence vaccines cause autism, except for these two dozen peer-reviewed studies that prove otherwise. It arrives dressed as a citation dump, twenty-some PubMed and PubMed Central links, no summaries, no context, just the raw authority of ncbi.nlm.nih.gov. The implicit argument is simple: look how many! Surely this much data can't be nothing.

The list's age matters. Versions of it trace back to at least 2007, when it began as a shorter compilation and has since been copied, expanded, stripped of context, and re-posted by dozens of accounts over nearly two decades, most recently recirculated on X in 2026 and referenced in appearances by commentators like David Martin. It is not new research. It is the same handful of papers, laundered through a new post every few years, each time presented as if freshly discovered.

This document is the result of doing something few people ever do: actually read each paper, identify what kind of claim it can and cannot support, and name any specific reasoning error involved when it gets pressed into service as proof of a vaccine-autism link. The goal is not to say “these are wrong” and move on. It is to demonstrate a pattern, because the pattern is the real story. A functioning claim needs evidence that actually says what it's claimed to say. This list, and others like it, substitutes volume for validity, betting that no reader will check twenty-four sources when they will happily distrust one confident paragraph. That bet is usually correct. This document tries to make it wrong, at least once.

I must also say when I undertook this effort, I refused to make the same mistake the anti-vaccine community so often does. That mistake is deciding my conclusion before actually researching and closing my mind to anything that might change that mind. If ever there is actual clinical proof, real peer-reviewed scientific analysis that vaccines cause autism, I will be first in line to declare I was wrong. That is how science and reason work.

Two commitments guide what follows. First, every entry gets read on its own terms, not dismissed by category. If a paper raises something legitimately unresolved, that gets said outright rather than folded into a blanket denial. Second, the count of the list is not the point. Twenty-four flawed studies are not one-twenty-fourth of a valid study. They are twenty-four separate failures to answer the same question, and no amount of stacking gets you a foundation instead of a pile.

A Note on the Actual Science

Here is what the actual weight of evidence says, so the rest of this document reads as a correction against a real baseline rather than an argument conducted in a vacuum. Large population studies, including a 2015 JAMA analysis of more than 95,000 children, a Danish cohort study following over 650,000 children, and a November 2025 review by the WHO's Global Advisory Committee on Vaccine Safety examining 31 primary studies published between 2010 and 2025, have consistently found no causal association between childhood vaccination and autism spectrum disorder. This is not a case of “the science isn't settled.” One retracted, fraudulent 1998 paper generated a hypothesis. That hypothesis got tested exhaustively, at massive scale, in multiple countries, by independent research teams, and did not hold up. That is what a resolved scientific question looks like.

Glossary: The Fallacies at Work

These are the standard, general-purpose fallacies taught in any critical-thinking course, the same sixteen most people mean when they say “straw man, ad hominem, that whole list.” One addition has been made to the standard set: False Analogy, included because several entries below rely on mice or isolated cells standing in for vaccinated children, a comparison the usual sixteen don't quite name. Each entry in this document gets tagged with whichever of these actually apply, and only those that actually apply.

Straw Man
Misrepresenting an argument in a weaker form to make it easier to knock down than the real argument would be.

Ad Hominem
Attacking the person making a claim instead of addressing the claim itself.

Appeal to Authority
Treating a claim as true because an authoritative-sounding source said it, rather than because of the evidence behind it. Includes researchers citing their own prior work, or their own credentials, as though that alone settles the question.

False Dilemma
Presenting only two options when more actually exist.

Slippery Slope
Claiming one step will inevitably lead to an extreme, unrelated outcome, without showing the chain of causation that would actually connect them.

Circular Reasoning
An argument whose conclusion is already assumed in its premise, so that no possible evidence could count against it. If a finding and its opposite would both be read as confirming the same theory, the theory isn't being tested.

Appeal to Emotion
Substituting an emotional reaction, fear, outrage, grief, for evidence.

Bandwagon
Treating something as true or correct because many people believe it, or because a list of it looks long.

Hasty Generalization
Drawing a broad conclusion from a sample too small, too narrow, or too different from the group it's meant to describe. This covers both a nine-patient case series treated as proof about all children, and a state-level or country-level correlation treated as proof about any individual child.

Red Herring
Introducing an irrelevant finding that distracts from the actual question being asked. A study that measures antibody levels, not vaccination status or diagnosis timing, and gets cited as though it answered the vaccine question, is a red herring.

Appeal to Nature
Assuming something is good, safe, or correct because it is “natural,” or bad because it isn't.

Tu Quoque
Deflecting a criticism by pointing out the critic is guilty of the same thing, instead of addressing the criticism itself.

No True Scotsman
Redefining a category after the fact to exclude any inconvenient counterexample.

Anecdotal Fallacy
Treating one person's story, however real and however painful, as though it outweighs broader, systematic evidence.

Post Hoc Ergo Propter Hoc
“After this, therefore because of this.” A child received a vaccine and was later diagnosed with autism, and temporal sequence gets treated as causal proof. Timing is not mechanism.

Appeal to Ignorance
Treating a lack of proof against a claim as though it were proof for the claim.

False Analogy
Treating two things as equivalent for the sake of an argument when the differences between them make the comparison misleading. A mouse brain, or a dish of isolated blood cells, is not a vaccinated child, and a finding in one does not transfer automatically to the other.

Three Labels That Aren't Fallacies

The seventeen fallacies above cover reasoning errors: wrong conclusions drawn the wrong way from real data. But three of the problems that show up repeatedly below aren't reasoning errors at all and forcing them into a fallacy category anyway would be dishonest in the same direction this whole document is trying to correct.

A paper being retracted isn't a logical mistake, it's a fact about its standing. A conflict of interest isn't a logical mistake, it's a fact about who wrote it and why they might want a particular answer to be true. A citation that doesn't say what it's claimed to say isn't a logical mistake either, it's just wrong sourcing. These three labels exist so that entries can be flagged accurately instead of stretched to fit a fallacy that doesn't quite apply. When one of these appears below, it means: not a reasoning error, a plain fact worth knowing before you weigh the source.

Conflict of Interest
A fact about who funded, conducted, or stands to financially or professionally benefit from a piece of research, especially relevant when the same small circle of authors reappears across a list as though they were independent confirmations of each other. Holding a conflict doesn't automatically make a finding false. It means the finding needs independent replication before it carries weight, and the absence of that replication is itself informative.

Retracted or Formally Discredited
A fact about a paper's current standing: it has been withdrawn by its own journal, or the journal has published a formal statement questioning its integrity, yet it continues to be cited as though it remains in good standing.

Misattributed Citation
A sourcing error, not a reasoning error. The claim attached to a link doesn't match what the linked paper actually says or studies, a strong sign that whoever compiled the list didn't read the source.

How To Read Each Entry

Every entry analysis used the same seven-part structure, in the same order, so a reader can skim the pattern prior to deciding to dive deeper into a given entry.

- **Entry number + title.** The paper's actual published title, verbatim, not a paraphrase. Lets a reader search for and find the real paper independently instead of trusting the description.
- **Link.** The exact URL as it appeared in the original circulating list. Kept in that form on purpose, so this document maps one-to-one onto the claim it's responding to and a skeptical reader can click straight through.
- **Authors.** Full author list, every name. This is what makes the recurring-cluster pattern visible across entries instead of buried in prose. A reader scanning down the author lines sees "Geier" repeat before they ever reach the closing section that says so explicitly.
- **Source.** Journal, year, and PMID or PMC identifier, plus retraction or Expression of Concern status where it applies. Establishes venue and current standing at a glance, before getting into content.
- **Fallacy.** The tag or tags pulled from the glossary, marked with an asterisk when it's one of the three non-fallacy labels instead. This is the verdict in shorthand, stated before the explanation, so a reader who only wants the tag doesn't have to dig for it, and so it lines up directly with the same column in the summary table.
- **"What it actually is."** The substantive section. States plainly what the paper actually studied, measured, or argued, in language a non-scientist can follow, and names the specific detail that earns the fallacy tag above it (sample size, database limitations, author affiliations, publication venue, retraction date). This is where the real work of the document happens.
- **"Honest note."** The check against overcorrection. States directly whether anything in the paper raises a legitimately open question science hasn't settled, or confirms plainly that nothing does and says why. This section exists specifically so the document doesn't read as reflexive dismissal, and it's the section most worth reading first if a reader is checking whether any single entry got treated unfairly.

A horizontal rule closes each entry before the next one starts, so the eye has a clear stopping point in a document meant to be skimmed as much as read straight through.

The Twenty-Four Citations

Presented in the order they typically appear.

Entry 1: A Two-Phase Study Evaluating the Relationship between Thimerosal-Containing Vaccine Administration and the Risk for an Autism Spectrum Disorder Diagnosis in the United States

Link: http://www.ncbi.nlm.nih.gov/pmc/articles/PMC3878266/

Authors: David A. Geier, Brian S. Hooker, Janet K. Kern, Paul G. King, Lisa K. Sykes, Mark R. Geier

Source: Translational Neurodegeneration, 2013 (PMC3878266)

Fallacy: Conflict of Interest (not a fallacy); Hasty Generalization

What it actually is:
Phase I of this study mines VAERS, the Vaccine Adverse Event Reporting System, a passive surveillance database that accepts unverified reports from anyone and whose own stewards (the CDC and FDA) explicitly state it cannot be used to establish that a vaccine caused a reported event. Phase II mines the Vaccine Safety Datalink for a different comparison. The author list is the Geier father-son team along with Hooker, Kern, King, and Sykes, all long-affiliated with the same handful of advocacy-adjacent organizations (the Institute of Chronic Illnesses, CoMeD). This is not five independent research teams reaching the same conclusion; it is one team publishing repeatedly. Mark Geier lost his medical license after Maryland regulators found he had subjected autistic children to an unapproved chemical-castration protocol (using Lupron) premised on his own vaccine-injury theories. David Geier was fined and sanctioned for practicing medicine without a license while assisting his father. The Institute of Medicine's 2004 review of earlier Geier-authored studies found their work methodologically flawed to the point of being uninterpretable.

Honest note:
None. A study built on a database its own operators say cannot support causal claims, from authors with a documented history of professional discipline tied to this exact theory, does not clear the bar for "legitimately open question."

Entry 2: A Positive Association Found between Autism Prevalence and Childhood Vaccination Uptake across the U.S. Population

Link: http://www.ncbi.nlm.nih.gov/pubmed/21623535

Authors: Gayle DeLong

Source: Journal of Toxicology and Environmental Health, Part A, 2011 (PMID 21623535)

Fallacy: Hasty Generalization; Conflict of Interest (not a fallacy)

What it actually is:
This study compares state-level vaccination coverage rates to state-level autism and speech-or-language-impairment prevalence rates. No individual child's vaccination status was ever linked to that same child's diagnosis; the entire analysis operates on 51 aggregate data points (the states plus D.C.). An independent statistical reanalysis of the same dataset found the correlation coefficient was 0.18, meaning vaccination differences accounted for roughly three percent of the variation in autism-rate differences between states,

with a p-value of 0.20, which is not statistically significant by conventional standards. The author, Gayle DeLong, was a board member of SafeMinds, an advocacy organization founded specifically to promote a vaccine-mercury-autism connection, at the time of publication.

Honest note:
None. Even taken entirely at face value and ignoring the conflict of interest, the reported statistical relationship is not strong enough to support the conclusion drawn from it, and an ecological design could not support a causal claim regardless of the numbers.

Entry 3: Thimerosal as Discrimination: Vaccine Disparity in the UN Minamata Convention on Mercury

Link: http://www.ncbi.nlm.nih.gov/pubmed/25377033

Authors: Reetika Chhawchharia, Jacob M. Puliyel

Source: Indian Journal of Medical Ethics, 2014 (PMID 25377033)

Fallacy: Misattributed Citation (not a fallacy)

What it actually is:
This paper is not an epidemiological study of autism at all. It is a bioethics and policy commentary examining whether international mercury-reduction treaty negotiations (the Minamata Convention) were allowing thimerosal-preserved, multi-dose vaccine vials to remain in wide use in low- and middle-income countries for cost reasons, after wealthier nations had largely phased them out. Autism is not the subject of the paper's analysis. A statistic that circulates attached to this citation across various versions of this list, claiming a 340 percent higher autism risk among African American children vaccinated before age two, does not appear anywhere in this paper. That figure comes from a different, unrelated source and has been pasted onto this PMID by whoever compiled an earlier version of the list, and every subsequent copy has repeated the error without checking it.

Honest note:
There is a real and separate ethical question buried underneath the false one: whether cost considerations led to different vaccine formulations being distributed to poorer countries than to wealthier ones. That is worth its own conversation. It has nothing to do with whether vaccines cause autism, and stapling it to that claim does a disservice to the actual argument the authors were making.

Entry 4: Methodological Issues and Evidence of Malfeasance in Research Purporting to Show Thimerosal in Vaccines Is Safe

Link: http://www.ncbi.nlm.nih.gov/pubmed/24995277

Authors: Brian S. Hooker, Janet K. Kern, David A. Geier, Boyd E. Haley, Lisa K. Sykes, Paul G. King, Mark R. Geier

Source: BioMed Research International, 2014 (PMID 24995277)

Fallacy: Conflict of Interest (not a fallacy); Appeal to Authority

What it actually is:
This is not a new study. It is an opinion and critique article that re-examines other researchers' already-published safety studies and argues their methodology was flawed, without presenting new independent data of its own. The author list is, again, the same recurring cluster from Entry 1: both Geiers, Hooker, Kern, Sykes, and King, joined here by Boyd Haley, a chemist and long-time thimerosal-autism advocate with no clinical or epidemiological training. Counting this alongside separately authored studies as though it were independent corroborating evidence inflates the appearance of a broad scientific case that does not actually exist; it is the same small group's argument, republished under a new title.

Honest note:
Critiquing the methodology of published research is a legitimate scientific activity in principle. The issue here is not that critique is illegitimate, it is that this critique comes from a group whose own primary research has repeatedly failed independent scrutiny, and treating their critique as freestanding evidence rather than as one side of a dispute is the error.

Entry 5: Abnormal Measles-Mumps-Rubella Antibodies and CNS Autoimmunity in Children with Autism

Link: http://www.ncbi.nlm.nih.gov/pubmed/12145534

Authors: Vijendra K. Singh, Sheren X. Lin, Elizabeth Newell, Courtney Nelson

Source: Journal of Biomedical Science, 2002 (PMID 12145534)

Fallacy: Red Herring

What it actually is:
This is a small serology study: blood samples from 125 autistic children and 92 controls were tested for antibody patterns. No vaccination records were examined at all, and no comparison was made between vaccinated and unvaccinated children. What was measured is the presence of certain measles-related antibodies and a correlation with antibodies to a brain protein (myelin basic protein), and the authors speculated this might reflect an atypical measles infection, not vaccination specifically. The finding has not been independently replicated at a scale that would support the mechanism the authors proposed, and being about antibody markers rather than autism diagnosis or vaccination status makes it a poor fit for a list claiming to show vaccines causing autism.

Honest note:
This is the closest thing on the list to a genuinely open biological question, in a narrow sense: whether immune dysregulation plays a role in some subset of autism cases remains an active area of general autism research, independent of vaccines. But that is a different claim from the one this citation gets used to support, and the paper itself never tested vaccination status against diagnosis.

Entry 6: Hepatitis B Vaccination of Male Neonates and Autism Diagnosis, NHIS 1997–2002 — RETRACTED

Link: http://www.ncbi.nlm.nih.gov/pubmed/21058170

Authors: Carolyn M. Gallagher, Melody S. Goodman

Source: Journal of Toxicology and Environmental Health, Part A, 2010; retracted 2026 (PMID 21058170)

Fallacy: Retracted (not a fallacy)

What it actually is:
This study used National Health Interview Survey data, meaning parent-reported vaccination history and parent-reported autism diagnosis, neither independently verified against medical records, and reported that boys vaccinated for Hepatitis B as neonates had roughly three times higher odds of a reported autism diagnosis than boys vaccinated later or not at all. Following publication, the journal received concerns about the methodology, commissioned an independent statistical review, and that reviewer concluded the study's conclusions were unsound due to fundamental methodological flaws. The journal issued a formal statement of retraction in May 2026.

Honest note:
None remaining. Whatever hypothesis this paper raised in 2010 has since gone through the formal peer-correction process and the paper has been withdrawn by its own journal. Citing a retracted paper as current evidence, without noting the retraction, is itself part of how this list survives: nobody updates it.

Entry 7: Do Aluminum Vaccine Adjuvants Contribute to the Rising Prevalence of Autism?

Link: http://www.ncbi.nlm.nih.gov/pubmed/22099159

Authors: Lucija Tomljenovic, Christopher A. Shaw

Source: Journal of Inorganic Biochemistry, 2011 (PMID 22099159)

Fallacy: Hasty Generalization

What it actually is:
This paper correlates national-level estimates of aluminum adjuvant exposure with national autism prevalence figures across a handful of Western countries, and separately correlates U.S. aluminum exposure over time with the U.S. autism prevalence trend over time. Both comparisons are ecological: no individual child's aluminum exposure is linked to that same child's diagnosis. Independent reviewers who checked the underlying numbers found the paper mixed autism prevalence figures from different birth cohorts and different measurement methods across countries, which inflates the apparent correlation. The World Health Organization's Global Advisory Committee on Vaccine Safety reviewed this line of research and found it seriously flawed. One of the same two authors, Christopher Shaw, later had an unrelated HPV-vaccine paper retracted by its journal.

Honest note:
None. Ecological, cross-country prevalence comparisons using mismatched cohorts cannot establish that aluminum in vaccines affects any individual child, and the paper's own data handling has been directly disputed.

Entry 8: What Is Regressive Autism and Why Does It Occur? Is It the Consequence of Multi-Systemic Dysfunction Affecting the Elimination of Heavy Metals and the Ability to Regulate Neural Temperature?

Link: http://www.ncbi.nlm.nih.gov/pmc/articles/PMC3364648/

Authors: Gary E. Ewing

Source: North American Journal of Medical Sciences, 2009 (PMC3364648)

Fallacy: Retracted / Formally Discredited (not a fallacy)

What it actually is:
A single-author theoretical paper proposing that autism results from an inherited inability to clear heavy metals combined with a temperature-regulation defect, tying the mechanism to vaccine overuse. It presents a model, not new patient data. In 2019, ten years after publication, the journal itself issued a formal Expression of Concern, stating that serious content-related issues had been raised about the article and that the publisher could not complete an investigation to resolve them, but felt obligated to flag the piece under international publishing-ethics guidelines regardless.

Honest note:
None. A journal publicly flagging its own decade-old article over unresolved integrity concerns is about as far from settled science as a citation can get.

Entry 9: A Case Series of Children with Apparent Mercury Toxic Encephalopathies Manifesting with Clinical Symptoms of Regressive Autistic Disorders

Link: http://www.ncbi.nlm.nih.gov/pubmed/17454560

Authors: David A. Geier, Mark R. Geier

Source: Journal of Toxicology and Environmental Health, Part A, 2007 (PMID 17454560)

Fallacy: Conflict of Interest (not a fallacy); Hasty Generalization

What it actually is:
Nine children who happened to present to the Geiers' own private genetics practice, described retrospectively as consistent with mercury poisoning. There is no control group, no comparison population, and no random or representative sampling; the Institutional Review Board that approved the study was the Geiers' own Institute for Chronic Illnesses. A case series of nine self-selected patients, examined by the researchers who already believed the conclusion, cannot establish a population-level cause of anything.

Honest note:
None. This is the weakest tier of evidence in clinical research (an uncontrolled case series) from a source with a documented pattern of professional discipline tied to this exact claim.

Entry 10: A Comprehensive Review of Mercury Provoked Autism

Link: http://www.ncbi.nlm.nih.gov/pubmed/19106436

Authors: David A. Geier, Paul G. King, Lisa K. Sykes, Mark R. Geier

Source: Indian Journal of Medical Research, 2008 (PMID 19106436)

Fallacy: Conflict of Interest (not a fallacy); Appeal to Authority

What it actually is:
A narrative literature review, not a new study, that compiles and re-argues the authors' own prior publications alongside selected outside sources to build a case for a mercury-autism mechanism. Review articles can be useful summaries of a field, but this one is written by advocates rather than independent reviewers, and it largely cites the same small cluster of authors (multiple Geier and Kern papers) as though they constitute independent lines of evidence.

Honest note:
None beyond what has already been addressed above. A review is only as strong as the studies it reviews, and here most of those studies are the authors' own.

Entry 11: Thimerosal Exposure and the Role of Sulfation Chemistry and Thiol Availability in Autism

Link: http://www.ncbi.nlm.nih.gov/pmc/articles/PMC3774468/

Authors: Janet K. Kern, Boyd E. Haley, David A. Geier, Lisa K. Sykes, Paul G. King, Mark R. Geier

Source: International Journal of Environmental Research and Public Health, 2013 (PMC3774468)

Fallacy: Conflict of Interest (not a fallacy); False Analogy

What it actually is:
A mechanistic review proposing that certain children have an inherited deficiency in a detoxification pathway (sulfation chemistry) that would make them more vulnerable to thimerosal. It draws on cell-level and biochemical literature to build a plausibility argument, not a study measuring vaccination against autism diagnosis in actual children. Same recurring author cluster as entries 1, 9, and 10 above; Boyd Haley has a long-standing commercial interest in mercury-chelation treatments for autism, which is a direct financial stake in the hypothesis being true.

Honest note:
None. A biochemical plausibility argument, even if every individual claim in it were accurate, is not evidence that the proposed chain of events actually happens in children or that it happens because of vaccination specifically.

Entry 12: B-Lymphocytes from a Population of Children with Autism Spectrum Disorder and Their Unaffected Siblings Exhibit Hypersensitivity to Thimerosal

Link: http://www.ncbi.nlm.nih.gov/pmc/articles/PMC3697751/

Authors: Marty A. Sharpe, Lee Taylor, Theresa L. Gist, David S. Baskin

Source: Journal of Toxicology, 2013 (PMC3697751)

Fallacy: False Analogy

What it actually is:
White blood cells drawn from children with autism, their siblings, and controls were exposed to thimerosal in a laboratory dish, and some cell samples showed different survival responses. This is a cell-culture toxicology study, not a study of what happens inside a living child after vaccination, and it does not measure vaccination history or autism onset timing at all. Finding that isolated cells behave differently under direct chemical exposure in vitro says nothing about whether the trace, metabolized doses children actually receive from an injection produce any comparable effect in a whole organism.

Honest note:
None specific to the vaccine-autism claim. Cellular sensitivity studies are a legitimate early step in toxicology, but they sit several steps removed from a claim about vaccination and diagnosis, and this paper does not attempt to bridge that gap.

Entry 13: Theoretical Aspects of Autism: Causes — A Review

Link: http://www.ncbi.nlm.nih.gov/pubmed/21299355

Authors: Helen V. Ratajczak

Source: Journal of Immunotoxicology, 2011 (PMID 21299355)

Fallacy: Post Hoc Ergo Propter Hoc

What it actually is:
A solo-authored narrative review by a toxicologist (not an epidemiologist) surveying possible autism causes, including a section arguing that vaccination-triggered brain inflammation may explain some cases. It compiles existing literature and case reports rather than presenting new population data, and leans heavily on the fact that autism diagnosis often follows vaccination in time, treating that sequence as suggestive of cause. The journal published a formal response to this article shortly after it appeared, directly disputing its central claims.

Honest note:
None regarding vaccination. The existence of a published rebuttal in the same journal is itself worth noting: this was not a claim that went unchallenged by the scientific community, it was answered in print.

Entry 14: Conjugate Vaccines and Autism

Link: http://www.ncbi.nlm.nih.gov/pubmed/21907498

Authors: Noel R. Rose

Source: Medical Hypotheses, 2011 (PMID 21907498)

Fallacy: Misattributed Citation (not a fallacy)

What it actually is:
This is a short editorial introducing a companion hypothesis paper in the same issue (see Entry 17), written by an immunologist summarizing an area of general interest in autoimmunity research. In it, the author states plainly that the available evidence does not support the hypothesis that the MMR vaccine causes autism or associated disorders. Citing this piece as one of the studies that "show vaccines cause autism" inverts what the piece actually says.

Honest note:
None. Whatever this editorial's other value as a survey of immune-system research, it cannot honestly be listed as evidence for the claim it explicitly denies.

Entry 15: Autism: A Novel Form of Mercury Poisoning

Link: http://www.ncbi.nlm.nih.gov/pubmed/11339848

Authors: Sallie Bernard, Albert Enayati, Lyn Redwood, Heidi Roger, Teresa Binstock

Source: Medical Hypotheses, 2001 (PMID 11339848)

Fallacy: Conflict of Interest (not a fallacy); Post Hoc Ergo Propter Hoc

What it actually is:
This is the founding document of the modern thimerosal-autism hypothesis, published as a speculative "medical hypotheses" piece rather than a study with original data. It builds its case by listing symptom overlaps between mercury poisoning and autism. Sallie Bernard is a co-founder of SafeMinds, the advocacy organization created specifically to promote this hypothesis; she is not an independent researcher encountering the theory, she is one of its originators.

Honest note:
None. This paper generated the hypothesis that decades of subsequent, independently conducted, large-population research went on to test and did not confirm. Citing the founding hypothesis paper as proof, twenty-plus years after the hypothesis failed to hold up under testing, treats the starting question as though it were the answer.

Entry 16: A Prospective Study of Thimerosal-Containing Rho(D)-Immune Globulin Administration as a Risk Factor for Autistic Disorders

Link: http://www.ncbi.nlm.nih.gov/pubmed/17674242

Authors: David A. Geier, Mark R. Geier

Source: Journal of Maternal-Fetal & Neonatal Medicine, 2007 (PMID 17674242)

Fallacy: Conflict of Interest (not a fallacy); Hasty Generalization

What it actually is:
This study compares 53 patients from the Geiers' own genetics practice to a historical control group of pregnant women from the same practice, examining whether mothers of autistic children were more often Rh-negative and therefore more likely to have received a mercury-preserved anti-D injection during pregnancy. The sample is small, self-selected, and drawn from a clinic run by researchers already committed to the mercury hypothesis. A later, independent, university-based study surveying 305 families through a general autism clinic found no elevated rate of Rh-negative mothers among children with autism and no association with the injection in question.

Honest note:
None. Where an independent group tried to replicate this specific finding with a larger, more representative sample, they did not find it.

Entry 17: Hypothesis: Conjugate Vaccines May Predispose Children to Autism Spectrum Disorders

Link: http://www.ncbi.nlm.nih.gov/pubmed/21993250

Authors: Brian J. Richmand

Source: Medical Hypotheses, 2011 (PMID 21993250)

Fallacy: Post Hoc Ergo Propter Hoc; Hasty Generalization

What it actually is:
Explicitly labeled a hypothesis paper by its own journal, this piece notes that conjugate vaccines (protecting against bacteria like Hib) were introduced in the US, Denmark, and Israel in different years, and that autism prevalence rose in each country a few years after that country adopted the vaccine. It proposes, without testing, that the timing of carbohydrate-antigen exposure might interfere with early brain development. No individual patient data appears anywhere in the paper; the entire argument rests on national introduction dates lining up loosely with national prevalence trends, which is a textbook ecological and temporal correlation, not causal evidence.

Honest note:
None. Even the paper's own framing as a hypothesis rather than a finding signals that this was never presented as settled evidence, only as something worth testing. It was tested, in the large population studies summarized earlier in this document, and did not hold up.

Entry 18: The Potential Importance of Steroids in the Treatment of Autistic Spectrum Disorders and Other Disorders Involving Mercury Toxicity

Link: http://www.ncbi.nlm.nih.gov/pubmed/15780490

Authors: Mark R. Geier, David A. Geier

Source: Medical Hypotheses, 2005 (PMID 15780490)

Fallacy: Conflict of Interest (not a fallacy); Hasty Generalization

What it actually is:
A speculative paper proposing that autism represents a form of "testosterone-mercury toxicity," built by combining separate strands of literature on testosterone's effect on mercury toxicity and on testosterone levels in some autistic children, then proposing hormone-based treatments as a result. It contains no new study of vaccinated versus unvaccinated children and does not measure autism diagnosis against vaccination status at all; its subject is a proposed treatment mechanism, not a causal test.

Honest note:
None regarding vaccination, since the paper does not examine vaccination. This hypothesis became the theoretical basis for the Geiers later subjecting autistic children to hormone-suppressing Lupron treatment, the same episode that cost Mark Geier his medical license.

Entry 19: Reduced Levels of Mercury in First Baby Haircuts of Autistic Children

Link: http://www.ncbi.nlm.nih.gov/pubmed/12933322

Authors: Amy S. Holmes, Mark F. Blaxill, Boyd E. Haley

Source: International Journal of Toxicology, 2003 (PMID 12933322)

Fallacy: Conflict of Interest (not a fallacy); Circular Reasoning

What it actually is:
This study compared mercury levels in the first haircuts of 94 autistic children to 45 controls and found autistic children had lower hair mercury, the opposite of what a simple exposure-based hypothesis would predict. The authors reinterpreted this as evidence of impaired mercury excretion rather than evidence against a mercury role, a move that makes the hypothesis compatible with either a high or a low result and therefore very difficult to test against. Mark Blaxill is a co-founder of SafeMinds; Boyd Haley has a commercial interest in mercury-chelation treatment.

Honest note:
None. Reinterpreting a negative or opposite finding as confirming evidence, rather than as evidence against the hypothesis, means no possible hair-mercury result could have counted against the theory. That is the textbook shape of circular reasoning.

Entry 20: Cultured Lymphocytes from Autistic Children and Non-Autistic Siblings Up-Regulate Heat Shock Protein RNA in Response to Thimerosal Challenge

Link: http://www.ncbi.nlm.nih.gov/pubmed/16870260

Authors: Susan J. Walker, Judy Segal, Michael Aschner

Source: Neurotoxicology, 2006 (PMID 16870260)

Fallacy: False Analogy

What it actually is:
White blood cells taken from autistic children and their non-autistic siblings were exposed to thimerosal in laboratory culture, and gene-expression stress markers were measured. Like Entry 12, this is a cell-culture toxicology study, useful for exploring biological mechanisms in principle, but it does not measure vaccination history, autism diagnosis timing, or any outcome in a living child. A cell dish does not have an immune system, a liver, or a developing brain in context.

Honest note:
None specific to the vaccine-autism claim, for the same reason given at Entry 12.

Entry 21: A Possible Central Mechanism in Autism Spectrum Disorders, Part 1

Link: http://www.ncbi.nlm.nih.gov/pubmed/19043938

Authors: Russell L. Blaylock

Source: Alternative Therapies in Health and Medicine, 2008 (PMID 19043938)

Fallacy: Appeal to Authority

What it actually is:
A solo-authored theoretical review proposing a chain of brain-inflammation mechanisms (excitotoxicity) as a unifying explanation for autism, touching on vaccines among several other proposed triggers. It presents no new patient data. The author, a retired neurosurgeon, has built a public career promoting a wide range of contested health claims and publishes primarily in alternative-medicine venues rather than mainstream peer-reviewed neurology or epidemiology journals; this piece appeared in a journal specifically dedicated to alternative therapies.

Honest note:
None. A theoretical mechanism proposed in a non-mainstream venue, with no patient data attached, does not constitute evidence of a real-world vaccine effect.

Entry 22: The Role of Mercury in the Pathogenesis of Autism

Link: http://www.ncbi.nlm.nih.gov/pubmed/12142947

Authors: Sallie Bernard, Albert Enayati, Heidi Roger, Teresa Binstock, Lyn Redwood

Source: Molecular Psychiatry, 2002 (PMID 12142947)

Fallacy: Conflict of Interest (not a fallacy); Post Hoc Ergo Propter Hoc

What it actually is:
A short companion piece to Entry 15, published the following year in a different journal, restating the same symptom-overlap argument between mercury poisoning and autism. Same authors, same SafeMinds affiliation, same absence of new data. Counting this alongside Entry 15 as if they were two separate lines of evidence double-counts a single argument published twice.

Honest note:
None, for the reasons already given at Entry 15.

Entry 23: Transcriptomic Analyses of Neurotoxic Effects in Mouse Brain After Intermittent Neonatal Administration of Thimerosal

Link: http://www.ncbi.nlm.nih.gov/pubmed/24675092

Authors: Xiaoling Li, Fengqin Qu, Wenjuan Xie, Fengli Wang, Hongmei Liu, Shuhui Song, Tingting Chen, Yang Zhang, Shu Zhu, Yun Wang, Caixia Guo, Tie-Shan Tang

Source: Toxicological Sciences, 2014 (PMID 24675092)

Fallacy: False Analogy

What it actually is:
Newborn mice were given injections of thimerosal at doses and schedules set by the researchers, and changes in brain gene activity were measured afterward. This is an animal toxicology study of a specific chemical compound at researcher-determined doses, not a study of human vaccination, human vaccine schedules, or human autism diagnosis. Mouse neonatal development also does not map directly onto human infant development on a comparable timescale, which is a further gap between what this paper measured and what the claim asserts.

Honest note:
None regarding human vaccination and autism. This paper's actual contribution is to a different, narrower question about thimerosal's effects on rodent brain chemistry at the doses tested.

Entry 24: A Dose-Response Relationship Between Organic Mercury Exposure from Thimerosal-Containing Vaccines and Neurodevelopmental Disorders

Link: http://www.ncbi.nlm.nih.gov/pubmed/25198681

Authors: David A. Geier, Brian S. Hooker, Janet K. Kern, Paul G. King, Lisa K. Sykes, Mark R. Geier

Source: International Journal of Environmental Research and Public Health, 2014 (PMID 25198681)

Fallacy: Conflict of Interest (not a fallacy); Hasty Generalization

What it actually is:
The list closes as it opened: the same six-author Geier/Hooker/Kern/King/Sykes/Geier team, mining a database for a dose-response pattern between thimerosal exposure and a cluster of neurodevelopmental diagnoses. By this point in the list, this exact author group has appeared in Entries 1, 4, 11, and here, a quarter of everything reviewed in this document. That is not four independent confirmations. It is one team, publishing on the same theory, across four different framings, for well over a decade.

Honest note:
None beyond what has been said about this author group throughout this document. If a claim needed to be true, one would expect it to eventually be confirmed by researchers with no stake in the outcome. That has not happened here.

What These Twenty-Four Citations Actually Add Up To

Laid end to end, the count breaks down like this. At least nine of the twenty-four entries were authored, in whole or in overlapping part, by the same small cluster of researchers: David Geier, Mark Geier, Janet Kern, Brian Hooker, Lisa Sykes, Paul King, and Boyd Haley, several of whom hold financial, advocacy, or litigation interests in the outcome, and one of whom lost his medical license over a treatment built on this exact theory. Two more entries trace back to Sallie Bernard, a founder of the advocacy group that originated the hypothesis in the first place. Five are animal or cell-culture studies that never touch a human vaccination record. Two are ecological, population-level correlations that cannot speak to any individual child. One has been formally retracted. One carries a published Expression of Concern from its own journal. One is an editorial that explicitly states the opposite of what it is being cited to prove. One is not about autism at all.

None of this required special expertise to find. It required reading each citation instead of counting it. That is the entire method of this document, and it is also the entire flaw in the list it responds to: a citation is not evidence until someone checks what it actually says, and the checking is the part that gets skipped.

What often prompts being directed to these citations is a parent trusting what they saw with her own eyes over any study. That instinct is very human and should not be dismissed in whole. Watching a child change is real, and the fear that follows is not irrational.

But eyes cannot see a mechanism, and memory cannot run a control group. The only way to know whether a vaccine caused a change that timing alone made it look like it caused is to compare vaccinated and unvaccinated children at scale, which is exactly what the studies summarized at the start of this document did, repeatedly, in multiple countries, for two decades. They found nothing. That finding deserves the same respect as the fear that prompted it.

Appendix: Summary Table

All twenty-four entries at a glance. An asterisk (*) marks a label that is not a fallacy, a fact about the paper's authorship, funding, or publication status rather than a reasoning error. Conflict of Interest is the single most common tag on this list.

#	PMID / Link	Author(s)	Fallacy Tag(s)	One-Line Verdict
1	PMC3878266	Geier, Hooker, Kern, King, Sykes, Geier	Conflict of Interest*; Hasty Generalization	VAERS/VSD data mined by a self-referential author team; passive-surveillance data cannot establish causation.
2	PMID 21623535	DeLong	Hasty Generalization; Conflict of Interest*	State-level correlation, not statistically significant on independent reanalysis; author was a SafeMinds board member.
3	PMID 25377033	Chhawchharia, Puliyel	Misattributed Citation*	Not an autism study. A mercury-equity policy piece; the '340%' stat attached to it belongs to a different source.
4	PMID 24995277	Hooker, Kern, Geier, Haley, Sykes, King, Geier	Conflict of Interest*; Appeal to Authority	Opinion/critique article re-arguing others' work; no new data; same recurring author cluster.
5	PMID 12145534	Singh, Lin, Newell, Nelson	Red Herring	Antibody serology study; never tested vaccination status against diagnosis.
6	PMID 21058170	Gallagher, Goodman	Retracted*	Formally retracted (May 2026) after independent statistical review found the conclusions unsound.
7	PMID 22099159	Tomljenovic, Shaw	Hasty Generalization	Cross-country prevalence correlation using mismatched cohorts; WHO's safety committee found it seriously flawed.
8	PMC3364648	Ewing	Retracted / Discredited*	Journal issued a formal Expression of Concern in 2019 over unresolved integrity issues.
9	PMID 17454560	Geier, Geier	Conflict of Interest*; Hasty Generalization	Uncontrolled 9-patient case series, self-referred to the authors' own clinic; no comparison group.
10	PMID 19106436	Geier, King, Sykes, Geier	Conflict of Interest*; Appeal to Authority	Narrative review that largely cites the authors' own prior work as independent evidence.
11	PMC3774468	Kern, Haley, Geier, Sykes, King, Geier	Conflict of Interest*; False Analogy	Biochemical plausibility argument; no patient vaccination or diagnosis data.
12	PMC3697751	Sharpe, Taylor, Gist, Baskin	False Analogy	Cell-culture study of isolated blood cells exposed to thimerosal in a dish; no vaccination data.
13	PMID 21299355	Ratajczak	Post Hoc Ergo Propter Hoc	Narrative review leaning on timing coincidence; the journal published a direct rebuttal.

14	PMID 21907498	Rose	Misattributed Citation*	Editorial that explicitly states evidence does not support an MMR-autism link.
15	PMID 11339848	Bernard, Enayati, Redwood, Roger, Binstock	Conflict of Interest*; Post Hoc Ergo Propter Hoc	The founding hypothesis paper, written by a co-founder of the advocacy group built around this theory.
16	PMID 17674242	Geier, Geier	Conflict of Interest*; Hasty Generalization	Small self-selected clinic sample; a larger independent study found no such association.
17	PMID 21993250	Richmand	Post Hoc Ergo Propter Hoc; Hasty Generalization	Explicitly labeled a hypothesis paper; rests on national vaccine-introduction dates lining up with prevalence trends.
18	PMID 15780490	Geier, Geier	Conflict of Interest*; Hasty Generalization	Speculative hormone-mechanism paper; does not examine vaccination at all.
19	PMID 12933322	Holmes, Blaxill, Haley	Conflict of Interest*; Circular Reasoning	Found lower mercury in autistic children's hair, then reinterpreted the opposite finding as confirming.
20	PMID 16870260	Walker, Segal, Aschner	False Analogy	Cell-culture gene-expression study; no vaccination or diagnosis data.
21	PMID 19043938	Blaylock	Appeal to Authority	Theoretical review with no patient data, published in an alternative-medicine journal.
22	PMID 12142947	Bernard, Enayati, Roger, Binstock, Redwood	Conflict of Interest*; Post Hoc Ergo Propter Hoc	A companion restatement of Entry 15's argument; same authors, same claim, published twice.
23	PMID 24675092	Li et al.	False Analogy	Mouse study of injected thimerosal; not a study of human vaccination or autism.
24	PMID 25198681	Geier, Hooker, Kern, King, Sykes, Geier	Conflict of Interest*; Hasty Generalization	The same six-author team that appears in Entries 1, 4, and 11 — a quarter of this entire list.

A Personal Note

Do not let anyone trick you the way this list tricks people. Not with a wall of paperwork. Not with twenty-four links dropped in a caption like a mic drop. Not by me, either. If anything in this document leaves you with a doubt, *go check it*. Click the links. Read the actual abstract. That is the whole reason the links are there in the first place, not as decoration, as an invitation. I am not a scientist. I do not have a law degree or a journalism degree. I am fallible, the same as almost everyone reading this. What I can do, and what anyone can do, is read a citation before repeating it and claiming it is proof of anything.

This document is not about vaccines specifically; it's about the trick. Piling up paper until the sheer weight of it feels like proof, betting that no one will check, because checking twenty-four sources is exhausting and distrusting one confident paragraph is easy. That trick works because most people, reasonably, do not have the time to run it down. It is not a failure of intelligence to fall for it. It is a failure of the tactic being designed to exploit trust and time.

I think we are living through something close to a dark age for exactly this reason: not because people stopped having feelings, but because feelings got set up as the enemy of facts instead of the partner of them. Somewhere along the way, caring hard about something started to look like proof you were right about it, and being calm and precise started to look like proof you did not care.

Both of those are wrong. The unfeeling scientist, the cold robot who only trusts a spreadsheet and shrugs at a grieving parent, is an ugly caricature, and it is not what this document is arguing for. A parent watching their child change is allowed to be terrified. That terror is real and it deserves to be taken seriously, not mocked and not exploited.

But terror is not evidence, and neither is outrage.

Outrage is one of the most powerful tools a person has when it is pointed at something real. It moves people. It changes laws. It is also, without facts underneath it, just a tantrum. The way you tell the difference is not by feeling harder, it is by verifying. Know the facts alongside your feelings, not instead of them and not after you have already decided what you feel. That order matters. Feel what you feel, and then go find out if it is true, and let the second thing inform the first instead of the other way around.

That is the ask, if this document asks anything of you at all. Not blind trust in me, or in any institution, or in any credential. Just the habit of checking before repeating, and the honesty to let what you find change your mind when it should.