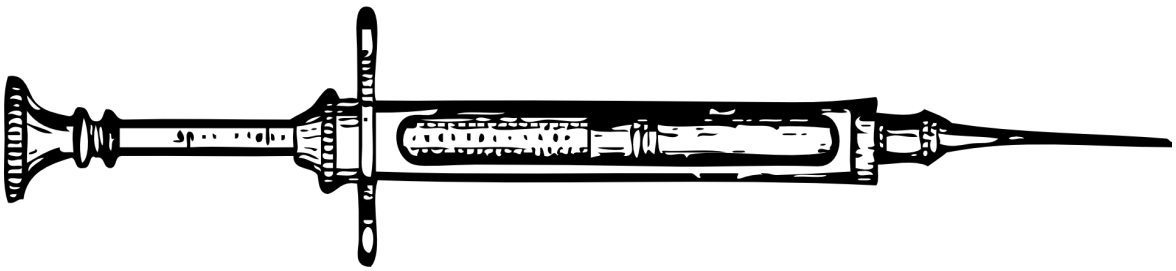
ALUMINUM THIMEROSAL FLAWS/INEFICACIES ASD AUTOIMMUNE ALLERGIC

THE VACCINE ENCYCLOPEDIA

BY: VERITAVITALIS



All the information herein is my discernment of the available scientific inquiries on the toxicokinetic mechanisms of vaccinations, with an emphasis on vaccine adjuvants. The information in this document is not official medical advice, and I urge all reading this to conduct their own independent research and consult a doctor that is educated in immunizations and their adjuvant-mediated immune-activation mechanisms before making an informed decision to exercise a religious or medical exemption.

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Immunization is a controversial topic because it is rooted in solid and undisputed scientific fact. In it's primary objective, immunization is effective because it triggers an immune response to a weakened (or neutralized) viral or bacterial pathogen. This process elicits our immune system to "remember" the specific antibodies it needed to produce for that weakened pathogen so that when we come into contact with the full-fledged disease, our immune system will know exactly how to deal with it. This all sounds effective, and it is also relatively safe, especially in modern vaccines where only a small fragment of a pathogen is used (antigen), which lacks the genetic material to replicate and elicit pathogenesis.

There is an immediate concern, however, which implicates both main types of vaccinations; the rate at which pathogens are "evolving" is often greater than the time it takes for us to study and inoculate a virus or bacteria into a functional vaccine. It is no coincidence that vaccinated kids are dying from the flu worldwide over (44,200 just this year). There are multiple reported instances [262-269] of outbreaks happening in populations with extremely high vaccine coverage (90-99%). The VE (vaccine efficacy) rate for vaccines used to be 33% in 2014, but in recent years it has dropped to a mere 10%. This means we are essentially unwillingly interbreeding stronger pathogens whilst developing weaker vaccines.

The most immediate issue with vaccinations is not the "deactivated" virus or bacteria or toxoid fragment, but the plethora of ingredients that; 1) not always need to be there, 2) have not been given a safe limit, 3) have not been tested for co-occuring toxicity, and lastly, 4) are known neurotoxins and carcinogens.

Many vaccines contain the compound thimerosal, which is essentially a vehicle for mercury to enter our bodies as ethylmercury [79]. Which has alarmingly similar mechanisms of toxicity to methyl-mercury. a Various studies have shown that exposure to thimerosal increases one's risk of developing neurodegenerative diseases [1-6, 9-15, 17-24, 114, 117], psychomotor disorders, cardiovascular disease, and immune disorders. Aluminum present in many vaccines has also shown to be neurotoxic and endocrine disruptive, and it's effects in vaccines where it is found co-occuring with thimerosal have not been diligently evaluated, despite the fact that many studies demonstrate a causal relationship between those vaccines with autism, ADD, ADHD, and other neurological disorders [164-167, 224-227].

Intravenous immunizations have been empirically displayed to employ mechanisms that trigger the adaptive immune response, however, new evidence suggests notable possible detrimental effects of vaccine adjuvants, especially in concomitant action.
Vaccine adjuvants are essential in the process of rendering a small and indivisible viral DNA fragment attractive and available to B-cells. The only way B-cells, which are non-specific and randomly differentiated, are able to match and recognize an antigen is if their production is hastened and amplified. This is only achieved if the immune system is overstimulated. This overstimulation/over-excitation is primarily done by means of aluminum phosphate, aluminum hydroxide, thimerosal, polysorbate80, monosodium glutamate (MSG), and even barium. [2] The role of adjuvants is to increase B-cell and T-cell production and activity, and they are clinically proven to carry out this task. [91] A possible concern arises when the particularly vital role of adjuvants; making the pathogen fragment visible to immune cell, demanding an over excitation of the immune response, and concurrently allowing access across the blood-brain-barrier (BBB), which is the proprietary neurological circulatory system's barrier against possible neurotoxins. It has been shown that xenomercurials, especially thimerosal, can elevate concentrations of both organic (EtHg) and inorganic (MetHG) mercury in the brain. Some literature suggests polysorbate80 may also be a neurotoxic agent enabling the access of mercurials and aluminum into the brain's segregate circulatory system. Polysorbate 80 (Tween 80) has a tendency to facilitate the entry of various neurotoxins into the brain [292-302]. ASD patients have higher levels of aluminum in their bodies [9], and it is increasingly suggestive that aluminum is a central mechanism in the onset of neurodegenerative disorders. One study

(Mold M., Umar D., King A., Exley C.) noted that aluminum is particularly abundantly accumulated in intracellular microglia-like cells and other inflammatory cells in the meninges, vasculature, and even in grey and white matter. [9] Intravenous aluminum, as present in many vaccines, can readily bind to fluoride, mercurials, and polysorbate 80.[3][5] With so many inter-relationships as a vehicle across the BBB, it is imperative that we are more careful about adjuvant concomitant action before administering conjugate vaccines, and any immunization in general, as heavy metals, pharmaceuticals, and other synthetic neurotoxins have a greater agency to cause neurodegenerative outcomes when bound to synthetic intra-BBB adjuvants.

Intravenous immunizations require adjuvants in order to elicit B-cell and T-cell production, because a small antigen fragment or a deactivated/attenuated virus is not enough to trigger an adaptive immune response. Aluminum adjuvants work by allowing phagocytosis of Al nanoparticles alongside viral DNA recombinant plasmids or an attenuated virus, in order to traverse across the body through the lymph system and boundlessly enter and exit the blood-brain-barrier, the proprietary neurological circulatory system.

One of the biggest issues with vaccines is the utter manipulation that governmental health agencies have over the studies that are supposed to evaluate vaccine safety. The National Academy of Medicine is a scientific body that the CDC claims to rely on for independent third-party testing of vaccines. In truth, various members of these “independent” organizations are also working for governmental agencies including the CDC, the USDHHS, the U.S. Senate, MedPAC, Janssen Pharmaceuticals, etc. Lastly, due to a botched report by the NAM, the U.S. government withdrew all funding for further research on vaccine toxicity, and vaccines were erroneously labeled as safe. Vaccines are also a **zero-liability** product; in that the drug manufacturers that develop and produce them bear zero culpability in the adverse effects (listed on the insert that RN’s no longer give us, but are required by law to) and renders them immune to litigation and prosecution, even in instances where a causal relationship can be drawn between vaccinations and a serious adverse event. The CDC maintains a database of the logged (many are not granted and many more are not reported) adverse events after vaccinations that, as they say; ‘could possibly’ be related to the vaccines. The application process is rigorous and it takes a lot to be granted compensation. The government’s vaccine injury compensation budget is hefty, but if every adverse event to a vaccination that happened was reported, it would go bankrupt many times over.

Intravenous immunizations have been empirically displayed to employ mechanisms that trigger the adaptive immune response, however, new evidence suggests notable possible detrimental effects of vaccine adjuvants, especially in concomitant action.
Vaccine adjuvants are essential in the process of rendering a small and indivisible viral DNA fragment attractive and available to B-cells. The only way B-cells, which are non-specific and randomly differentiated, are able to match and recognize an antigen is if their production is hastened and amplified. This is only achieved if the immune system is overstimulated. This overstimulation/over-excitation is primarily done by means of aluminum phosphate, aluminum hydroxide, thimerosal, polysorbate80, monosodium glutamate (MSG), and even barium. The role of adjuvants is to increase B-cell and T-cell production and activity, and they are clinically proven to carry out this task. A possible concern arises when the particularly vital role of adjuvants; making the immunization enter every single cell, demands that they allow access across the blood-brain-barrier (BBB), which is the proprietary neurological circulatory system’s barrier against possible neurotoxins. It has been shown that xenomercurials, especially thimerosal, can elevate concentrations of both organic (EtHg) and inorganic (MetHG) mercury in the brain. Some literature suggests polysorbate80 may also be a neurotoxic agent enabling the access of mercurials and aluminum into the brain’s segregate circulatory system. Polysorbate 80 (Tween 80) has a tendency to facilitate the entry of various neurotoxins into the

brain. ASD patients have higher levels of aluminum in their bodies, and it is increasingly suggestive that aluminum is a central mechanism in the onset of neurodegenerative disorders. One study (Mold M., Umar D., King A., Exley C.) noted that aluminum is particularly abundantly accumulated in intracellular microglia-like cells and other inflammatory cells in the meninges, vasculature, and even in grey and white matter. Intravenous aluminum, as present in many vaccines, can readily bind to fluoride, mercurials, and polysorbate 80. With so many inter-relationships as a vehicle across the BBB, it is imperative that we are more careful about adjuvant concomitant action before administering conjugate vaccines, and any immunization in general, as heavy metals, pharmaceuticals, and other synthetic neurotoxins have a greater agency to cause neurodegenerative outcomes when bound to synthetic intra-BBB adjuvants.

Intravenous immunizations require adjuvants in order to elicit B-cell and T-cell production, because a small antigen fragment or a deactivated/attenuated virus is not sufficient to trigger the adaptive immune response. Aluminum adjuvants work by allowing phagocytosis of Al nanoparticles alongside viral DNA recombinant plasmids or a live attenuated virus, in order to traverse across the body through the lymph system and freely enter and exit the brain through the blood-brain-barrier; the proprietary neurological circulatory system. The serious adverse health effects of many vaccine adjuvants, with respect to the current vaccination schedule, must be acknowledged, or rather, admitted by public health authorities so that they may modify the schedule and vaccine excipients accordingly. This difficult and costly confession is also imperative for the necessary safety and efficacy testing to be undertaken, and along with it, a vast reassesment of policy, transparency, and practices currently employed by vaccine manufacturers. Corporations who profit billions from vaccines should not appoint their own chair members responsbile for vaccine efficacy studies.

CDC VACCINE INGREDIENTS PER VACCINE:
https://www.cdc.gov/vaccines/pubs/pinkbook/downloads/appendices/B/excipient-table-2.pdf

VACCINE INJURY TABLE:
https://www.hrsa.gov/sites/default/files/vaccinecompensation/vaccineinjurytable.pdf

VACCINE ADVERSE EVENTS REPORTING SYSTEM (VAERS) DATA:
https://wonder.cdc.gov/vaers.html

INSTITUTE OF MEDICINE (IOM)- ADVERSE EFFECTS OF VACCINES: EVIDENCE AND CAUSALITY:
https://commed.vcu.edu/IntroPH/Communicable_Disease/2012/adverseffectsVaccines.pdf

SCIENTIFIC PUBLICATIONS/ARTICLES ON ADJUVANT TOXICITY, POST-IMMUNIZATION; NEURODEVELOPMENTAL DISORDERS, AUTOIMMUNE DISORDERS, AND ANAPHYLACTIC DISORDERS:

BLUE: ALUMINUM ADJUVANTS
GREEN: THIMEROSAL (ETHYLMERCURY)
RED: VACCINE FLAWS/INNEFICACIES
YELLOW: ASD PATHOPHYSIOLOGY/NEURODEVELOPMENTAL DISORDERS
PURPLE: AUTOIMMUNE (AUTO-INFLAMMATORY) DISORDERS (INCLUDING ASIA)
CYAN: ANAPHYLACTIC DISORDERS

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1) https://www.ncbi.nlm.nih.gov/pubmed/29573974
- Evidence of an association between Thimerosal and neurodevelopmental outcomes.
- Cases of reported autism, developmental delay, psychomotor disorder, and neurodevelopmental disorder in general were each significantly more likely than their respective controls to receive Thimerosal-containing Hib vaccine than Thimerosal-free Hib vaccine.

2) https://www.ncbi.nlm.nih.gov/pubmed/29476861
- Thimerosal and ethylmercury chloride accelerate the protein fibrillation kinetics in 42 and 122%, respectively, indicating the toxicity of these compounds in biological systems.

3) https://pdfs.semanticscholar.org/f90a/117857ed31929578fe5e1cfdef8d9fca10a3.pdf
- Mercurials, such as Thimerosal, are ineffective in vivo and may be more toxic for tissue cells than bacterial cells.
- The high order of toxicity from Thimerosal and its ethylmercury breakdown product has been known and published for decades.

4) https://www.ncbi.nlm.nih.gov/pmc/articles/PMC3600517/
- Data shows an effect of organic mercury on the viability of Jurkat T cells, suggesting a possible toxic effect of these compounds of mercury in vivo.
- The treatment of Jurkat T cells with thimerosal caused a significant decrease in cellular viability.

5) https://www.ncbi.nlm.nih.gov/pubmed/29413097
- Three doses of Thimerosal-containing HepB vaccine exposure in comparison to no exposure significantly increased the risk of an ADHD diagnosis.

6) https://www.ncbi.nlm.nih.gov/pubmed/12175822?dopt=Abstract
- Mercury activates pro-inflammatory cytokine expression in mice.
- These results indicate that mercury suppresses NO synthesis by inhibition of the NF-kappaB pathway and modulates cytokine expression by p38 MAPK activation in J774A.1 macrophage cells.

7) https://www.ncbi.nlm.nih.gov/pubmed/19043938
- Excessive vaccination as a central mechanism in autism spectrum disorders.
- “Studies have shown that careful control of brain glutamate levels is essential to brain pathway development and that excess can result in the arrest of neural migration, as well as dendritic and synaptic loss. It has also been shown that certain cytokines, such as TNF-alpha, can, via its receptor, interact with glutamate receptors to enhance the neurotoxic reaction. To describe this interaction I have coined the term immunoexcitotoxicity, which is described in this article.”

8) https://www.ncbi.nlm.nih.gov/pubmed/21350943
- The neurotoxic effect of ethylmercury has not been studied with co-occurring aluminum in thimerosal-containing vaccines.
- Thimerosal at concentrations relevant for infants' exposure (in vaccines) is toxic to cultured human-brain cells and to laboratory animals. The persisting use of TCV (in developing countries) is counterintuitive to global efforts to lower Hg exposure and to ban Hg in medical products; its continued use in TCV requires evaluation of a sufficiently nontoxic level of ethylmercury compatible with repeated exposure (co-occurring with adjuvant-Al) during early life.

9) https://www.ncbi.nlm.nih.gov/pubmed/23401210

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- In vitro studies comparing etHg with meHg demonstrate equivalent measured outcomes for cardiovascular, neural and immune cells.

10) https://www.ncbi.nlm.nih.gov/pubmed/24486466
- Perinatal multiple exposure to neurotoxic (lead, methylmercury, ethylmercury, and aluminum) substances and neurodevelopment at six and 24 months of age.
- Ethylmercury exposure during pregnancy negatively affected neurodevelopment & psychomotor development.

11) https://www.ncbi.nlm.nih.gov/pubmed/25625408
- Exposure to mercury and aluminum in early life: developmental vulnerability as a modifying factor in neurologic and immunologic effects.
- Rigorous and replicable studies (in different animal species) have shown evidence of EtHg and Al toxicities.
- The safety levels of ethylmercury and adjuvant aluminum present in vaccines have never been determined, despite their prevalent use in vaccines.

12) https://www.ncbi.nlm.nih.gov/pubmed/26945727
- Dose-response analysis indicating time-dependent neurotoxicity caused by organic and inorganic mercury-Implications for toxic effects in the developing brain.
- Ethylmercury exposure from thimerosal in some vaccines has been associated, in some studies, with autism and other neurological disorders in children.

13) https://www.ncbi.nlm.nih.gov/pubmed/26989453
- Alternatively Spliced Methionine Synthase in SH-SY5Y Neuroblastoma Cells: Cobalamin and GSH Dependence and Inhibitory Effects of Neurotoxic Metals and Thimerosal.
- Thimerosal decreases cellular levels of glutathionylcobalamin and Methylcobalamin, indicating that thimerosal can inhibit glutathione antioxidant activity and promote the oxidation of methionine synthase, negatively affecting all methylation reactions.

14) https://www.ncbi.nlm.nih.gov/pubmed/27294299
- MC1568 Inhibits Thimerosal-Induced Apoptotic Cell Death by Preventing HDAC4 Up-Regulation in Neuronal Cells and in Rat Prefrontal Cortex.
- Thimerosal induced an increase in SOD and calbindin levels, indicating that ethylmercury can trigger oxidative damage in brain cells and consequently contribute to neurotoxicity.

15) https://www.ncbi.nlm.nih.gov/pubmed/27660204
- Ethylmercury thiosalicylate (thimerosal) is an organic mercury-based compound commonly used as an antimicrobial preservative that has been found to be neurotoxic.
- Thimerosal, at 0.5μM in SH-SY5Y cells and at 1μM in neurons, caused cell death by activation of apoptosis.

16) https://link.springer.com/chapter/10.1007/398_2016_1
- There are many commonalities/simmilarities in the mechanisms of toxic action of methylmercury and ethylmercury (from thimerosal):
- **Both MeHg & EtHg** bind to the amino acid cysteine.
- **Both decrease glutathione activity.**
- **Both disrupt glutamate homeostasis.**
- **Both cause oxidative stress**/creation of ROS
- **Both cause effects on receptor binding/neurotransmitter release** involving one or more transmitters.
- **Both cause DNA damage or impair DNA synthesis**.

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17) https://www.ncbi.nlm.nih.gov/pubmed/28539852
- Abnormal Brain Connectivity Spectrum Disorders Following Thimerosal Administration: A Prospective Longitudinal Case-Control Assessment of Medical Records in the Vaccine Safety Datalink.
- On a per 25 μg Hg basis, cases diagnosed with ASD (OR = 1.493), TD (OR = 1.428), or ADD/ADHD (OR = 1.503) were significantly (P < .001) more likely than controls to have received increased Hg exposure. (through thimerosal)

18) https://www.ncbi.nlm.nih.gov/pubmed/28595786
- Thimerosal-containing vaccines significantly increase the risk of atypical autism diagnosis.
- The present study provides important epidemiological evidence significantly associating increasing Hg exposure from Thimerosal-containing childhood vaccines and the subsequent risk of atypical autism diagnosis, and suggests that Thimerosal should be eliminated from vaccines.

19) https://www.ncbi.nlm.nih.gov/pmc/articles/PMC4065774/
- Methodological Issues and Evidence of Malfeasance in Research Purporting to Show Thimerosal in Vaccines Is Safe
- There are over 165 studies that have focused on Thimerosal, an organic-mercury (Hg) based compound, used as a preservative in many childhood vaccines, and found it to be harmful.
- in a study conducted directly by CDC epidemiologists, a 7.6-fold increased risk of autism from exposure to Thimerosal during infancy was found. The CDC's current stance that Thimerosal is safe and that there is no relationship between Thimerosal and autism is based on six specific published epidemiological studies coauthored and sponsored by the CDC. The purpose of this review is to examine these six publications and analyze possible reasons why their published outcomes are so different from the results of investigations by multiple independent research groups over the past 75+ years

20) https://www.ncbi.nlm.nih.gov/pubmed/29329213
- A Cross-Sectional Study of the Association between Infant Hepatitis B Vaccine Exposure in Boys and the Risk of Adverse Effects as Measured by Receipt of Special Education Services.
- An exposed population receiving three doses of infant Thimerosal-containing hepatitis B vaccine (weighted *n* = 11,186,579), in comparison to an unexposed population (weighted *n* = 704,254), were at an increased risk of receipt of special education services.

21) https://www.ncbi.nlm.nih.gov/pubmed/29481853
- ALA can ameliorate neurodevelopmental disorders that arise due to postnatal thimerosal administration.
- Thimerosal at all doses (30, 300 and 3000 μg Hg/kg) significantly impacted locomotor activity.

22) https://www.sciencedirect.com/science/article/pii/S0149763405802179?via%3Dihub
- Mercury neurotoxicity: Mechanisms of blood-brain barrier transport.
- Physical properties and redox potentials determine the qualitative and quantitative differences in toxicity among inorganic mercury compounds, while the ability of MeHg to cross the blood-brain barrier accounts for its accumulation in the CNS and a clinical picture that is dominated by neurological disturbances.

23) https://www.ncbi.nlm.nih.gov/pubmed/25198681
- On a per microgram of organic-Hg basis, PDD (odds ratio (OR) = 1.054), specific developmental delay (OR = 1.035), tic disorder (OR = 1.034) and hyperkinetic syndrome of childhood (OR = 1.05) cases were significantly more likely than controls to receive increased

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organic-Hg exposure. By contrast, none of the non-thimerosal related outcomes were significantly more likely than the controls to have received increased organic-Hg exposure.
- "The cumulative total dose of Hg exposure from thimerosal-containing hepatitis B vaccine (T-HBV) administered within the first six months of life was calculated. [Significant links were found with: specific developmental delay, tic disorder and hyperkinetic syndrome of childhood]. Cases were significantly more likely than controls to receive increased organic-Hg exposure."

24) https://www.ncbi.nlm.nih.gov/pubmed/27816865
- The collective evidence strongly suggests that Thimerosal exposure is associated with adverse neurodevelopmental outcomes. It is claimed that the continued use of Thimerosal in the less-developed countries is due to the cost to change to another preservative, such as 2-phenoxyethanol.
- However, the estimated cost increase per child in the first year of life is lower than estimated lifetime cost of caring for a child with a neurodevelopmental disorder, such tic disorder. The evidence indicates that Thimerosal-free vaccine options should be made available in developing countries.

25) https://www.ncbi.nlm.nih.gov/pubmed/21998477
- While HAI antibody is the major correlate of protection, postvaccination titers alone should not be used as a surrogate for vaccine efficacy. Vaccine failures from clinical trials need to be examined to determine why seemingly protective HAI titers may not protect.
- This study highlights a possible flaw in measuring vaccine efficacy through hemagglutination inhibition expression.

26) https://www.ncbi.nlm.nih.gov/pubmed/10534356
- Vaccinated children may contract variant infections through vertical or horizontal transmission. Universal vaccination has accelerated an accumulation of HBsAg a determinant mutants with amino acid changes critical for immune escape in vaccinated children who became carriers, suggesting that new vaccination strategies should be considered.
- In HBV DNA-positive children from 3 surveys, the prevalence of a determinant mutants increased from 8 of 103 (7.8%) in 1984 to 10 of 51(19.6%) in 1989 and 9 of 32 (28.1%) in 1994 and was higher in those fully-vaccinated than unvaccinated (12/33 vs. 15/153, P =. 0003).

27) https://www.ncbi.nlm.nih.gov/pmc/articles/PMC4202242/
- Aluminum-Induced Entropy in Biological Systems: Implications for Neurological Disease
- Al disrupts biological self-ordering, energy transduction, and signaling systems, thus increasing biosemiotic entropy. Beginning with the biophysics of water, disruption progresses through the macromolecules that are crucial to living processes (DNAs, RNAs, proteoglycans, and proteins). It injures cells, circuits, and subsystems and can cause catastrophic failures ending in death. Al forms toxic complexes with other elements, such as fluorine, and interacts negatively with mercury, lead, and glyphosate. Al negatively impacts the central nervous system in all species that have been studied, including humans.

28) https://www.ncbi.nlm.nih.gov/pmc/articles/PMC3878266/
- 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.
- "The present study provides new epidemiological evidence supporting an association between increasing organic-Hg exposure from Thimerosal-containing childhood vaccines and the subsequent risk of an ASD diagnosis."

29) https://www.ingentaconnect.com/content/ben/cmc/2011/00000018/00000017/art00011

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- Aluminum Vaccine Adjuvants: Are they Safe?
- Experimental research, however, clearly shows that aluminum adjuvants have a potential to induce serious immunological disorders in humans. In particular, aluminum in adjuvant form carries a risk for autoimmunity, **long-term brain inflammation** and associated neurological complications and may thus have profound and widespread adverse health consequences.

30) www.ncbi.nlm.nih.gov/pmc/articles/PMC3364648/
- 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?
- "There is a compelling argument that the occurrence of regressive autism is attributable to genetic and chromosomal abnormalities, arising from the overuse of vaccines, which subsequently affects the stability and function of the autonomic nervous system and physiological systems."

31) www.ncbi.nlm.nih.gov/pmc/articles/PMC3774468/
- Thimerosal Exposure and the Role of Sulfation Chemistry and Thiol Availability in Autism.
- "The emergence of ASD symptoms post-6 months of age temporally follows the administration of many childhood vaccines."

32) www.ncbi.nlm.nih.gov/pmc/articles/PMC3697751/
- B-Lymphocytes from a Population of Children with Autism Spectrum Disorder and Their Unaffected Siblings Exhibit Hypersensitivity to Thimerosal.
- "This suggests certain individuals with a mild mitochondrial defect may be highly susceptible to mitochondrial specific toxins like the vaccine preservative thimerosal."

33) www.tandfonline.com/doi/full/10.3109/1547691X.2010.545086
www.ncbi.nlm.nih.gov/pubmed/21299355
- Theoretical aspects of autism: Causes—A review.
- "Documented causes of autism include genetic mutations and/or deletions, viral infections, and encephalitis following vaccination."

34) https://academic.oup.com/toxsci/article/139/2/452/2511500
- Transcriptomic Analyses of Neurotoxic Effects in Mouse Brain After Intermittent Neonatal Administration of Thimerosal.
- "Our results indicate that higher dose of neonatal thimerosal-mercury (20× higher than that used in human) is capable of inducing long-lasting substantial dysregulation of neurodevelopment, synaptic function, and endocrine system, which could be the causal involvements of autistic-like behavior."

35) www.sciencedirect.com/science/article/pii/S0946672X17308763
- Aluminum in brain tissue in autism.
- "Shockingly high levels of **aluminum** have been found in the brains of **autistic** people, and aluminum in vaccines is implicated as having a part in the mechanism that causes autism."

36) www.ncbi.nlm.nih.gov/pubmed/21623535
- A positive association found between autism prevalence and childhood vaccination uptake across the U.S. population.
- "The higher the proportion of children receiving recommended vaccinations, the higher was the prevalence of AUT or SLI. A 1% increase in vaccination was associated with an additional 680 children having AUT or SLI."

37) www.ncbi.nlm.nih.gov/pubmed/25377033

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FIGURE 1

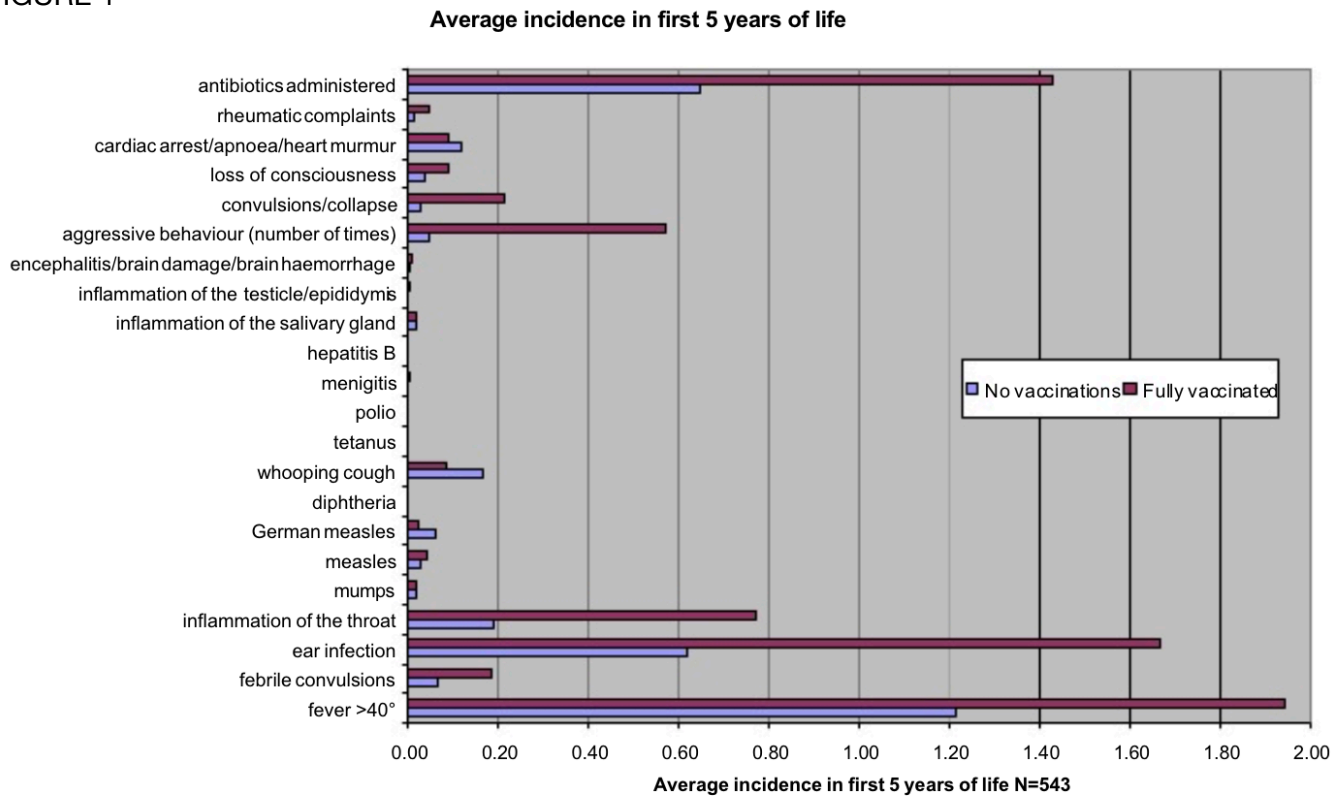


FIGURE 2

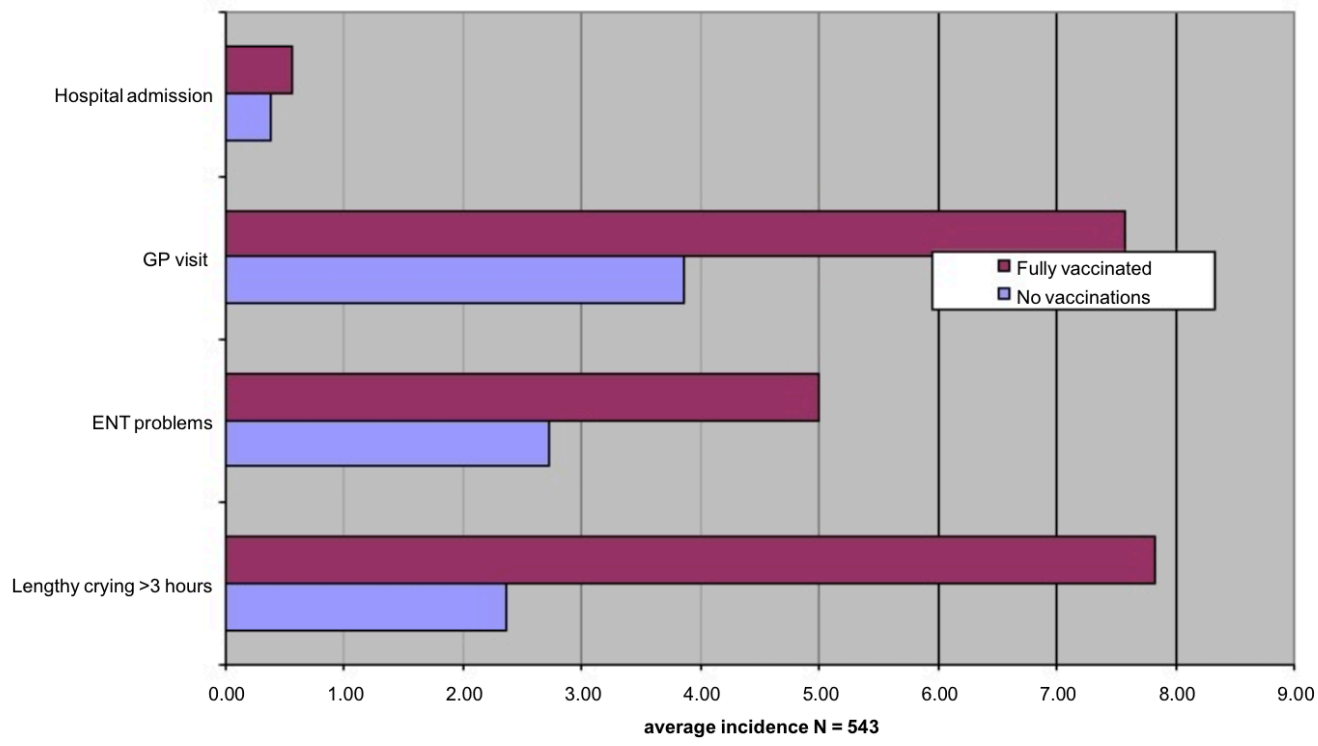
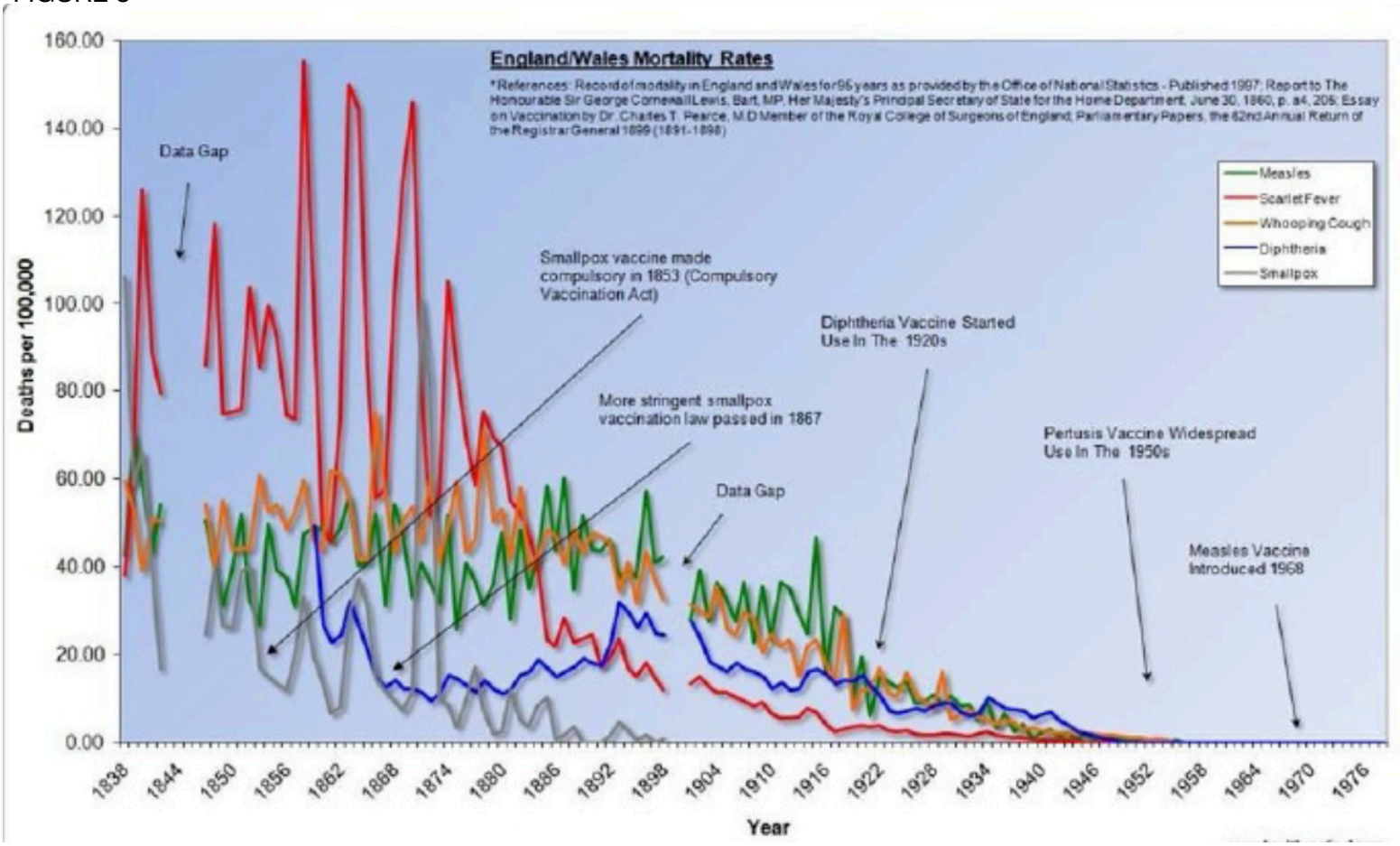


FIGURE 3



- Commentary–Controversies surrounding mercury in vaccines: autism denial as impediment to universal immunization.
- "He confirmed that the risk of autism among African American children vaccinated before the age of 2 years was 340% that of those vaccinated later."

38) www.ncbi.nlm.nih.gov/pubmed/24995277
- Methodological issues and evidence of malfeasance in research purporting to show thimerosal in vaccines is safe.
- "In a study conducted directly by CDC epidemiologists, a 7.6-fold increased risk of autism from exposure to Thimerosal during infancy was found. The CDC's current stance that Thimerosal is safe and that there is no relationship between Thimerosal and autism is based on six specific published epidemiological studies coauthored and sponsored by the CDC. The purpose of this review is to examine these six publications and analyze possible reasons why their published outcomes are so different from the results of investigations by multiple independent research groups over the past 75+ years."

39) www.ncbi.nlm.nih.gov/pubmed/12145534
- Abnormal measles-mumps-rubella antibodies and CNS autoimmunity in children with autism.
- "Furthermore, over 90% of MMR antibody-positive autistic sera were also positive for MBP autoantibodies, suggesting a strong association between MMR and CNS autoimmunity in autism."

40) www.ncbi.nlm.nih.gov/pubmed/21058170
- Hepatitis B vaccination of male neonates and autism diagnosis, NHIS 1997-2002.
- "Boys vaccinated as neonates had threefold greater odds for autism diagnosis compared to boys never vaccinated or vaccinated after the first month of life."
- Findings suggest that U.S. male neonates vaccinated with the hepatitis B vaccine prior to 1999 (from vaccination record) had a **threefold higher risk for parental report of autism**

diagnosis compared to boys not vaccinated as neonates during that same time period. Nonwhite boys bore a greater risk.

41) www.ncbi.nlm.nih.gov/pmc/articles/PMC3261751/
- Similarities in features of autism and asthma and a possible link to acetaminophen use.
- "The role of acetaminophen (paracetamol) in an increased risk for asthma is described and a possible similar link to an increased risk for autism is suggested."
- **Altered levels of immunoglobulins, cytokines and, inflammatory markers** have been identified in the serum, cerebral spinal fluid, and autopsy **brain tissues of autistic patients**.

42) www.ncbi.nlm.nih.gov/pubmed/18445737
- Acetaminophen (paracetamol) use, measles-mumps-rubella vaccination, and autistic disorder: the results of a parent survey.
- "**Acetaminophen use after measles-mumps-rubella vaccination was significantly associated with autistic disorder** when considering children 5 years of age or less."

43) www.ncbi.nlm.nih.gov/pubmed/17454560
- A case series of children with apparent mercury toxic encephalopathies manifesting with clinical symptoms of regressive autistic disorders.
- "There was a significant dose-response relationship between the severity of the regressive ASDs observed and the total mercury dose children received from Thimerosal-containing vaccines/Rho (D)-immune globulin preparations."

44) www.ncbi.nlm.nih.gov/pubmed/19106436
- A comprehensive review of mercury provoked autism.
- "Furthermore, a review of molecular mechanisms indicates that Hg exposure can induce death, disorganization and/or damage to selected neurons in the brain similar to that seen in recent ASD brain pathology studies, and this alteration may likely produce the symptoms by which ASDs are diagnosed."

45) www.ncbi.nlm.nih.gov/pubmed/11339848
- Autism: a novel form of mercury poisoning.
- "A review of medical literature and US government data suggests that: (i) many cases of idiopathic autism are induced by early mercury exposure from thimerosal; (ii) this type of autism represents an unrecognized mercurial syndrome; and (iii) genetic and non-genetic factors establish a predisposition whereby thimerosal's adverse effects occur only in some children."

46) www.ncbi.nlm.nih.gov/pubmed/17674242
- A prospective study of thimerosal-containing Rho(D)-immune globulin administration as a risk factor for autistic disorders.
- "Children with ASD were significantly more likely to have Rh-negative mothers than controls. Each ASD patient's mother was determined to have been administered a TCR during her pregnancy."

47) www.ncbi.nlm.nih.gov/pubmed/21993250
- Hypothesis: conjugate vaccines may predispose children to autism spectrum disorders.

"**Conjugate vaccines fundamentally change the manner in which the immune systems of infants and young children function** by deviating their immune responses."

48) www.ncbi.nlm.nih.gov/pubmed/15780490
- The potential importance of steroids in the treatment of autistic spectrum disorders and other disorders involving mercury toxicity.

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- “In light of the fact that there are a number of other diseases that may have a chronic mercury toxicity component, such as Alzheimer’s disease, heart disease, obesity, ALS, asthma, and other various forms of autoimmune disorders, it is imperative that further research should be conducted to understand mercury-testosterone toxicity.”

49) www.ncbi.nlm.nih.gov/pubmed/12933322
- Reduced levels of mercury in first baby haircuts of autistic children.
- “Hair mercury levels among controls were significantly correlated with the number of the mothers’ amalgam fillings and their fish consumption as well as exposure to mercury through childhood vaccines, correlations that were absent in the autistic group.”

50) www.ncbi.nlm.nih.gov/pubmed/16870260
- Cultured lymphocytes from autistic children and non-autistic siblings up-regulate heat shock protein RNA in response to thimerosal challenge.
- “The differences [between autistic and non-autistic siblings] in expression profiles between those cells treated with zinc versus thimerosal were dramatic.”

51) https://www.ncbi.nlm.nih.gov/pubmed/26948677
- Aluminum adjuvants of vaccines injected into the muscle: Normal fate, pathology and associated disease.
- Safety concerns largely depend on the long biopersistence time inherent to this adjuvant, which may be related to its quick withdrawal from the interstitial fluid by avid cellular uptake; and the capacity of adjuvant particles to migrate and slowly accumulate in lymphoid organs and the brain, a phenomenon documented in animal models and resulting from MCP1/CCL2-dependant translocation of adjuvant-loaded monocyte-lineage cells (Trojan horse phenomenon). These novel insights strongly suggest that serious re-evaluation of long-term aluminum adjuvant phamacokinetics and safety should be carried out.

52) https://www.ncbi.nlm.nih.gov/pubmed/29021840
- Vaccination and autoimmune diseases: is prevention of adverse health effects on the horizon?
- Molecular mimicry and bystander activation are reported as possible mechanisms by which vaccines can cause autoimmune reactions. The individuals who might be susceptible to develop these reactions could be especially not only those with previous post-vaccination phenomena and those with allergies but also in individuals who are prone to develop autoimmune diseases, such as those with a family history of autoimmunity or with known autoantibodies, and the genetic predisposed individuals.

53) Current Opinion in Neurology, 2012
- Neurological adverse events associated with vaccination.
- “The present review summarizes data on neurologic complications following vaccination and provides evidence that indicates whether they were directly associated with the vaccines. These complications include autism (measles vaccine), multiple sclerosis (hepatitis B vaccine), meningoencephalitis (Japanese encephalitis vaccine), Guillain-Barré syndrome and giant cell arteritis (influenza vaccine), and reactions after exposure to the animal rabies vaccine. Seizures and hypotonic/hyporesponsive episodes following pertussis vaccination and potential risks associated with varicella vaccination, as well as vaccine-associated paralytic poliomyelitis following oral poliovirus vaccination, are also described.”

54) https://academicjournals.org/article/article1411048618_Deisher%20et%20al.pdf?fbclid=IwAR1Iyx666ZJzPXpcq1EEUml_pf6DTHynGDIzQFLGGmRXqSlXiWxwExYAzeQ
- Impact of environmental factors on the prevalence of autistic disorder after 1979.

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- "Thus, rising autistic disorder prevalence is directly related to vaccines manufactured utilizing human fetal cells. Increased paternal age and DSM revisions were not related to rising autistic disorder prevalence"

55) https://www.ncbi.nlm.nih.gov/pubmed/29413097
- Exposure to thimerosal-containing hepatitis B vaccines is associated with an increased risk of developing **ADHD.**

56) https://www.ncbi.nlm.nih.gov/pubmed/30711515
- Pandemrix-induced narcolepsy is associated with genes related to immunity and neuronal survival.
- "We found a novel association between Pandemrix-induced narcolepsy and the non-coding RNA gene GDNF-AS1, which has been shown to regulate expression of the essential neurotrophic factor GDNF. **Changes in regulation of GDNF have been associated with neurodegenerative diseases."**

57) https://www.ncbi.nlm.nih.gov/pubmed/938230
- **Neomycin adjuvant in vaccines caused kidney failure** and permanent loss of hearing.

58) https://www.ncbi.nlm.nih.gov/pmc/articles/PMC2137847/
- Neomycin-induced liver cirrhosis and fibrosis can be alleviated with supplemental choline.

59) https://www.gastrojournal.org/article/0016-5085(82)90006-3/pdf
- Neomycin and lactulose combined induced the greatest intestinal acidification, and greatest reduction in gut microflora. (many vaccines contain beta-lactone and lactose, galactose, dextrose, glucose and other synthetic sugars, which potentially could exhibit similar effects on the gut microbiome, but further examination is warranted.

60) https://ca.gsk.com/media/591357/neosporin.pdf
- Neosporin side-effects and toxicity, neomycin is an ingredient in neosporin. **(and in vaccines).**

61) https://www.karger.com/Article/Pdf/202042
- Neomycin-induced malabsorption and **serious kidney damage.**

62) https://www.ncbi.nlm.nih.gov/pubmed/22235057
- Mechanisms of aluminum adjuvant toxicity and autoimmunity in pediatric populations.

63) https://www.ncbi.nlm.nih.gov/pubmed/22235045
- Autoimmunity following hepatitis B vaccine as part of the spectrum of 'Autoimmune (Auto-inflammatory) Syndrome induced by Adjuvants' (ASIA): analysis of 93 cases.
- Common clinical characteristics were observed among 93 patients diagnosed with immune-mediated conditions post-HBVv, suggesting a common denominator in these diseases. In addition, risk factors such as history of autoimmune diseases and the appearance of adverse event(s) during immunization may serve to predict the risk of post-immunization diseases. The ASIA criteria were found to be very useful among adults with post-vaccination events. The application of the ASIA criteria to pediatric populations requires further study.

64) https://www.oatext.com/Pilot-comparative-study-on-the-health-of-vaccinated-and-unvaccinated-6-to-12-year-old-U-S-children.php
- **Pilot comparative study** on the health of vaccinated and unvaccinated 6- to 12- year old U.S. children.

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- In conclusion, vaccinated homeschool children were found to have a higher rate of allergies and NDD than unvaccinated homeschool children. While vaccination remained significantly associated with NDD after controlling for other factors, preterm birth coupled with vaccination was associated with an apparent synergistic increase in the odds of NDD.

65) https://www.ncbi.nlm.nih.gov/pmc/articles/PMC3018252/
- Thimerosal-containing vaccines and Autism: A Review of Recent Epidemologic Studies.

66) https://www.ncbi.nlm.nih.gov/m/pubmed/21058170/
- Hepatitis B vaccination of male neonates and autism diagnosis, NHIS 1997-2002.
- Findings suggest that U.S. male neonates vaccinated with the hepatitis B vaccine prior to 1999 (from vaccination record) had a threefold higher risk for parental report of autism diagnosis compared to boys not vaccinated as neonates during that same time period. Nonwhite boys bore a greater risk.

67) https://www.sciencedirect.com/science/article/pii/S0048969717316479
- Associations of prenatal and early childhood mercury exposure with autistic behaviors at 5 years of age: The Mothers and Children's Environmental Health (MOCEH) study
- Blood mercury levels at late pregnancy and early childhood were associated with more autistic behaviors in children at 5 years of age.

68) https://www.sciencedirect.com/science/article/pii/S0946672X17306089
- The association between mercury levels and autism spectrum disorders: A systematic review and meta-analysis.
- Results of the current meta-analysis revealed that mercury is an important causal factor in the etiology of ASD.

69) https://www.ncbi.nlm.nih.gov/pubmed/15808517
- Immunosuppressive and autoimmune effects of thimerosal in mice.

EtHg made up 59% and inorganic mercury 41% of the renal mercury. In conclusion, the organic mercury compound thimerosal (EtHg) has initial immunosuppressive effects similar to those of MeHg. However, in contrast to MeHg, thimerosal treatment leads in genetically susceptible mice to a second phase with strong immunostimulation and autoimmunity, which is T-cell dependent, H-2 linked and may at least partly be due to the inorganic mercury derived from the metabolism of ethyl mercury.

70) http://www.neurology.org/content/63/5/838.short
- Hep B vaccine and increased risk of multiple sclerosis.
- These findings are consistent with the hypothesis that immunization with the recombinant hepatitis B vaccine is associated with an increased

risk of MS, and challenge the idea that the relation between hepatitis B vaccination and risk of MS is well understood.

71) https://www.scribd.com/doc/60166949/Roosendaal-study-of-vaccinated-vs-unvaccinated-children-in-the-Netherlands-Results-Survey

72) https://www.ncbi.nlm.nih.gov/pubmed/30593270
- Myasthenia gravis following human papillomavirus vaccination: a case report.
- A 23-year-old woman presented with binocular diplopia, ptosis, dysarthria, and dysphagia, which occurred on the 3rd day after the second HPV vaccine administration. She was diagnosed with MG based on history, clinical features, and test results.
- HPV vaccination may cause MG owing to unexpected abnormal autoimmune responses.

73) http://www.ncbi.nlm.nih.gov/pubmed/16206512

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- A case-control study of serious autoimmune adverse events following hepatitis B immunization.

74) https://www.scribd.com/document/196005066/Vaccine-Research-SAAD

75) https://www.scribd.com/document/120430481/CDC-MMRV-Vaccine-Data-Safety-Link-Slides
- CDC MMRV vaccine safety data.
- **One in every thousand** children vaccinated with the MMRV vaccine develop **seizures**.

76) https://www.scribd.com/document/74769917/Do-Aluminum-Vaccine-Adjuvants-Contribute-to-Rising-Prevalence-of-Autism
- Al exposure from vaccines in the US vaccination schedule from 1991 to 2008 shows a highly significant positive linear correlation with ASD prevalence at all three levels of exposure.

77) https://www.scribd.com/document/74769917/Do-Aluminum-Vaccine-Adjuvants-Contribute-to-Rising-Prevalence-of-Autism
- Autism: A form of lead and mercury toxicity.
- “Lead and mercury can lead to autistic disorders.”

78) https://www.sciencedirect.com/science/article/pii/S0162013413001773
- Administration of aluminium to neonatal mice in vaccine-relevant amounts is associated with adverse long term neurological outcomes.
- Al adjuvants can **persist in the body** long-term and **penetrate the blood-brain barrier**.
- Al adjuvants can trigger adverse neurobehavioral outcomes in vaccine-relevant exposures.
- Efforts should be made to reduce Al exposure from vaccines.

79) https://www.ncbi.nlm.nih.gov/pmc/articles/PMC5909100/
- Immunoexcitotoxicity as the central mechanism of etiopathology and treatment of autism spectrum disorders: A possible role of fluoride and aluminum
- Children are exposed to such sequential immune stimulation via a growing number of environmental excitotoxins, vaccines, and persistent viral infections. We demonstrate that fluoride and aluminum (Al3+) can exacerbate the pathological problems by worsening excitotoxicity and inflammation. While Al3+ appears among the key suspicious factors of ASD, fluoride is rarely recognized as a causative culprit. A long-term burden of these ubiquitous toxins has several health effects with a striking resemblance to the symptoms of ASD. In addition, their synergistic action in molecules of aluminofluoride complexes can affect cell signaling, neurodevelopment, and CNS functions at several times lower concentrations than either Al3+ or fluoride acting alone.

80) https://1796web.com/pdfs/haley.pdf
- Mercury toxicity: Genetic susceptibility and synergistic effects
- In summary, it appears as if autistics represent a subset of the population that are more susceptible to the toxic effects of mercury and thimerosal because they are not efficient excreters of these toxic materials.

81) https://link.springer.com/article/10.1007%2Fs12026-013-8404-0
- Autoimmune/autoinflammatory syndrome induced by adjuvants (ASIA syndrome) in commercial sheep.
- Detection of Al(III) in tissues indicated the presence of aluminum in the nervous tissue of experimental animals. The present report is the first description of a new sheep syndrome (ovine ASIA syndrome) linked to multiple, repetitive vaccination and that can have

devastating consequences as it happened after the compulsory vaccination against bluetongue in 2008.

82) https://www.ncbi.nlm.nih.gov/pubmed?orig_db=PubMed&cmd=Search&term=%22Lancet%22%5BJour%5D+AND+398%5Bpage%5D+AND+2008%5Bpdat%5D

- Influenza vaccination and risk of community-acquired pneumonia in immunocompetent elderly people: a population-based, nested case-control study.
- The effect of influenza vaccination on the risk of pneumonia in elderly people during influenza seasons might be less than previously estimated.

83) https://www.ncbi.nlm.nih.gov/pubmed/12660567

- Lessons from macrophagic myofasciitis: towards definition of a vaccine adjuvant-related syndrome.
- Aluminum hydroxide is known to potently stimulate the immune system and to shift immune responses towards a Th-2 profile. It is plausible that persistent systemic immune activation that fails to switch off represents the pathophysiologic basis of chronic fatigue syndrome associated with macrophagic myofasciitis, similarly to what happens in patients with post-infectious chronic fatigue and possibly idiopathic chronic fatigue syndrome.

84) https://www.ncbi.nlm.nih.gov/pubmed?Db=pubmed&Cmd=Retrieve&list_uids=11335699&dopt=abstractplus

- Central nervous system disease in patients with macrophagic myofasciitis.
- The association between MMF and multiple sclerosis-like disorders may give new insights into the controversial issues surrounding vaccinations and demyelinating CNS disorders.

85) https://n.neurology.org/content/63/5/838.long

- Recombinant hepatitis B vaccine and the risk of multiple sclerosis
A prospective study.

- These findings are consistent with the hypothesis that immunization with the recombinant hepatitis B vaccine is associated with an increased risk of MS, and challenge the idea that the relation between hepatitis B vaccination and risk of MS is well understood.

86) https://www.ncbi.nlm.nih.gov/pubmed?Db=pubmed&Cmd=Retrieve&list_uids=17114826&dopt=abstractplus

- Aluminum adjuvant linked to Gulf War illness induces motor neuron death in mice.-
- Apoptotic neurons were identified in aluminum-injected animals that **showed significantly increased activated caspase-3** labeling in lumbar spinal cord (255%) and primary motor cortex (192%) compared with the controls. Aluminum-treated groups also showed significant motor neuron loss (35%) and increased numbers of astrocytes (350%) in the lumbar spinal cord. The findings suggest a possible role for the aluminum adjuvant in some neurological features associated with GWI and possibly an additional role for the combination of adjuvants.

87) https://onlinelibrary.wiley.com/doi/abs/10.1111/j.1600-0773.1992.tb00471.x?sid=nlm%3Apubmed

- It is likely that **aluminium is transported to the brain by the iron-binding protein transferrin** and enters the brain via specific transferrin receptors.
- Aluminium is widely used as an adjuvant in human vaccines, and children can often receive upto **3.75 mg** of parenteral aluminium during the first six months of life.

88) https://content.iospress.com/articles/journal-of-alzheimers-disease/jad101494

- Aluminum and Alzheimer's Disease: After a Century of Controversy, Is there a Plausible Link?

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- **Very small amounts** of Al are needed to produce neurotoxicity and this criterion is satisfied through dietary Al intake.
- Al sequesters different transport mechanisms to actively traverse brain barriers.
- Incremental acquisition of small amounts of Al over a lifetime favors its selective accumulation in brain tissues.
- Since 1911, experimental evidence has repeatedly demonstrated that chronic Al intoxication reproduces neuropathological hallmarks of AD.

89) https://www.sciencedirect.com/science/article/pii/S0162013409001895?via%3Dihub
- Long-term persistence of vaccine-derived aluminum hydroxide is associated with chronic cognitive dysfunction.
- Macrophagic myofasciitis (MMF) is an emerging condition, characterized by specific muscle lesions assessing long-term persistence of aluminum hydroxide within macrophages at the site of previous immunization.
- Long-term persistence of vaccine-derived aluminum hydroxide within the body assessed by MMF is associated with cognitive dysfunction, not solely due to chronic pain, fatigue and depression.

90) https://link.springer.com/article/10.1007%2Fs00296-014-3065-4
- Macrophagic myofasciitis and vaccination: Consequence or coincidence?
- Thirteen patients received intramuscular administration of aluminum-containing vaccine prior to the onset of symptoms. MMF may mirror a distinctive pattern of an inflammatory myopathy. The vaccines containing this adjuvant may trigger MMF in some patients.

91) https://www.nmd-journal.com/article/S0960-8966(06)00036-8/fulltext
- Al(OH)3-adjuvanted vaccine-induced macrophagic myofasciitis in rats is influenced by the genetic background.
- Genetic determinatives of cytotoxic T-cell responses could interfere with the clearance process and condition the persistence of vaccine-induced MMF-lesions.

92) https://bmcmedicine.biomedcentral.com/articles/10.1186/1741-7015-11-99
- Slow CCL2-dependent translocation of biopersistent particles from muscle to brain
- Intramuscular injection of **alum-containing vaccine** was associated with the appearance of aluminum deposits in distant organs, such as **spleen and brain** where they were still detected one year after injection.

93) https://www.ncbi.nlm.nih.gov/pubmed?Db=pubmed&Cmd=Retrieve&list_uids=11522584&dopt=abstractplus
- Macrophagic myofasciitis lesions assess long-term persistence of vaccine-derived aluminium hydroxide in muscle.
- MMF lesion is secondary to intramuscular injection of aluminium hydroxide-containing vaccines, shows both **long-term persistence** of aluminium hydroxide and an ongoing local immune reaction, and is detected in patients with systemic symptoms which appeared **subsequently to vaccination**.

94) https://www.ncbi.nlm.nih.gov/pubmed/27908630
- Non-linear dose-response of aluminium hydroxide adjuvant particles: Selective low dose neurotoxicity.
- Concerns about its safety emerged following recognition of its unexpectedly long-lasting biopersistence within immune cells in some individuals, and reports of chronic fatigue syndrome, cognitive dysfunction, myalgia, dysautonomia and autoimmune/inflammatory features temporally linked to multiple Al-containing vaccine administrations.

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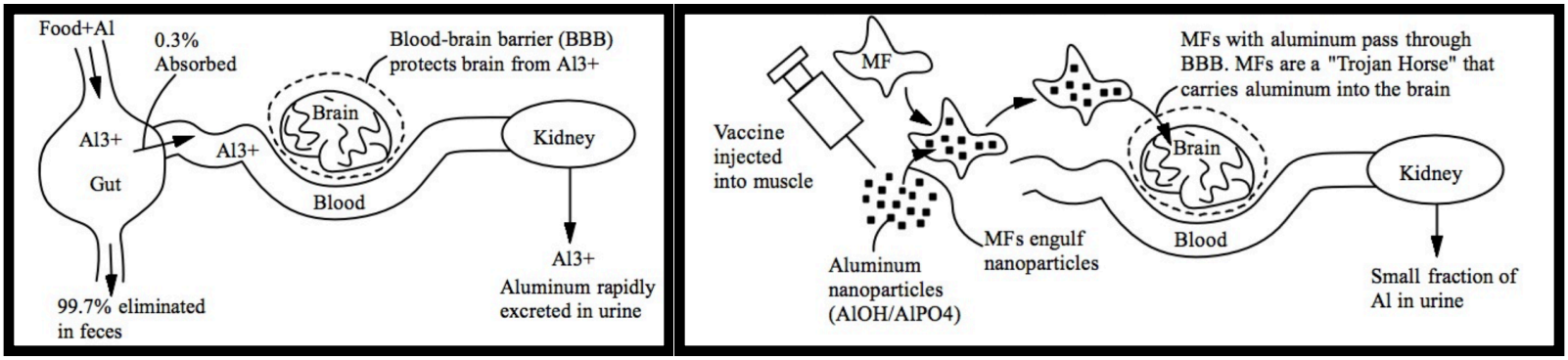
95) https://www.ncbi.nlm.nih.gov/pubmed/15961160
- Nanomolar aluminum induces pro-inflammatory and pro-apoptotic gene expression in human brain cells in primary culture.
- Preliminary data indicate that of the most altered gene expression levels, 17/24 (70.8%) of aluminum-affected genes, and 7/8 (87.5%) of aluminum-induced genes exhibit expression patterns similar to those observed in AD.

96) https://www.ncbi.nlm.nih.gov/pubmed/26265215
- Nanomolar aluminum induces expression of the inflammatory systemic biomarker C-reactive protein (CRP) in human brain microvessel endothelial cells (hBMECs).
- The three major findings in this short communication are: (i) that CRP is up-regulated in AD serum; (ii) that CRP serum levels increased in parallel with AD progression; and (iii) for the first time show that nanomolar aluminum potently up-regulates CRP expression in hBMECs to many times its 'basal abundance'. The results suggest that aluminum-induced CRP may in part contribute to a pathophysiological state associated with a chronic systemic inflammation of the human vasculature.

97) https://www.ncbi.nlm.nih.gov/pubmed/25699008
- Biopersistence and brain translocation of aluminum adjuvants of vaccine.
- Concerns linked to the use of alum particles emerged following recognition of their causative role in the so-called macrophagic myofasciitis (MMF) lesion detected in patients with myalgic encephalomyelitis/chronic fatigue/syndrome. MMF revealed an unexpectedly long-lasting biopersistence of alum within immune cells in presumably susceptible individuals, stressing the previous fundamental misconception of its biodisposition.

FIGURE 4



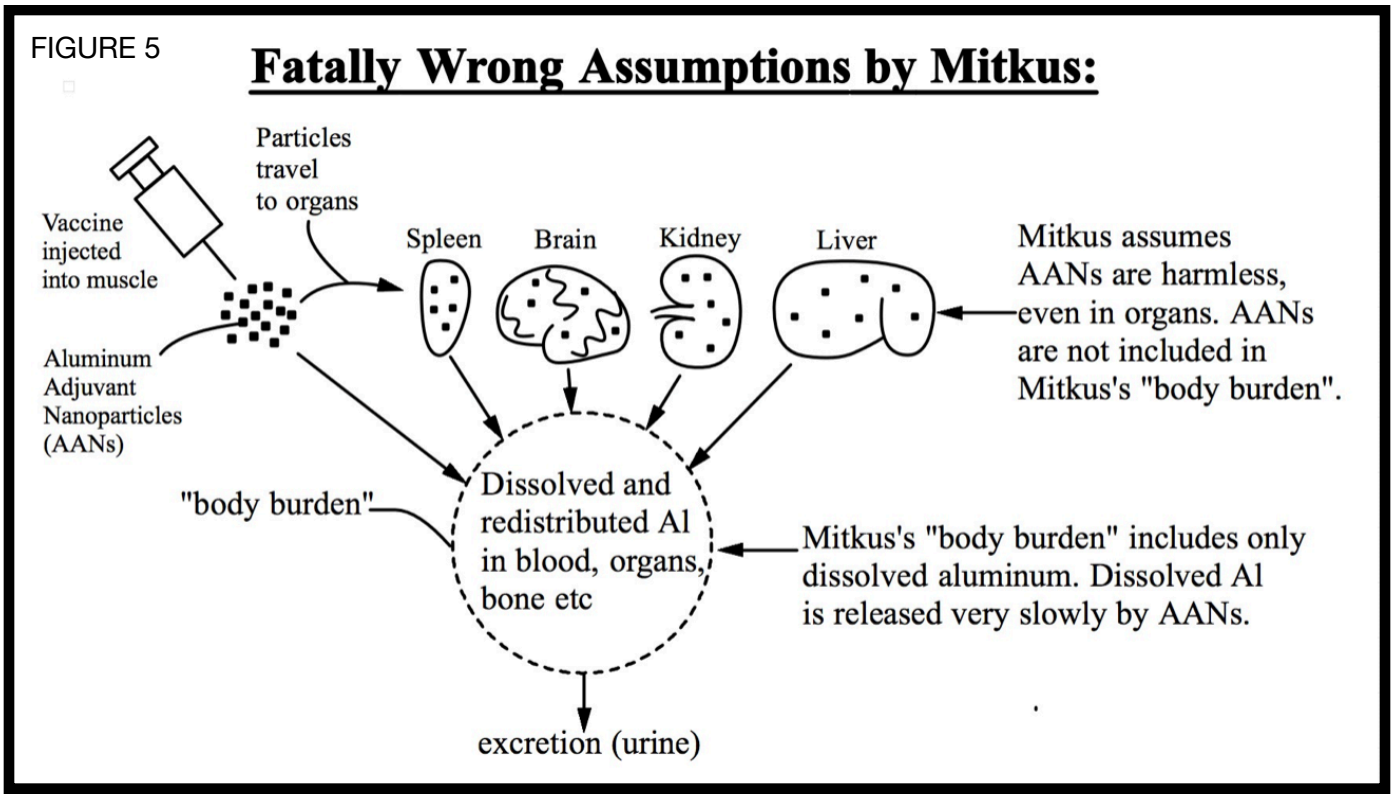
ORAL ALUMINUM INTRAVENOUS ALUMINUM

98) https://www.ncbi.nlm.nih.gov/pubmed/23932735
- Administration of aluminum to neonatal mice in vaccine-relevant amounts is associated with adverse long term neurological outcomes.
- These current data implicate Al injected in early postnatal life in some CNS alterations that may be relevant for a better understanding of the etiology of ASD.

99) https://jamanetwork.com/journals/jamapediatrics/fullarticle/1712578
- No significant change in levels of urinary or serum aluminum were seen after vaccination. (This study found no aluminum excreted through urine post-vaccination, and it did not find aluminum in the blood either, which could indicate the aluminum is “trapped” inside macrophages, which travel through the lymphatics, not the blood.)

- Significant declines were noted post-vaccination in serum iron (58.1%), manganese (25.9%), selenium (9.5%), and zinc (36.4%) levels, as was a significant increase in serum copper level (8.0%)
- (This study supports the fallacy in the rhetoric pushed by vaccine manufacturers that aluminum adjuvant is readily excreted by the body, and it supports the growing body of evidence recently uncovering its biopersistence and inflammatory pathways.)

FIGURE 5



100) https://www.ncbi.nlm.nih.gov/pubmed/29307441
- Critical analysis of reference studies on the toxicokinetics of aluminum-based adjuvants.
- Keith et al. (Vaccine, 2002) used a high MRL (2mg/kg/d), an erroneous model of 100% immediate absorption of vaccine Al, and did not consider renal and blood-brain barrier immaturity. **Mitkus et al. (Vaccine, 2011)** only considered solubilized Al, with erroneous calculations of absorption duration. Systemic Al particle diffusion and **neuro-inflammatory potential** were omitted. The MRL they used was both inappropriate (oral Al vs. injected adjuvant) and still too high (1mg/kg/d) regarding recent animal studies. Both paucity and serious weaknesses of reference studies strongly suggest that novel experimental studies of Al adjuvants toxicokinetics should be performed on the long-term.

101) https://www.ncbi.nlm.nih.gov/pubmed/19277608
- Prenatal exposure to infection: a primary mechanism for abnormal dopaminergic development in schizophrenia.
- Experimental investigations show that early prenatal immune challenge (immunization) can lead to the emergence of early structural and functional alterations in the mesocorticolimbic DA system, long before the onset of the full spectrum of psychosis-associated behavioral and cognitive abnormalities in adulthood.

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102) https://www.ncbi.nlm.nih.gov/pubmed/18752727
- Prenatal immune activation leads to multiple changes in basal neurotransmitter levels in the adult brain: implications for brain disorders of neurodevelopmental origin such as schizophrenia.
- Our results thus confirm that maternal immunological stimulation during early/middle pregnancy is sufficient to induce long-term changes in multiple neurotransmitter levels in the brains of adult offspring. This further supports the possibility that infection-mediated interference with early fetal brain development may predispose the developing organism to the emergence of neurochemical imbalances in adulthood, which may be critically involved in the precipitation of adult behavioural and pharmacological abnormalities after prenatal immune challenge.

103) https://www.ncbi.nlm.nih.gov/pmc/articles/PMC5095060/
- Exploiting macrophages as targeted carrier to guide nanoparticles into glioma
- "we exploited **macrophages as 'Trojan horses'** to carry drug-loading nanoparticles (NPs), pass through barriers, and offload them into brain tumor sites.

104) https://www.ncbi.nlm.nih.gov/pubmed/19376155/
- Curcumin attenuates aluminium-induced functional neurotoxicity in rats.
- (this study demonstrates the ability of turmeric's main active compound; curcumin, to **enter the B.B.B** and remove biopersistent aluminum, especially nanoparticles as present in vaccines.)

105) https://www.ncbi.nlm.nih.gov/pubmed/19740540
- Aluminum hydroxide injections lead to **motor deficits and motor neuron degeneration**.
- Aluminum-treated mice showed significantly increased apoptosis of motor neurons and increases in reactive astrocytes and microglial proliferation within the spinal cord and cortex. Morin stain detected the presence of aluminum in the cytoplasm of motor neurons with some neurons also testing positive for the presence of hyper-phosphorylated tau protein, a **pathological hallmark of various neurological diseases**, including Alzheimer's disease and frontotemporal dementia. A second series of experiments was conducted on mice injected with six doses of aluminum hydroxide. Behavioural analyses in these mice revealed significant impairments in a number of motor functions as well as diminished spatial memory capacity.

106) https://www.ncbi.nlm.nih.gov/pubmed/22099159
- Do aluminum vaccine adjuvants contribute to the rising prevalence of autism?
- Our results show that: (i) children from countries with the highest ASD prevalence appear to have the highest exposure to Al from vaccines; (ii) the increase in exposure to Al adjuvants significantly correlates with the increase in ASD prevalence in the United States observed over the last two decades (Pearson r=0.92, p<0.0001); and (iii) a significant correlation exists between the amounts of Al administered to preschool children and the current prevalence of ASD in seven Western countries, particularly at 3-4 months of age (Pearson r=0.89-0.94, p=0.0018-0.0248).
- The application of the Hill's criteria to these data indicates that **the correlation between Al in vaccines and ASD may be causal.**

107) https://www.ncbi.nlm.nih.gov/pmc/articles/PMC3672058/
- Maternal Immune Activation Increases Neonatal Mouse Cortex Thickness and Cell Density.
- Studies of the human autism brain are also consistent with the notion that autism might arise from an activation of the immune system to trigger abnormal brain development.

108) https://www.ncbi.nlm.nih.gov/pmc/articles/PMC3322300/

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- Maternal immune activation yields offspring displaying mouse versions of the three core symptoms of autism.

109) https://www.nature.com/articles/mp201715
- Maternal immune activation dysregulation of the fetal brain transcriptome and relevance to the pathophysiology of autism spectrum disorder
- MIA may confer increased risk for ASD by dysregulating key aspects of fetal brain gene expression that are highly relevant to pathophysiology affecting ASD.

110) https://link.springer.com/article/10.1007/s11011-017-0077-2
- The putative role of environmental aluminium in the development of chronic neuropathology in adults and children. How strong is the evidence and what could be the mechanisms involved?
- Detailed are several mechanisms whereby significant quantities of aluminium introduced via immunisation could produce chronic neuropathology in genetically susceptible children. Accordingly, it is recommended that the use of aluminium salts in immunisations should be discontinued and that adults should take steps to minimise their exposure to environmental aluminium.

111) https://www.researchgate.net/publication/315813451_Clinical_clues_for_autoimmunity_and_neuroinflammation_in_patients_with_autistic_regression

112) https://www.ncbi.nlm.nih.gov/pmc/articles/PMC4177682/
- A comparison of temporal trends in United States autism prevalence to trends in suspected environmental factors.
- Polybrominated diphenyl ethers (PBDEs), **cumulative aluminum adjuvants, cumulative total immunizations, glyphosate, maternal obesity.**

113) https://www.ncbi.nlm.nih.gov/pubmed/12145534
- Abnormal measles-mumps-rubella antibodies and CNS autoimmunity in children with autism.
- An inappropriate antibody response to MMR, specifically the measles component thereof, might be related to pathogenesis of autism.

114) https://www.termedia.pl/Original-paper-Lasting-neuropathological-changes-in-rat-brain-after-intermittent-neonatal-administration-of-thimerosal,20,15811,1,1.html
- Lasting neuropathological changes in rat brain after intermittent neonatal administration of thimerosal.
- Administration of THIM to suckling rats in a vaccination-like manner and at doses analogous to those used in paediatric vaccines or higher injures neurons and astroglia in several brain regions.

115) https://www.ncbi.nlm.nih.gov/pubmed/14754936
- Age at first measles-mumps-rubella vaccination in children with autism and school-matched control subjects: a population-based study in metropolitan atlanta.
- Similar proportions of case and control children were vaccinated by the recommended age or shortly after (ie, before 18 months) and before the age by which atypical development is usually recognized in children with autism (ie, 24 months). Vaccination before 36 months was more common among case children than control children, especially among children 3 to 5 years of age.

116) https://www.ncbi.nlm.nih.gov/pubmed/24235069

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- Effect of thimerosal on the neurodevelopment of premature rats.
- The negative adverse consequences on neurodevelopment observed in the present study are consistent with previous studies; **this study raised serious concerns about adverse neurodevelopmental disorder such as autism in humans following the ongoing worldwide routine administration of thimerosal-containing vaccines to infants.**

117) https://www.ncbi.nlm.nih.gov/pubmed/19747466?itool=EntrezSystem2.PEntrez.Pubmed.Pubmed_ResultsPanel.Pubmed_RVDocSum&ordinalpos=1

- Neonatal administration of a vaccine preservative, thimerosal, produces lasting impairment of nociception and apparent activation of opioid system in rats.
- THIM administration to suckling or adult rats impairs sensitivity to pain, apparently due to activation the endogenous opioid system.

118) https://www.ncbi.nlm.nih.gov/pubmed/21623535

- A positive association found between autism prevalence and childhood vaccination uptake across the U.S. population.
- Although individuals probably have a genetic predisposition to develop autism, researchers suspect that one or more environmental triggers are also needed. One of those triggers might be the battery of vaccinations that young children receive. Using regression analysis and controlling for family income and ethnicity, the relationship between the proportion of children who received the recommended vaccines by age 2 years and the prevalence of autism (AUT) or speech or language impairment (SLI) in each U.S. state from 2001 and 2007 was determined. A positive and statistically significant relationship was found: The higher the proportion of children receiving recommended vaccinations, the higher was the prevalence of AUT or SLI. A 1% increase in vaccination was associated with an additional 680 children having AUT or SLI.

119) https://academicjournals.org/journal/JPHE/article-abstract/C98151247042

- Impact of environmental factors on the prevalence of autistic disorder after 1979
- Rising autistic disorder prevalence is directly related to **vaccines manufactured utilizing human fetal cells.** Increased paternal age and DSM revisions were not related to rising autistic disorder prevalence.

120) https://www.ncbi.nlm.nih.gov/pubmed/16126512

- Infection, vaccines and other environmental triggers of autoimmunity.
- Vaccines, in several reports were found to be temporally followed by a new onset of autoimmune diseases. The same mechanisms that act in infectious invasion of the host, apply equally to the host response to vaccination. It has been accepted for diphtheria and tetanus toxoid, polio and measles vaccines and GBS. Also this theory has been accepted for MMR vaccination and development of autoimmune thrombocytopenia, MS has been associated with HBV vaccination. Occupational and other chemical exposures are considered as triggers for autoimmunity.

121) https://www.ncbi.nlm.nih.gov/pubmed/21549155

- Persistent behavioral impairments and alterations of brain dopamine system after early postnatal administration of thimerosal in rats.
- Early postnatal THIM administration causes lasting neurobehavioral impairments and neurochemical alterations in the brain, dependent on dose and sex.

122) https://www.ncbi.nlm.nih.gov/pubmed/25098693

- Parsonage-Turner syndrome following post-exposure prophylaxis.

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- An immunological event, such as - in this case - a vaccination as part of PEP treatment, can trigger the onset of PTS. The clinical presentation is distinctive with acute severe pain followed by patchy paresis, atrophy and sensory symptoms that persist for months to years.

123) https://www.ncbi.nlm.nih.gov/pubmed/9756729
- Serological association of measles virus and human herpesvirus-6 with brain autoantibodies in autism.
- This study is the first to report an association between virus serology and brain autoantibody in autism; it supports the hypothesis that a virus-induced autoimmune response may play a causal role in autism.

124) https://www.ncbi.nlm.nih.gov/pubmed/18321861
- Inhibition of the human thioredoxin system. A molecular mechanism of mercury toxicity.
- We analyzed the effects of mercuric chloride (HgCl(2)) and monomethylmercury (MeHg) on the proteins of the mammalian thioredoxin system, thioredoxin reductase (TrxR) and thioredoxin (Trx), and of the glutaredoxin system, glutathione reductase (GR) and glutaredoxin (Grx). HgCl(2) and MeHg inhibited recombinant rat TrxR with IC(50) values of 7.2 and 19.7 nm, respectively.

125) https://www.ncbi.nlm.nih.gov/pmc/articles/PMC3395253/
- Thimerosal-Derived Ethylmercury Is a Mitochondrial Toxin in Human Astrocytes: Possible Role of Fenton Chemistry in the Oxidation and Breakage of mtDNA
- These mitochondria appear to have undergone a permeability transition, an observation supported by the **five-fold increase in Caspase-3 activity observed after Thimerosal treatment.**

126) https://www.ncbi.nlm.nih.gov/pmc/articles/PMC1513334/
- Uncoupling of ATP-Mediated Calcium Signaling and Dysregulated Interleukin-6 Secretion in Dendritic Cells by Nanomolar Thimerosal.
- THI and Ry, in combination, produced additive effects leading to uncoupling of IP3R and RyR1 signals. THI altered ATP-mediated interleukin-6 secretion, initially enhancing the rate of cytokine secretion but suppressing cytokine secretion overall in DCs. DCs are exquisitely sensitive to THI, with one mechanism involving the uncoupling of positive and negative regulation of Ca2+ signals contributed by RyR1.

127) https://www.ncbi.nlm.nih.gov/pubmed/18704827
- An investigation of porphyrinuria in Australian children with autism.
- These profiles serve as an indirect measure of environmental toxicity generally, and mercury (Hg) toxicity specifically, with the latter being a variable proposed as a causal mechanism of ASD.

128) https://link.springer.com/article/10.1007/s11011-016-9870-6
- Altered urinary porphyrins and mercury exposure as biomarkers for autism severity in Egyptian children with autism spectrum disorder.
- The results showed that the ASD children in the present study had increased blood Hg and Pb levels compared with healthy control children indicating that disordered porphyrin metabolism might interfere with the pathology associated with the autistic neurologic phenotype.

129) https://pdfs.semanticscholar.org/70e1/c409d94aa8a6871b57527698ea6dc603ca49.pdf
- Mercury and Autism: A Review
- There has been a great deal of information from different studies that seems to indicate that repetitive mercury exposure during pregnancy, through thimerosal, dental amalgam, and fish

consumption, and after birth, through thimerosal-containing vaccina- tions and pollution, in genetically susceptible individuals is one potential factor in autism.

130) https://www.ncbi.nlm.nih.gov/pmc/articles/PMC5705731/
- (**RETRACTED ARTICLE** EXPOSES VACCINE RESEARCH **CONFLICT OF INTEREST**)
- This review includes a systematic literature search of original studies on the potential relationship between Hg and ASD from 1999 to August 2015, finding that of the studies with public health and/or industry affiliation, 86% reported no relationship between Hg and ASD. However, among studies without public health and/or industry affiliation, **only 21% find no relationship between Hg and ASD**. The discrepancy in these results suggests a bias indicative of a conflict of interest.

131) https://www.researchgate.net/publication/293486496_Thimerosal_in_childhood_vaccines_neurodevelopment_disorders_and_heart_disease_in_the_United_States
- Thimerosal in childhood vaccines, neurodevelopment disorders, and heart disease in the United States.
- Our analyses showed increasing relative risks for neurodevelopment disorders and heart disease with increasing doses of mercury.

132) https://www.ncbi.nlm.nih.gov/pubmed/15795695
- A two-phased population epidemiological study of the safety of thimerosal-containing vaccines: a follow-up analysis.
- This study showed that exposure to mercury from TCVs administered in the US was a consistent significant risk factor for the development of NDs.

133) https://www.ncbi.nlm.nih.gov/pubmed/9500320?dopt=Abstract
- Ileal-lymphoid-nodular hyperplasia, non-specific colitis, and pervasive developmental disorder in children.
- Onset of behavioural symptoms was associated, by the parents, with measles, mumps, and rubella vaccination in eight of the 12 children, with measles infection in one child, and otitis media in another.

134) https://www.ncbi.nlm.nih.gov/pubmed/9756729?dopt=Abstract
- Serological association of measles virus and human herpesvirus-6 with brain autoantibodies in autism.
- This study is the first to report an association between virus serology and brain autoantibody in autism; it supports the hypothesis that a virus-induced autoimmune response may play a causal role in autism.

135) https://www.ncbi.nlm.nih.gov/pubmed/25433158
- **Thioredoxin**: a novel, independent diagnosis marker in children with **autism**.
- Our study demonstrated that serum TRX levels were associated with ASD, and elevated levels could be considered as a novel, independent diagnosis indicator of ASD.

136) https://www.ncbi.nlm.nih.gov/pubmed/18321861
- Inhibition of the human **thioredoxin** system. A molecular mechanism of **mercury toxicity**.
- Overall, mercury inhibition was selective toward the thioredoxin system. In particular, the remarkable potency of the mercury compounds to bind to the selenol-thiol in the active site of TrxR should be a major molecular mechanism of mercury toxicity.

137) https://www.ncbi.nlm.nih.gov/pubmed/11522584

- Macrophagic myofasciitis lesions assess long-term persistence of **vaccine-derived aluminium hydroxide in muscle.**
- We conclude that the MMF lesion is secondary to intramuscular injection of aluminium hydroxide-containing vaccines, shows both long-term persistence of aluminium hydroxide and an ongoing local immune reaction, and is detected in patients with systemic symptoms which appeared subsequently to vaccination.

138) https://www.scribd.com/doc/33874512/Merck-Vitamin-K-Package-Insert-Aquamephyton-PI

- Severe hypersensitivity reactions, including anaphylactoid reactions and deaths have been reported following parenteral administration. The majority of these reported events occurred following intravenous administration (see Box Warning.)
- The possibility of allergic sensitivity, including an anaphylactoid reaction, should be kept in mind following parenteral administration.

139) https://academic.oup.com/ajcn/article/80/6/1611/4690493

- Metabolic biomarkers of increased oxidative stress and impaired methylation capacity in children with autism.
- An increased vulnerability to oxidative stress and a decreased capacity for methylation may contribute to the development and clinical manifestation of autism.

140) https://www.sciencedirect.com/science/article/pii/S0946672X17308763

- Aluminium in brain tissue in autism.
- The pre-eminence of intracellular aluminium associated with non-neuronal cells was a standout observation in autism brain tissue and may offer clues as to both the origin of the brain aluminium as well as a putative role in autism spectrum disorder.
- The aluminium content of brain tissue in autism was consistently high. The mean (standard deviation) aluminium content across all 5 individuals for each lobe were 3.82(5.42), 2.30(2.00), 2.79(4.05) and 3.82(5.17) µg/g dry wt. for the occipital, frontal, temporal and parietal lobes respectively. These are some of the highest values for aluminium in human brain tissue yet recorded and **one has to question why, for example, the aluminium content of the occipital lobe of a 15 year old boy would be 8.74 (11.59) µg/g dry wt.**

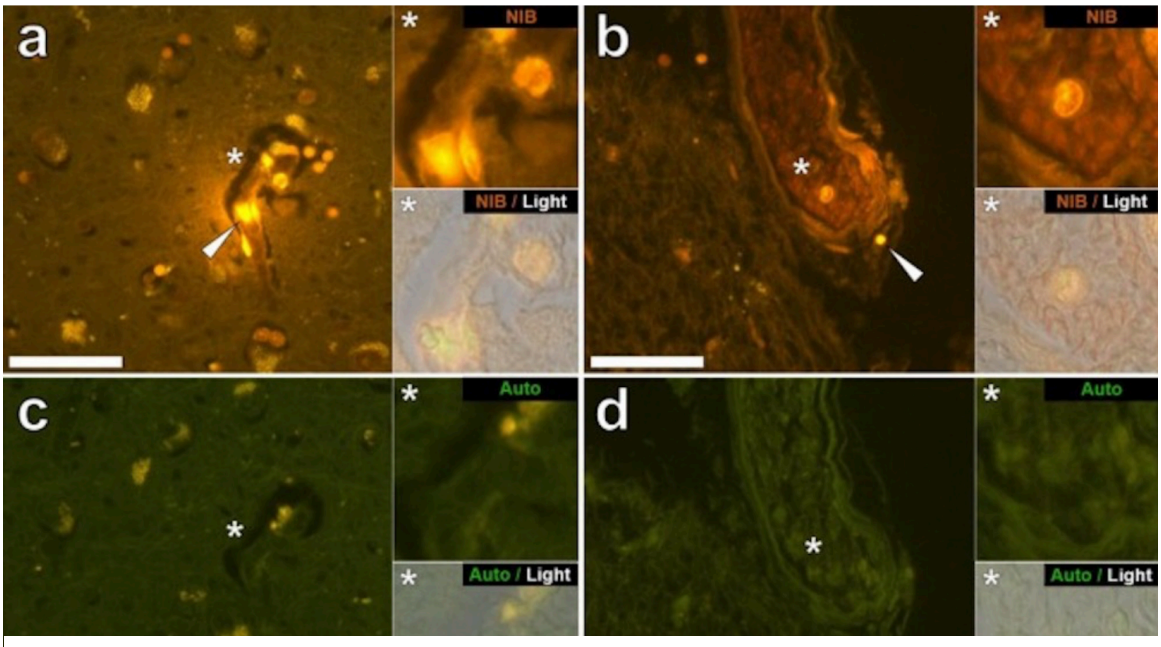

Figure 6: Intracellular **aluminum** accumulation in the glia and neurons of a 15 year old male diagnosed with autism.

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141) https://www.ncbi.nlm.nih.gov/pubmed/25577494
- Interplay of glia activation and oxidative stress formation in fluoride and aluminium exposure.
- **Aluminium, fluoride and a combination of aluminium-fluoride treatments caused an increase in brain lipid peroxidation products and reactive oxygen species (ROS) formation.** Similarly, an increase in glial activation and inflammatory response were seen in these groups versus the control. Oxidative stress induced glial activation (GFAP) and increased the expression of B cells (CD20). This also corresponded to the extent of tissue damage and lipid peroxidation observed. Taken together, the results suggest a close link between oxidative stress neuroinflamation and degeneration in aluminium-fluoride toxicity.

142) https://www.ncbi.nlm.nih.gov/pubmed/11522584
- Macrophagic myofasciitis lesions assess long-term persistence of **vaccine-derived aluminium hydroxide in muscle.**
- We conclude that the MMF lesion is secondary to intramuscular injection of aluminium hydroxide-containing vaccines, shows both long-term persistence of aluminium hydroxide and an ongoing local immune reaction, and is detected in patients with systemic symptoms which appeared subsequently to vaccination.

142) https://www.ncbi.nlm.nih.gov/pubmed/20810785
- Effects of selenite and chelating agents on mammalian thioredoxin reductase inhibited by mercury: implications for treatment of mercury poisoning.
- These results stress the role of TrxR as a target of mercurials and provide the mechanism of selenite as a detoxification agent for mercury poisoning.

143) https://www.ncbi.nlm.nih.gov/pubmed/15527868
- Thimerosal neurotoxicity is associated with **glutathione depletion**: protection with glutathione precursors.
- Thimerosal-induced cytotoxicity was associated with depletion of intracellular GSH in both cell lines. Pretreatment with 100 microM glutathione ethyl ester or N-acetylcysteine (NAC), but not methionine, resulted in a significant increase in intracellular GSH in both cell types.
- Although Thimerosal has been recently removed from most children's vaccines, it is still present in flu vaccines given to pregnant women, the elderly, and to children in developing countries.

144) https://www.ncbi.nlm.nih.gov/pubmed/2499694
- Brain and tissue levels of mercury after chronic methylmercury exposure in the monkey.
- These data clearly indicate that brain half-life is considerably longer than blood half-life in the monkey under conditions of chronic dosing.

145) https://link.springer.com/chapter/10.1007/398_2016_1
- Alkyl Mercury-Induced Toxicity: Multiple Mechanisms of Action.

146) https://oem.bmj.com/content/18/4/303.short
- Poisoning by Ethyl Mercury Toluene Sulphonanilide
- Many systems were involved, including the kidneys, the gastro-intestinal tract, the skin, the heart, and the muscles, but involvement of the nervous system was the most constant with disturbance of speech, cerebellar ataxia, and spasticity. **Mental abnormalities were occasionally observed. Many patients died.**

147) https://link.springer.com/article/10.1385/BTER:105:1-3:071
- In vitro uptake of glutamate in GLAST-and GLT-1-transfected mutant CHO-K1 cells is inhibited by the ethylmercury-containing preservative thimerosal.

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- Thimerosal-mediated inhibition of glutamate transport in the CHO-K1 cell line DdB7 was more pronounced in the GLT-1-transfected cells compared with the GLAST-transfected cells. These studies suggest that thimerosal accumulation in the central nervous system might contribute to dysregulation of glutamate homeostasis.

148) https://www.ncbi.nlm.nih.gov/pubmed/18838647
- Influenza vaccine effectiveness among children 6 to 59 months of age during 2 influenza seasons: a case-cohort study.
- In 2 seasons with suboptimal antigenic match between vaccines and circulating strains, we **could not demonstrate VE in preventing influenza-related inpatient/ED or outpatient visits in children younger than 5 years.**
- (This means the vaccine was completely ineffective.)

149) https://www.sciencedirect.com/science/article/abs/pii/0952327888900865
- Multiple effects of ethylmercurithiosalicylate on the metabolization of arachidonic acid by human neutrophils.
- Thimerosal inhibited acyltransferase, 5-lipoxygenase and the ω-oxidation system of LTB4 in a concentration-dependent fashion which was characteristic for the individual metabolites. LTA4 hydrolase activity was not affected. The inhibitory effects of thimerosal occurred instantaneously.

150) https://onlinelibrary.wiley.com/doi/abs/10.1002/ajim.4700050308
- Clinical observations in ethyl mercury chloride poisoning
- Forty-one patients in the Peoples Republic of China were poisoned by **ethyl mercury** chloride, caused by the ingestion of rice that had been treated with the chemical.

151) https://www.sciencedirect.com/science/article/pii/S0041008X13005644
- The **retention time of inorganic mercury** in the brain — A systematic review of the evidence.

152) https://www.ncbi.nlm.nih.gov/pmc/articles/PMC1280342/
- Comparison of Blood and Brain Mercury Levels in Infant Monkeys Exposed to Methylmercury or Vaccines Containing Thimerosal.
- A higher percentage of the total Hg in the brain was in the form of **inorganic Hg for the thimerosal-exposed monkeys** (34% vs. 7%). The results indicate that MeHg is not a suitable reference for risk assessment from exposure to thimerosal-derived Hg.

153) https://www.ncbi.nlm.nih.gov/pubmed/11331700
- An assessment of thimerosal use in childhood vaccines.
- Depending on the immunization schedule, vaccine formulation, and infant weight, cumulative **exposure of infants to mercury from thimerosal during the first 6 months of life may exceed EPA guidelines.**

154) https://pubs.rsc.org/en/content/articlelanding/2019/MT/C8MT00268A#!divAbstract
- Thimerosal inhibits Drosophila melanogaster tyrosine hydroxylase (DmTyrH) leading to changes in dopamine levels and impaired motor behavior: implications for neurotoxicity.
- These findings suggest an initiating and primary role for THIM-mediated DmTyrH dysfunction that leads to impaired DA function and behavioral abnormalities, ultimately causing oxidative stress-related neurotoxicity.

155) https://www.ncbi.nlm.nih.gov/pubmed/20386881

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- Identification and distribution of mercury species in rat tissues following administration of thimerosal or methylmercury.
- In general, mercury in tissues and blood following TM treatment was predominantly found as Ino-Hg, but a considerable amount of Et-Hg was also found in the liver and brain.

156) https://www.mdpi.com/1660-4601/10/8/3771
- Thimerosal Exposure and the Role of Sulfation Chemistry and Thiol Availability in Autism.
- Thiol-modulating mechanisms affecting the cytotoxicity of TM have been identified. Importantly, the emergence of ASD symptoms post-6 months of age temporally follows the administration of many childhood vaccines.

157) https://www.mdpi.com/1660-4601/14/5/519
- Mercury in Children: Current State on Exposure through Human Biomonitoring Studies
- National human biomonitoring (HBM) data has demonstrated that low levels of exposure of Hg are still an important health concern for children, which no one country can solve alone.
- At the EU level, the lack of precise regulations gives the basis of an increased concern, since the **harmful effects of high dose EtHg seem to be close to those of MeHg.**

158) https://www.tandfonline.com/doi/abs/10.1080/02772248.2013.877246
- Thimerosal in childhood vaccines contributes to accumulating mercury toxicity in the kidney.
- Available evidence for the etHg-induced toxicity in the kidney was examined, and the main mechanisms and molecular interactions of cytotoxicity of etHg/thimerosal exposure in kidney described.

159) https://www.sciencedirect.com/science/article/pii/S0946672X14000091?via%3Dihub
- In vitro study of thimerosal reactions in human whole blood and plasma surrogate samples.
- Analogous behaviour of methylmercury and ethylmercury species in human blood was shown and an ethylmercury-glutathione adduct was identified.

160) https://journals.plos.org/plosone/article?id=10.1371/journal.pone.0092705
- Suppression by Thimerosal of Ex-Vivo CD4+ T Cell Response to Influenza Vaccine and Induction of Apoptosis in Primary Memory T Cells.
- We report that ex-vivo exposure of quiescent or TCR-activated primary human T cells to thimerosal induced a dose-dependent apoptotic cell death associated with depolarization of mitochondrial membrane, generation of reactive oxygen species, **cytochrome c release from the mitochondria and caspase-3 activation**. Moreover, exposure to non-toxic concentrations of thimerosal induced cell cycle arrest in G0/G1 phase of TCR-activated T cells, and inhibition of the release of proinflammatory cytokines such as IFN gamma, IL-1 beta, TNF alpha, IL-2, as well as the chemokine MCP1. No shift towards Th2 or Th17 cells. Overall these results underline the proapoptotic effect of thimerosal on primary human lymphocytes at concentrations 100 times less to those contained in the multidose vaccine, and they reveal the inhibitory effect of this preservative on T-cell proliferation and functions at nanomolar concentrations.

161) https://www.tandfonline.com/doi/full/10.1080/02772248.2015.1028407
- Ethyl mercury induces Ca2+ uptake through the P2×7 receptor in a mouse cerebellar microglia cell line.
- These findings suggest that ethyl mercury may induce Ca2+ uptake through the P2×7 receptor of the cell membrane.

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162) https://www.sciencedirect.com/science/article/pii/S0269749114000104?via%3Dihub
- Perinatal multiple exposure to neurotoxic (lead, methylmercury, ethylmercury, and aluminum) substances and neurodevelopment at six and 24 months of age.
- Multivariate regression analysis showed that MDI was negatively affected by breast-milk Pb and by HHg. PDI was positively affected by breastfeeding and negatively affected by ethylmercury.

163) https://www.tandfonline.com/doi/abs/10.1080/15287394.2014.861335
- Milestone Achievement and Neurodevelopment of Rural Amazonian Toddlers (12 to 24 Months) with Different Methylmercury and Ethylmercury Exposure.
- In conclusion, milestone achievement was delayed in toddlers from tin-ore mining communities. Despite significantly higher exposure to both forms of organic Hg (MeHg from maternal fish consumption, and EtHg from TCV) in toddlers from the fishing village, significant differences were seen only among the proportions of most severely affected toddlers (GDS < 70).

164) https://www.sciencedirect.com/science/article/pii/S0946672X15300146?via%3Dihub
- Toxicity of organic and inorganic mercury species in differentiated human neurons and human astrocytes.
- Generally, neurons are more susceptible to Hg species induced cytotoxicity as compared to astrocytes. This might be due to the massive cellular mercury uptake in the differentiated neurons. The organic compounds exerted stronger cytotoxic effects as compared to inorganic $HgCl_2$. In contrast to $HgCl_2$ exposure, organic Hg compounds seem to induce the apoptotic cascade in neurons following low-level exposure.

165) https://pubs.rsc.org/en/content/articlelanding/2015/MT/C5MT00171D#!divAbstract
- The blood–cerebrospinal fluid barrier – first evidence for an active transport of organic mercury compounds out of the brain.
- Although methylmercury is recognized as a potent neurotoxicant, its transfer into the central nervous system (CNS) is not fully evaluated. While methylmercury and thimerosal pass the blood–brain barrier, limited data are available regarding the second brain regulating interface, the blood–cerebrospinal fluid (CSF) barrier.

166) https://link.springer.com/article/10.1007%2Fs00232-016-9933-y
- Effects of Thimerosal on Lipid Bilayers and Human Erythrocytes: An In Vitro Study.
- The experimental findings of this study demonstrated that THI interacted in a concentration-dependent manner with DMPC and DMPE bilayers, and in vitro interacted with erythrocytes inducing morphological changes.

167) https://www.tandfonline.com/doi/full/10.1080/15287394.2016.1182003
- A brain proteome profile in rats exposed to methylmercury or thimerosal (ethylmercury).
- Both MeHg and EtHg exposure induced an overexpression of calbindin, a protein that acts as a neuroprotective agent by (1) adjusting the concentration of Ca^{2+} within cells and preventing neurodegenerative diseases and (2) decreasing expression of glutamine synthetase, a crucial protein involved in regulation of glutamate concentration in synaptic cleft.

168) https://academic.oup.com/toxsci/article/154/1/27/2422075

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- From the Cover: Ethylmercury-Induced Oxidative and Endoplasmic Reticulum Stress-Mediated Autophagic Cell Death: Involvement of Autophagosome–Lysosome Fusion Arrest.
- Collectively, our results show that EtHg induces autophagy via oxidative and ER stress and blockade of autophagic flux. Autophagy might play a dual role in EtHg-induced renal toxicity, being both protective following treatment with low doses of EtHg and detrimental following treatment with high doses.

169) https://link.springer.com/article/10.1007%2Fs11064-017-2277-x
- Abating Mercury Exposure in Young Children Should Include Thimerosal-Free Vaccines.
- The indiscriminate use of pediatric-TCVs in less developed countries carries an unjustifiable and excessive EtHg exposure with an unnecessary risk of neurotoxicity to the developing brain; (b) measurable benefits (of Thimerosal-free) and measurable risks of tic disorders have been associated with the (Thimerosal-containing) type of vaccine; (c) Thimerosal-free vaccines are clinically and toxicologically justifiable and they should be available to children in less developed countries.

170) https://www.sciencedirect.com/science/article/pii/S0304416518303362?via%3Dihub
- Multiple low-level exposures: Hg interactions with co-occurring neurotoxic substances in early life.
- In infancy, exposures to acute binary mixtures (TCV- EtHg and Al-adjuvants in infant immunizations) are associated with increased risks of tics and other developmental disorders.

171) https://www.ncbi.nlm.nih.gov/pubmed/20391113
- Porphyrinuria in Korean children with autism: correlation with oxidative stress.
- Various studies correlated elevated heavy metal body burden with ASD diagnoses as evidenced by increased urinary porphyrin levels in patients.
- Significant correlations were observed between hepatic detoxification/oxidative stress markers and urinary porphyrins. In agreement with published data, the present results demonstrated that measurement of porphyrins serves as a reliable tool for diagnosis of heavy metal involvement in ASD.

172) https://www.ncbi.nlm.nih.gov/pmc/articles/PMC3098713/
- Aberrant NF-KappaB Expression in Autism Spectrum Condition: A Mechanism for Neuroinflammation.
- In summary, NF-κB is aberrantly expressed in orbitofrontal cortex in patients with ASC, as part of a putative molecular cascade leading to inflammation, especially of resident immune cells in brain regions associated with the behavioral and clinical symptoms of ASC.

173) https://www.ncbi.nlm.nih.gov/pubmed/16273274
- Thimerosal induces neuronal cell apoptosis by causing cytochrome c and apoptosis-inducing factor release from mitochondria.
- Our data suggest that thimerosal causes apoptosis in neuroblastoma cells by changing the mitochondrial microenvironment.

174) https://www.ncbi.nlm.nih.gov/pubmed/15527868
- Thimerosal **neurotoxicity is associated with glutathione depletion**: protection with glutathione precursors.
- Thimerosal-induced cytotoxicity was associated with depletion of intracellular GSH in both cell lines.

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175) https://www.ncbi.nlm.nih.gov/pubmed/20628439
- Influence of pediatric vaccines on amygdala growth and opioid ligand binding in rhesus macaque infants: A pilot study.
- These results suggest that maturational changes in amygdala volume and the binding capacity of [(11)C]DPN in the amygdala was significantly altered in infant macaques receiving the vaccine schedule.

176) https://www.ncbi.nlm.nih.gov/pubmed/18482737
- Thimerosal exposure in infants and neurodevelopmental disorders: an assessment of computerized medical records in the Vaccine Safety Datalink.
- Consistent significantly increased rate ratios were observed for autism, autism spectrum disorders, tics, attention deficit disorder, and emotional disturbances with Hg exposure from TCVs. By contrast, none of the control outcomes had significantly increased rate ratios with Hg exposure from TCVs.

177) https://www.tandfonline.com/doi/abs/10.1080/02772240701806501#.Ue8MEY1wqSo
- Hepatitis B triple series vaccine and developmental disability in US children aged 1–9 years
- This study found statistically significant evidence to suggest that boys in United States who were vaccinated with the triple series Hepatitis B vaccine, during the time period in which vaccines were manufactured with thimerosal, were more susceptible to developmental disability than were unvaccinated boys.

178) https://www.ncbi.nlm.nih.gov/pubmed/29751176
- IL-4 mediates the delayed neurobehavioral impairments induced by neonatal hepatitis B vaccination that involves the down-regulation of the IL-4 receptor in the hippocampus.
- We observed that mice injected intraperitoneally with recombinant mouse IL-4 (mIL-4) during early life had similar neuroinflammation and cognition impairment similar to those induced by neonatal hepatitis B vaccination. Next, the mechanism underlying the effects of IL-4 on brain in mice was explored using a series of experiments. In brief, these experiments showed that IL-4 mediates the delayed neurobehavioral impairments induced by neonatal hepatitis B vaccination, which involves the **permeability of neonatal blood-brain barrier** and the down-regulation of IL-4 receptor.

179) https://www.ncbi.nlm.nih.gov/pubmed/19357975
- Induction of metallothionein in mouse cerebellum and cerebrum with low-dose thimerosal injection.
- In conclusion, MT-1 and MT-3 mRNAs but not MT-2 mRNA are easily expressed in the cerebellum rather than in the cerebrum by the injection of low-dose thimerosal. It is thought that the cerebellum is a sensitive organ against thimerosal. As a result of the present findings, in combination with the brain pathology observed in patients diagnosed with autism, the present study helps to support the possible biological plausibility for how low-dose exposure to mercury from thimerosal-containing vaccines may be associated with autism.

180) https://www.ncbi.nlm.nih.gov/pubmed/29763840
- The risk of **neurodevelopmental disorders** at age 10 years associated with **blood concentrations of interleukins 4 and 10** during the first postnatal month of children born extremely preterm.

- Among children born EP, those who had top quartile concentrations of IL-4 and/or IL-10 on postnatal days 21 and/or 28 were more likely than their peers to have low scores on components of the NEPSY-II, OWLS-II, and WIAT-III assessments, as well as identification as having an ASD.

181) https://www.ncbi.nlm.nih.gov/pubmed/14325286
- PERTUSSIS VACCINE TESTING FOR FREEDOM-FROM-TOXICITY.
- Toxicity was encountered during the early use of AlPO(4) in pertussis vaccine products, with a special product and quadruple-antigen vaccines.

182) https://www.ncbi.nlm.nih.gov/pmc/articles/PMC1548249/
- Aluminium hydroxide intake: real risk of aluminium toxicity.
- (This particular study examined oral aluminum hydroxide exposure.)

183) https://www.ncbi.nlm.nih.gov/pubmed/3613692
- Aluminum deposition in the central nervous system. Preferential accumulation in the hippocampus in weanling rats.
- Thus, in non-uremic, weanling rats supplemented with 1,25-dihydroxyvitamin-D3, the administration of aluminum favors selective accumulation in the hippocampus. No differences between aluminum hydroxide and aluminum citrate administration were observed.

184) https://www.ncbi.nlm.nih.gov/pubmed/1779937
- Behavioural effects of gestational exposure to aluminium.
- Our preliminary results demonstrate behavioural and neurochemical alterations in the offspring of mice exposed to aluminium during gestation.

185) https://www.ncbi.nlm.nih.gov/pubmed/8212836
- Studies on the toxicities of aluminium hydroxide and calcium phosphate as immunological adjuvants for vaccines.
- Al-gel elicited vascular permeability-increasing and toxic effects to macrophages (Mϕ), while its haemolytic effect was weak.

186) https://www.ncbi.nlm.nih.gov/pubmed/8442404
- Immunocytochemical and ultrastructural evidence of dendritic degeneration in motor neurons of aluminum-intoxicated rabbits.
- These dendritic changes were confirmed at the ultrastructural level; neurofilamentous accumulations, membranous inclusions and disrupted microtubules were common features of motor neuron axons. These observations suggest that dendrites are characteristically involved in aluminum intoxication in addition to the widely reported accumulation of phosphorylated neurofilament in perikarya and axons.

187) https://www.ncbi.nlm.nih.gov/pubmed/8447157
- Adjuvants--a balance between toxicity and adjuvanticity.
- The most common adjuvants for human use today are still aluminium hydroxide, aluminium phosphate and calcium phosphate although oil emulsions, products from bacteria and their synthetic derivatives as well as liposomes have also been tested or used in humans.

188) https://www.ncbi.nlm.nih.gov/pubmed/8505021
- Neurotoxic effect of enteral aluminium.

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- Soluble and chelated aluminium compounds seriously worsened the learning ability, and the aluminium content of the brain was elevated. Acetylcholinesterase activity increased and choline-acetyltransferase activity decreased, resulting in a diminished cholinergic activity, which is a characteristic of Alzheimer's disease.

189) https://www.ncbi.nlm.nih.gov/pubmed/9302746
- Local tissue irritating effects and adjuvant activities of calcium phosphate and aluminium hydroxide with different physical properties.
- **Aluminium hydroxide gel (Al-gel) also elicited granulomatous inflammatory reactions consisting mainly of macrophages with foamy cytoplasm,** small lymphocytes and giant cells at the injection sites for up to 8 weeks or longer. Severity of local tissue irritation due to calcium phosphate gel (Ca-gel) was similar to that due to Al-gel except for the duration of the inflammatory reactions. Calcium phosphate suspension (Ca-sus)-induced local reactions completely ceased by the 4th week, while aluminium hydroxide suspension (Al-sus)-induced reactions were seen up to the 8th week. Electron-microscopical observations showed that both Al-gel and Al-sus caused damage of macrophages.

190) https://www.ncbi.nlm.nih.gov/pubmed/23557144
- Slow CCL2-dependent translocation of biopersistent particles from muscle to brain.
- Although generally well tolerated, alum is occasionally detected within monocyte-lineage cells long after immunization in presumably susceptible individuals with systemic/neurologic manifestations or autoimmune (inflammatory) syndrome induced by adjuvants (ASIA).
- Continuously escalating doses of this poorly biodegradable adjuvant in the population may become insidiously unsafe, especially in the case of overimmunization or immature/altered blood brain barrier or high constitutive CCL-2 production.

191) https://www.ncbi.nlm.nih.gov/pmc/articles/PMC4318414/
- Biopersistence and Brain Translocation of Aluminum Adjuvants of Vaccines
- Brain translocation of alum particles is linked to a Trojan horse mechanism previously described for infectious particles (HIV, HCV), that obeys to CCL2, signaling the major inflammatory monocyte chemoattractant.

192) https://www.ncbi.nlm.nih.gov/pmc/articles/PMC3623725/
- Macrophagic myofasciitis: characterization and pathophysiology.
- **Clinical symptoms associated with MMF are paradigmatic of the recently delineated "autoimmune/inflammatory syndrome induced by adjuvants"** (ASIA).
- Animal experiments indicate that biopersistent nanomaterials taken-up by monocytes-lineage cells in tissues, e.g. fluorescent alum surrogates, can first translocate to draining lymph nodes, and thereafter circulate in blood within phagocytes and reach the spleen, and, eventually, slowly accumulate in brain.

193) https://journals.sagepub.com/doi/10.1177/0961203309345724
- Adjuvants and autoimmunity.
- The very fact that TLR activation leads to adaptive immune responses to foreign entities explains why so many adjuvants used today in vaccinations are developed to mimic TLR ligands. Alongside their supportive role, adjuvants were found to inflict by themselves an illness of autoimmune nature, defined as 'the adjuvant diseases'. The debatable question of silicone as an adjuvant and connective tissue diseases, as well as the Gulf War syndrome

and macrophagic myofaciitis which followed multiple injections of aluminium-based vaccines, are presented here.
- Owing to the adverse effects exerted by adjuvants, there is no doubt that safer adjuvants need to be developed and incorporated into future vaccines.

194) https://www.ncbi.nlm.nih.gov/pubmed/9302736
- In vivo absorption of aluminium-containing vaccine adjuvants using 26Al.
- The area under the blood level curve for 28 days indicates that three times more aluminium was absorbed from AP adjuvant than AH adjuvant. The distribution profile of aluminium to tissues was the same for both adjuvants **(kidney > spleen > liver > heart > lymph node > brain).**

195) https://link.springer.com/article/10.1007/s10024001-0137-8
- Aluminum Phagocytosis in Quadriceps Muscle following Vaccination in Children: Relationship to Macrophagic Myofasciitis
- We encountered two children with the **first two cases of MMF in North America**. A 5-year-old male with chronic intestinal pseudo-obstruction required nighttime parenteral nutrition. Abnormal pupillary reflexes and urinary retention suggested a diffuse dysautonomia, which prompted a neurological diagnostic work-up. A 3-year-old child had developmental delay and hypotonia. Both children received age-appropriate immunizations.

196) https://www.ncbi.nlm.nih.gov/pubmed/14733966
- Macrophagic myofasciitis: an infantile Italian case.
- It is probably due to intramuscular injection of aluminium-containing vaccines and is characterized by a typical muscular infiltrate of large macrophages with aluminium inclusions. We report a 1-year-old Italian child presenting irritability, delayed motor development, hyperCKemia (up to 10 times the normal value), and typical features of macrophagic myofasciitis on muscle biopsy.

197) https://www.sciencedirect.com/science/article/pii/S0168583X96004296
- Al uptake and accumulation in the rat brain.
- When 26Al was injected into healthy rats, **a considerable amount of 26Al entered the brain (cerebrum) through the blood-brain barrier** 5 days after a single injection, and the brain 26Al level remained almost constant from 5 to 270 days.

198) https://www.ncbi.nlm.nih.gov/pubmed/1866832/
- [Vaccination granuloma in the breast region--differential diagnosis].
- **Vaccination granulomas (VG) caused by injection of aluminum** adsorbed vaccines have not been described previously in the breast region. We therefore present eight cases, all in women. None of the small tumors were diagnosed as VG before the operation.

199) https://www.ncbi.nlm.nih.gov/pubmed/10188852/
- **A tumour in the breast:** vaccination granuloma as a differential diagnosis.
- The possibility of a vaccination granuloma should be kept in mind in patients with a palpable tumour in the upper part of the breast, as well as in mammography screening conditions and in follow-up patients after previous treatment for breast cancer.

200) https://www.ncbi.nlm.nih.gov/pubmed/8943754/
- Aluminium and injection site reactions.

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- As in previous reports, all four cases included collections of histiocytes which contained faint granular brownish refractile material within their cytoplasm; ultrastructural examination showed this to be aluminium. Two cases showed a prominent inflammatory reaction with numerous lymphoid follicles and a notable eosinophilic infiltrate. Two cases showed unusual features not described previously. In one, there was a sclerosing lipogranuloma-like reaction with unlined cystic spaces containing crystalline material.

201) https://www.ncbi.nlm.nih.gov/pubmed/2318117
- [Aluminum hydroxide granuloma following hepatitis B vaccination].

202) https://www.ncbi.nlm.nih.gov/pubmed/11373585
- [Post-vaccination granuloma due to aluminium hydroxide].
- Post-vaccination granulomas a well-known reaction due to aluminium adsorbed vaccines. We report three cases of children who developed subcutaneous nodules at the site of a previous injection of Tetracoq*vaccine (tetanus, diphtheria, Bordetella pertussis, poliovirus). Histologically, the lesions were characterized by a necrotizing granulomatous reaction with eosinophilic crystalline material. This material stained positively with the solochrome cyanine stain and was pink-purple. This aluminium stain enabled diagnosis of post-immunization injection-site reaction due to aluminium.

203) https://www.ncbi.nlm.nih.gov/pubmed/2145128
- Inflammatory nodular reactions after hepatitis B vaccination due to aluminium sensitization.
- In 2 patients, pruritic nodules appeared after revaccination against hepatitis B. Aluminium was found to be responsible for this side effect: contact allergy to aluminium was present in both patients, whereas controls were negative.

204) https://www.ncbi.nlm.nih.gov/pubmed/11405222
- Defined synthetic vaccines.
- New adjuvants have to be developed which show low toxicity, high potency and are also able to drive the immune response in the desired direction.
- **Ideally, a vaccine would only consist of well-characterized, synthetic materials.**

205) https://www.ncbi.nlm.nih.gov/pubmed/2145483
- [Subcutaneous nodules and sensitivity to aluminum in patients undergoing hyposensitivity immunotherapy].
- Sensitization has been reported to occur during continuous application of aluminium-containing antiperspirants or by aluminium adjuvants in vaccines and hyposensitization immunotherapy.

206) https://www.ncbi.nlm.nih.gov/pubmed/15620469/
- Vaccine related itching nodules and hypersensitivity to aluminium.

207) https://www.ncbi.nlm.nih.gov/pubmed/15121293/
- Itching nodules and hypersensitivity to aluminium after the use of adsorbed vaccines from SSI.

208) https://www.ncbi.nlm.nih.gov/pubmed/7492132/
- Persistent subcutaneous nodules in patients hyposensitized with aluminum-containing allergen extracts.

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- Persistent subcutaneous nodules that develop after the administration of aluminum-containing preparations may show two characteristic histopathologic patterns. A pure histiocytic foreign body reaction was observed in early lesions, and a delayed hypersensitivity granulomatous reaction was seen in older lesions.

209) https://www.ncbi.nlm.nih.gov/pubmed/8494110/
- Granulomas associated with tetanus toxoid immunization.
- Examination with energy dispersive x-ray microanalysis confirmed the presence of aluminum and phosphorus in the granular debris but not in the surrounding infiltrate.

210) https://www.ncbi.nlm.nih.gov/pubmed/8470766/
- Postimmunization (vaccination) injection-site reactions. A report of four cases and review of the literature.
- The reactions are thoufght to be immunologic (hypersensitivity) reactions associated with the aluminum contents of the preparation.

211) https://www.ncbi.nlm.nih.gov/pubmed/1509548/
- [Aluminum allergy caused by DTP vaccine].
- All children referred to two private dermatological practices from 1 Jan. 1985 to 31 Dec. 1990 who had pruritus and subcutaneous infiltrates in the areas of immunization with Di-Te-Pol vaccine were patch tested with a Finn Chamber or with 2% aqueous aluminium chloride. Di-Te-Pol vaccine contains aluminium hydroxide. Contact allergy to aluminium was demonstrated in 32 children (20 girls and 12 boys). Of the three patch test methods used, testing with 2% AlCl3 occluded with a Finn Chamber proved to be the most sensitive.

212) https://www.ncbi.nlm.nih.gov/pubmed/15917121/
- Aluminium hydroxide-induced granulomas in pigs.
- The results indicated that the vaccine was to be held responsible for the formation of granulomas.

213) https://www.ncbi.nlm.nih.gov/pubmed/23764827
- Selective **accumulation of aluminum in cerebral arteries in Alzheimer's disease (AD).**
- Together, these results suggest for the first time that endothelial cells that line the cerebral vasculature may have biochemical attributes conducive to binding and targeting aluminum to selective anatomical regions of the brain, such as the hippocampus, with potential downstream pro-inflammatory and pathogenic consequences.

214) https://www.sciencedirect.com/science/article/pii/S0892036211001942?via%3Dihub
- Multiple toxic heavy metals and neonatal neurobehavior in China require considering co-exposure to Thimerosal-ethylmercury and adjuvant-aluminum

215) https://www.ncbi.nlm.nih.gov/pubmed/25428645
- Are there negative CNS impacts of aluminum adjuvants used in vaccines and immunotherapy?
- Al has been demonstrated to impact the CNS at every level, including by changing gene expression. These outcomes should raise concerns about the increasing use of Al salts as vaccine adjuvants and for the application as more general immune stimulants.

216) https://www.ncbi.nlm.nih.gov/pubmed/26384437

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- Highly delayed systemic translocation of aluminum-based adjuvant in CD1 mice following intramuscular injections.
- On the basis of previous reports showing alum neurotoxic effects in CD1 mice, an additional experiment was done, and showed early brain translocation at day 45 of alum injected subcutaneously at 200 µg Al/kg. This study confirms the striking biopersistence of alum. It points out an unexpectedly delayed diffusion of the adjuvant in lymph nodes and spleen of CD1 mice, and suggests the importance of mouse strain, route of administration, and doses, for future studies focusing on the potential toxic effects of aluminum-based adjuvants.

217) https://www.ncbi.nlm.nih.gov/pubmed/23609067
- Aluminum in the central nervous system (CNS): toxicity in humans and animals, vaccine adjuvants, and autoimmunity.
- The literature demonstrates clearly negative impacts of aluminum on the nervous system across the age span. In adults, aluminum exposure can lead to apparently age-related neurological deficits resembling Alzheimer's and has been linked to this disease and to the Guamanian variant, ALS-PDC
- In young children, a highly significant correlation exists between the number of pediatric aluminum-adjuvanted vaccines administered and the rate of autism spectrum disorders. Many of the features of aluminum-induced neurotoxicity may arise, in part, from autoimmune reactions, as part of the ASIA syndrome.

218) https://www.ncbi.nlm.nih.gov/pubmed/27515230
- Insight into the cellular fate and toxicity of aluminium adjuvants used in clinically approved human vaccinations.
- High loading of aluminium oxyhydroxide in the cytoplasm of THP-1 cells without immediate cytotoxicity might predispose this form of aluminium adjuvant to its subsequent transport throughout the body including **access to the brain**.

219) https://www.ncbi.nlm.nih.gov/pubmed/20924155
- Maternal immune activation and autism spectrum disorder: interleukin-6 signaling as a key mechanistic pathway.
- These abnormalities have correlated with clinical findings of immune dysregulation, neurological and behavioral abnormalities in some autistic individuals. Additionally, researchers have observed genetic variations in these models in genes which regulate neurological and immunological development, similar to what is observed clinically in ASD.

220) https://www.ncbi.nlm.nih.gov/pubmed/26103532
- Cytokine-dependent bidirectional connection between impaired social behavior and susceptibility to seizures associated with maternal immune activation in mice.
- Increased severity of epilepsy in the IL-6+IL-1β mice correlated with the improvement of autism-like behavior.

221) https://www.ncbi.nlm.nih.gov/pubmed/25816799
- Preliminary evidence of neuropathology in nonhuman primates prenatally exposed to maternal immune activation.
- These data provide the first evidence that prenatal exposure to MIA alters dendritic morphology in a nonhuman primate MIA model, which may have profound implications for revealing the underlying neuropathology of neurodevelopmental disorders related to maternal infection.

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222) https://www.ncbi.nlm.nih.gov/pubmed/27996954
- Anaphylaxis Due to the Excipient Polysorbate 80.
- The results of the ISAC assay enabled allergists to reach a new diagnosis, which in turn led them to reconsider the indication for SIT and the composition of previously prescribed vaccines.

223) https://www.ncbi.nlm.nih.gov/pubmed/28741088
- The autoimmune/inflammatory syndrome induced by adjuvants (ASIA)/Shoenfeld's syndrome: descriptive analysis of 300 patients from the international ASIA syndrome registry.
- The most frequent autoimmune disease related to ASIA syndrome was undifferentiated connective tissue disease (UCTD). ASIA syndrome is associated with a high incidence of UCTD and positive anti-nuclear antibodies (ANA) test. Clinical and laboratory features differ from the type of adjuvant used. These findings may contribute to an increased awareness of ASIA syndrome and help physicians to identify patients at a greater risk of autoimmune diseases following the exposure to vaccines and other adjuvants.

224) https://www.ncbi.nlm.nih.gov/books/NBK223724/
- Immunization Safety ReviewThimerosal-Containing Vaccines and Neurodevelopmental Disorders.
- In 1999, FDA determined that under the recommended childhood immunization schedule, infants might be exposed to cumulative doses of ethylmercury that exceed some federal safety guidelines established for ingestion of methylmercury, another form of organic mercury (Ball et al., 2001). In July 1999, the American Academy of Pediatrics (AAP) and the U.S. Public Health Service (PHS) issued a joint statement recommending the removal of thimerosal from vaccines as soon as possible (CDC, 1999a).

(Thimerosal is still a commonly used adjuvant in many other countries, and some vaccines in the US **labeled "thimerosal-free" often contain thimerosal in small enough doses**, which in the current infant schedule of multi-conjugate vaccine combinations before a child even reaches 10 years of age could elicit significant neurodevelopmental outcomes. The study below [225] from 2018 addresses the present-day administration of thimerosal-containing vaccines to infants in developing countries.)

225) https://www.ncbi.nlm.nih.gov/pubmed/29895363
- Low-dose Thimerosal (ethyl-mercury) is still used in infants` vaccines: Should we be concerned with this form of exposure?
- The risk from the **neurotoxic effects of pre- and post-natal Hg exposures** depend, in part, on aggravating or attenuating environmental and/or genetic-associated factors. Health authorities in charge of controlling infectious disease dismiss the toxicology of mercury (immunological and subtle neurological effects as insignificant) related to low-dose Thimerosal.

226) http://www.sarnet.org/lib/ATT01062.pdf
- Neurotoxic effects of thimerosal at vaccines doses on the encephalon and development in 7 days-old hamsters.
- The administration of thimerosal in equivalent doses to vaccines content was associated with low corporal weight, low encephalon weight, and smaller stature in postnatal hamsters. Neurotoxic effects were also produced at encephalic level: at hippocampus (regions CA1, CA3 and DG), cerebral cortex, and cerebellum (Purkinje cells and granulose cells); with

decrease in neuronal density, neuronal necrosis, axonal demyelinization, and gliosis. In addition, risk increase in developing any of these alterations was high just in the animal group receiving thimerosal.

227) https://www.ncbi.nlm.nih.gov/pubmed/22658806
- Prenatal exposure to organomercury, thimerosal, persistently impairs the serotonergic and dopaminergic systems in the rat brain: implications for association with developmental disorders.
- These results indicate that embryonic exposure to thimerosal produces lasting impairment of brain monoaminergic system, and thus every effort should be made to avoid the use of thimerosal.

228) https://www.jpands.org/vol21no4/miller.pdf
- Aluminum in Childhood Vaccines Is Unsafe.
- Aluminum is a neurotoxin, yet infants and young children are repeatedly injected with aluminum adjuvants from multiple vaccines **during critical periods of brain development.**
- Numerous studies provide credible evidence that aluminum adversely affects important biological functions and may contribute to neurodegenerative and autoimmune disorders.

229) https://www.ncbi.nlm.nih.gov/pubmed/12617510
- Smallpox vaccination and adverse reactions. Guidance for clinicians.
- Anecdotal experience suggests that, despite treatment with VIG, persons with cell-mediated immune deficits have a poorer prognosis than those with humoral deficits. Infection-control precautions should be used to prevent secondary transmission and nosocomial infection. Central nervous system disease, which includes postvaccinial encephalopathy (PVE) and postvaccinial encephalomyelitis (or encephalitis) (PVEM), occur after smallpox vaccination.

230) https://www.ncbi.nlm.nih.gov/pubmed/15638050
- A case-series of adverse events, positive re-challenge of symptoms, and events in identical twins following hepatitis B vaccination: analysis of the Vaccine Adverse Event Reporting System (VAERS) database and literature review.
- Evidence from biological plausibility, case-reports, case-series, epidemiological, and now for positive re-challenge and exacerbation of symptoms, and events in **identical twins** was presented. One would have to consider that **there is causal relationship** between HBV and serious autoimmune disorders among certain susceptible vaccine recipients in a defined temporal period following immunization.

231) https://www.ncbi.nlm.nih.gov/pubmed/16040339
- Concurrent HLA-related response factors mediate recombinant hepatitis B vaccine major adverse events.
- There are apparent common **causal immune mechanisms** among reported adverse events. HLA class II alleles/haplotypes linked to HB vaccine cellular/non-response and Crohn's disease can create conditions that actively/passively amplify, respectively, all or other components of the **immune response to the HB vaccine**. Presence of the HLA class I allele A2 can result in heavy cytotoxic T-cell activation and vaccine/self-peptide presentation to immune cells.

232) https://www.ncbi.nlm.nih.gov/pubmed/18549949
- Status epilepticus and lymphocytic pneumonitis following hepatitis B vaccination.

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- We suggest that, in some cases, vaccination may be the triggering factor for autoimmune and neurological disturbances in genetically predisposed individuals and physicians should be aware of this possible association.

233) https://www.ncbi.nlm.nih.gov/pubmed/19428906
- Human papillomavirus immunisation of adolescent girls and anticipated reporting of immune-mediated adverse events.
- Using a nationwide hospitalisation registry we estimated incidence rates of immune-mediated disorders before HPV vaccination in a cohort of 418,289 Danish girls aged 12-15 years. We further estimated the expected number of cases of immune-mediated disorders occurring in temporal relationship to a hypothetical HPV vaccination schedule purely by chance.

234) https://www.ncbi.nlm.nih.gov/pubmed/23576057
- Adverse events following immunization with vaccines containing adjuvants.
- Two patients with previous autoimmune disease showed **severe adverse reactions with the reactivation of their illness.** Minor local reactions were present in 49% of patients. Vaccines containing adjuvants may be associated with an increased risk of autoimmune/inflammatory adverse events following immunization.

235) https://www.ncbi.nlm.nih.gov/pubmed/24837504
- Adverse events following yellow fever immunization: Report and analysis of 67 neurological cases in Brazil.
- Two cases had a combination of neurotropic and autoimmune features. This is the largest sample of YEL-AND already analyzed. Rates are similar to other recent studies, but on this study the age group from 5 to 9 years of age had the highest risk. As neurological adverse events have in general a good prognosis, they should not contraindicate the use of yellow fever vaccine in face of risk of infection by yellow fever virus.

237) https://www.ncbi.nlm.nih.gov/pubmed/25381482
- The epidemiological profile of ASIA syndrome after HPV vaccination: an evaluation based on the Vaccine Adverse Event Reporting Systems.
- After causality assessment and case validation, **2,207 cases were considered probably or possibly related to vaccination.** These represent the largest ASIA cohort ever reported and allowed us to estimate epidemiological and clinical characteristic of this syndrome. The commonest clinical manifestation observed were pyrexia (58%), myalgia (27%) and arthralgia or arthritis (19%), and the estimated reporting rate was of 3.6 cases per **100,000 doses of HPV vaccine distributed (95% CI 3.4-3.7).**
- This study presents the first systematic estimation of ASIA incidence and expands the knowledge on this pathology. Further analyses are needed to identify genetic and non-genetic risk factors for ASIA syndrome.

238) https://www.ncbi.nlm.nih.gov/pubmed/25427994
- **Chronic fatigue syndrome and fibromyalgia following immunization** with the hepatitis B vaccine: another angle of the 'autoimmune (auto-inflammatory) syndrome induced by adjuvants' (ASIA).
- This study suggests that in some cases CFS and FM can be temporally related to immunization, as part of ASIA syndrome.

239) https://www.ncbi.nlm.nih.gov/pubmed/25486901

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- In silico analysis of autoimmune diseases and genetic relationships to vaccination against infectious diseases.
- Results showing unique and common gene sets, pathways, immune system categories and functional clusters of genes in four autoimmune diseases suggest it is possible to develop molecular classifications of autoimmune and inflammatory events. Combining this information with cellular and other disease responses should greatly aid in the assessment of potential immune-mediated adverse events following vaccination.

240) https://www.ncbi.nlm.nih.gov/pubmed/26123389
- A coordinated cross-disciplinary research initiative to address an increased incidence of narcolepsy following the 2009-2010 Pandemrix vaccination programme in Sweden.
- Patients with narcolepsy were also found to have **increased levels of interferon-gamma production in response to streptococcus-associated antigens.** The chain of patient-related events and the study results emerging over time were subjected to intense nationwide media attention. The **importance of transparent communication** and collaboration with patient representatives to maintain public trust in vaccination programmes is also discussed in the review.

241) https://www.ncbi.nlm.nih.gov/pubmed/26526761
- Overall conceptual framework for studying the genetics of autoimmune diseases following vaccination: a regulatory perspective.
- Here, we propose a conceptual framework for investigating the genetics of ADs as safety signals following vaccination, potentially contributing to the identification of relevant biomarkers. We also discuss a study design that incorporates genetic information into postmarket clinical evaluation of autoimmune adverse events following vaccination.

242) https://www.ncbi.nlm.nih.gov/pubmed/28463636
- Evaluation of optic neuritis following human papillomavirus vaccination.
- With the self-controlled temporal scan statistic, the primary analysis restricting on recommended vaccination schedule timing showed an increased risk of potential ON after second dose.
- The risk of potential ON was higher among participants with a history of prior autoimmune diseases.

243) https://www.ncbi.nlm.nih.gov/pubmed/20708902
- 'ASIA' - autoimmune/inflammatory syndrome induced by adjuvants.
- In recent years, four conditions: siliconosis, the Gulf war syndrome (GWS), the **macrophagic myofasciitis syndrome (MMF)** and **post-vaccination phenomena** were linked with **previous exposure to an adjuvant.** Furthermore, these four diseases share a similar complex of signs and symptoms which further support a common denominator.

244) https://www.ncbi.nlm.nih.gov/pubmed/24238833
- Autoimmune/inflammatory syndrome induced by adjuvants (ASIA) 2013: Unveiling the pathogenic, clinical and diagnostic aspects.
- Silicone was associated with siliconosis, aluminum hydroxide with post-vaccination phenomena and macrophagic myofasciitis syndrome. Several mechanisms have been hypothesized to be involved in the onset of adjuvant-induced autoimmunity; a genetic favorable background plays a key role in the appearance on such vaccine-related diseases and also justifies the rarity of these phenomena. This paper will focus on protean facets which

are part of ASIA, focusing on the roles and mechanisms of action of different adjuvants which lead to the autoimmune/inflammatory response.

245) https://www.ncbi.nlm.nih.gov/pubmed/28059022
- Autoimmune/inflammatory syndrome induced by adjuvants (Shoenfeld's syndrome) - An update.
- In recent years, physicians have become more aware of the existence of ASIA syndrome and the relationship between adjuvants exposure and autoimmunity and more cases are being reported.
- Furthermore, we especially referred to the relationship between ASIA syndrome and systemic lupus erythematosus (SLE) and antiphospholipid syndrome (APS).

246) https://www.ncbi.nlm.nih.gov/pubmed/24559657
- Narcolepsy, 2009 A(H1N1) pandemic influenza, and pandemic influenza vaccinations: what is known and unknown about the neurological disorder, the role for autoimmunity, and vaccine adjuvants.
- **Vaccine-associated narcolepsy** may **not be solely** linked to the **AS03 adjuvant** but more likely be linked to how the **specific influenza antigen** component of the European AS03-adjuvanted pandemic vaccine was prepared. Careful and long-term epidemiological studies of subjects who developed narcolepsy in association with AS03-adjuvanted A(H1N1) pandemic vaccine prepared with the European inactivation/purification protocol are needed.

247) https://www.ncbi.nlm.nih.gov/pubmed/25963881
- Perception of self: **distinguishing autoimmunity from autoinflammation**.
- Second, the efficacy of biologic agents directed against proinflammatory cytokines (for example IL-1β and TNF) also highlights differences between autoinflammatory and autoimmune processes. Finally, whereas autoinflammatory diseases are mostly driven by inflammasome-induced IL-1β and IL-18 production, autoimmune diseases are associated with type I interferon (IFN) signatures in blood
- The origins of intracellular autoantigens in autoimmune disorders are also discussed.

248) https://www.ncbi.nlm.nih.gov/pubmed/22054760
- The common immunogenic etiology of **chronic fatigue syndrome**: from infections to vaccines via adjuvants to the ASIA syndrome.
- Recently, the AISA (autoimmune/inflammatory syndrome induced by adjuvants) syndrome was recognized, indicating the possible contribution of adjuvants and vaccines to the development of autoimmunity.

249) https://www.ncbi.nlm.nih.gov/pubmed/25427994/
- Chronic fatigue syndrome and fibromyalgia following immunization with the hepatitis B vaccine: another angle of the 'autoimmune (auto-inflammatory) syndrome induced by adjuvants' (ASIA).
- This study suggests that in some cases CFS and FM can be temporally related to immunization, as part of ASIA syndrome. The appearance of adverse event during immunization, the presence of autoimmune susceptibility and higher titers of autoantibodies all can be suggested as risk factors.

250) https://www.ncbi.nlm.nih.gov/pubmed/18725327

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- **Chronic fatigue syndrome** with autoantibodies--the result of an augmented adjuvant effect of hepatitis-B vaccine and silicone implant.
- Our patient illness started following hepatitis-B vaccine, suggesting that it was caused or accelerated by vaccination. In parallel to vaccination our patient suffered from breast injury, which might represent the time of silicone leak. The exposure to the adjuvant, silicone, might have augmented her immune response to the vaccine. To the best of our knowledge this is the first case of **combined adverse effect to vaccine and silicone.**

251) https://pdfs.semanticscholar.org/1ee8/19805aba7ff0d60aaf55f464c2010b3254d0.pdf
- The hepatitis B vaccine and autoimmune/inflammatory syndrome induced by adjuvants: Relationship with Saccharomyces cerevisiae.
- A 41 years old man was evaluated for CFS and fibromyalgia beginning 15 years earlier following vaccination with HBV-vaccine. Since then, he reported various physical and cognitive symptoms that did not allow him to work or to have social life. He was healthy and functional prior to the vaccination besides a story of allergies including sensitivity to yeast.

252) https://emerge.org.au/wp-content/uploads/2015/11/Ortega-Hernandez-O.-D.-and-Y.-Shoenfeld.-Infection-vaccination-and-autoantibodies-in-chronic-fatigue-syndrome-cause-or-coincidence-Ann.-N.-Y.-Acad.-Sci.-2009-1173.pdf
- Infection, Vaccination, and Autoantibodies in Chronic Fatigue Syndrome, Cause or Coincidence?
- **Chronic fatigue syndrome (CFS)** is a heterogeneous syndrome of unknown etiology and physiopathology. CFS patients complain about disabling fatigue, depression, diffi- culty with memory, and concomitant skeletal and muscular pain. Interestingly enough, there is certain overlap between CFS symptoms, autoimmune rheumatic disease, and infectious diseases. Certain neuroendocrine-immune abnormalities have also been de- scribed, and autoantibodies commonly described in some autoimmune diseases have been found in CFS patients as well. **Vaccination is depicted as playing an important role in CFS on- set**. Recently, a case report pointed toward a causal association between silicone breast linkage, **hepatitis B virus vaccination**, and CFS onset in a previous healthy woman. Such findings suggest that there is a likely deregulation of the immune system influenced by specific agents (infections, vaccination, and products, such as silicone).

253) https://journals.sagepub.com/doi/abs/10.1177/0961203311429552?journalCode=lupa
- Gulf War Syndrome as a part of the autoimmune (autoinflammatory) syndrome induced by adjuvant (ASIA).
- Namely, myalgia, arthralgias, chronic fatigue, neurological cognitive impairment, gastrointestinal symptoms, respiratory symptoms, skin manifestations and appearance of autoantibodies. Regardless of the aetiology of GWS, be it exposure to environmental factors or chemical drugs, vaccinations or the adjuvants in them, GWS fits well with the definition of ASIA and is included as part of ‘Shoenfeld’s syndrome’.

254) https://www.ncbi.nlm.nih.gov/pubmed/17269603
- Lupus nephritis after hepatitis B vaccination: an uncommon complication.

255) https://www.ncbi.nlm.nih.gov/pubmed/19865091
- Vaccines and autoimmunity.
- In this article, on the basis of published evidence and our own experience, we discuss the various aspects of the causal and temporal interactions between vaccines and autoimmune

phenomena, as well as the possible mechanisms by which different components of vaccines might induce autoimmunity.

256) https://link.springer.com/article/10.1007/s12016-010-8213-3
- Guillain–Barré Syndrome—A Classical Autoimmune Disease Triggered by Infection or Vaccination.
- **About a third of all cases of Guillain–Barré syndrome are preceded by Campylobacter jejuni infection**. C. jejuni strains isolated from GBS patients have a lipooligosaccharide (LOS) with a **GM1-like structure**. Molecular mimicry between LOS and the peripheral nerves as a cause of GBS was demonstrated in animal models of human GBS. **Following the "swine flu" virus vaccine program in the USA in 1976, an increase in incidence of GBS was observed** and the calculated relative risk was 6.2. Later studies have found that **influenza vaccines** contained structures that can induce **anti-GM1** (ganglioside) antibodies after inoculation into mice.

257) https://www.ncbi.nlm.nih.gov/pubmed/21051205
- Autoimmune or auto-inflammatory syndrome induced by adjuvants (ASIA): old truths and a new syndrome?
- In this issue a new syndrome called 'Asia'-autoimmune/auto-inflammatory syndrome induced by adjuvants has been proposed.

EFFECTS OF AUMINUM ON NEUROLIGIN-I, CAM-KINASE-II; A POSSIBLE MECHANISM FOR THE ETIOLOGY OF AUTISM SPECTRUM DISORDERS:
[An analysis of studies 261-277]

Forms of aluminum employed in vaccines:
- **Aluminum Hydroxide**
- **Aluminum Phosphate**
- **Aluminum Hydroxyphosphate**
- **Potassium Aluminum Sulfate**
- **Amorphous Aluminum Hydroxyphosphate Sulfate**
- **Aluminum Potassium Sulfate**
- **Aluminum Lake Dyes**

CaM-Kinase-II activates neuroligin-I, which is essential in the formation of neural circuits, and specifically in increasing excitatory synaptic responses [244,237,243]. Defective neuroligin-I expression is associated with autism [246, 247, 251]. The mechanism by which neuroligin-I supports synapse formation and its role in the [244, 258, 259] process is closely related to interleukin expression [219]. Autism is often marked by inhibition of natural neural apoptosis and increased brain growth, especially in the pre-frontal cortex [226]. Aluminum is shown to inhibit dephosphorylation and impair NMDA receptor-associated signal transduction pathways [249, 250, 256, 267] and Cam-Kinase-II function [243].

The use of aluminum in vaccines could contribute to the onset of neurodevelopmental outcomes associated with ASIA (autoimmune (auto-inflammatory) syndrome induced by adjuvants) [83, 190, 244-258] and impaired NMDA receptor-associated signal transduction pathways in the same way neomycin (another adjuvant common in vaccines) does [276]. Additionally, NMDA hypofunction due to adjuvant overstimulation is associated with neurodegeneration and intrinsically, autism spectrum disorders (ASD) [250]. Autism is also

associated with autoimmune disorders [253]. An increased neuron number and head size [231, 238] may indicate prologued oxidative stress and neuronal inflammation, also associated with MMF (Macrophagic myofasciitis) [242]. Aluminum hydroxide (in vaccines) is a critical agent in the etiology of MMF. [89, 90, 93, 97, 192] Thus, the effect of aluminum hydroxide in the brain is one of prolonged inflammation of neurons and glia, with one of the results of chronic inflammation being *tumor* (excessive growth), due to its inhibitory and dysregulatory effects on specific neurological and immunological biochemical pathways [249, 256] Cytokines such as the class of interleukin-1 compounds, although serving an important role in immune function, also regulate neuronal synaptic plasticity, development, and function. [256, 257] The heavy metal burden solicited by the current schedule has been shown to exceed regulations, especially in infant concomitant formulas, and vaccine adjuvant heavy metals such as aluminum hydroxide and ethylmercury have been shown to impair neuroimmunological systems, contributing to the usual onset of co-occuring neurodevelopmental disorders and autoimmune [254, 255] disorders.

261) https://onlinelibrary.wiley.com/doi/full/10.1111/j.1471-4159.1990.tb04187.x
- Dephosphorylation of r Factor by Protein Phosphatase 2A in Synaptosomal Cytosol Fractions, and **Inhibition by Aluminum**.
- Both peaks 1 and 2 dephosphorylated τ factor phosphorylated by **Ca2+/calmodulin-dependent protein kinase II** and the catalytic subunit of cyclic AMP-dependent protein kinase.
- Aluminum chloride inhibited the activities of both peaks 1 and 2 with IC50 values of 40–60 μM. These results suggest that dephosphorylation of r factor in presynaptic nerve terminals is controlled mainly by protein phosphatase 2A and that the **neurotoxic effect of aluminum** seems to be related mostly to inhibition of dephosphorylation of τ factor.

262) https://www.ncbi.nlm.nih.gov/pubmed/17582332
- Activity-dependent validation of excitatory versus inhibitory synapses by neuroligin-1 versus neuroligin-2.
- Taken together, these data indicate that **neuroligins do not establish, but specify and validate, synapses via an activity-dependent mechanism**, with different neuroligins acting on distinct types of synapses. This hypothesis reconciles the overexpression and knockout phenotypes and suggests that neuroligins contribute to the use-dependent formation of neural circuits.

263) https://www.ncbi.nlm.nih.gov/pubmed/22068992
- **Neuron number and size in prefrontal cortex** of children with autism.
- **Children with autism had 67% more neurons in the PFC** (mean, 1.94 billion; 95% CI, 1.57-2.31) compared with control children (1.16 billion; 95% CI, 0.90-1.42; P = .002), including 79% more in DL-PFC (1.57 billion; 95% CI, 1.20-1.94 in autism cases vs 0.88 billion; 95% CI, 0.66-1.10 in controls; P = .003) and 29% more in M-PFC (0.36 billion; 95% CI, 0.33-0.40 in autism cases vs 0.28 billion; 95% CI, 0.23-0.34 in controls; P = .009).

264) https://journals.plos.org/plosgenetics/article?id=10.1371/journal.pgen.1006940
- Functional significance of rare **neuroligin 1 variants found in autism**.
- Here, we found a novel mutation in NLGN1, a gene encoding a synaptic protein, in patients with ASD. We also developed a mouse model with this mutation, and showed that the model mouse exhibits abnormal social behavior. These results suggest that a rare variant in NLGN1 is functionally significant and support that **the NLGN synaptic pathway may be important in the etiology of neuropsychiatric disorder**s.

265) https://www.ncbi.nlm.nih.gov/pmc/articles/PMC2824441/
- **Neuroligin 1 deletion results in impaired spatial memory** and increased repetitive behavior.
- Broadly, these data are consistent with a role of synaptic cell-adhesion molecules in general, and neuroligin-1 in particular, **in autism**, and implicate reduced excitatory synaptic transmission as a potential mechanism and treatment target for repetitive behavioral abnormalities.

266) https://www.ncbi.nlm.nih.gov/pubmed/23269831
- **Neuroligin-1 controls synaptic abundance of NMDA-type glutamate receptors** through extracellular coupling.
- Here, we provide evidence that **NL1 regulates the abundance of NMDARs** at postsynaptic sites. This function relies on extracellular, NL1 isoform-specific sequences that facilitate biochemical interactions between NL1 and the NMDAR GluN1 subunit.

267) https://www.ncbi.nlm.nih.gov/m/pubmed/10428068/
- **Prenatal exposure to aluminum reduces expression of neuronal nitric oxide synthase** and of soluble guanylate cyclase and impairs glutamatergic neurotransmission in rat cerebellum.
- Prenatal exposure to Al prevented glutamate-induced proteolysis of the microtubule-associated protein-2, disaggregation of microtubules, and neuronal death, indicating an **impairment of NMDA receptor-associated signal transduction pathways**. Prenatal exposure to Al reduced significantly the content of nitric oxide synthase and guanylate cyclase and increased the content of calmodulin both in cultured neurons and in the whole cerebellum. This effect was selective for proteins of the glutamate-nitric oxide-cGMP pathway as the content of mitogen-activated protein kinase and the synthesis of most proteins were not affected by prenatal exposure to Al.

268) https://www.ncbi.nlm.nih.gov/pmc/articles/PMC3181613/
- **NMDA receptor function**, memory, and brain aging.
- In those individuals destined to develop Alzheimer's disease, other abnormalities (eg, amyloidopathy and **oxidative stress**) interact to increase the NMDA receptor hypofunction (NRHypo) burden. In these vulnerable individuals, the brain then enters into a severe and persistent NRHypo state, which can lead to widespread **neurodegeneration** with accompanying mental symptoms and further cognitive deterioration.

269) https://www.ncbi.nlm.nih.gov/pubmed/12930820
- Functional excitatory synapses in HEK293 cells expressing neuroligin and glutamate receptors.
- The discovery that **neuroligin is a key protein involved in synapse formation** offers the unprecedented opportunity to induce functional synapses between neurons and heterologous cells.

270) https://jamanetwork.com/journals/jama/article-abstract/1104604
- Increased Neuron Number and Head Size in Autism
- The **excessive head growth and brain growth occur prior to most clinical manifestations of the disorder**, raising the possibility that the **mechanisms that cause**

excessive growth also play a role in the **primary developmental neuropathology of autism**.

271) https://www.ncbi.nlm.nih.gov/pubmed/19431079
- **Autoimmunity** in autism.
- Furthermore, in recent studies, **antibodies directed against the fetal brain** have been detected in some mothers of children with autism; these antibodies have the ability to alter behavioral outcomes in the offspring of animal models.

272) https://www.ncbi.nlm.nih.gov/pubmed/22918031
- **Cytokine dysregulation** in autism spectrum disorders (ASD): possible role of the environment.
- There are many reports of cytokine imbalances in ASD. These imbalances could have a pathogenic role, or they may be markers of underlying genetic and environmental influences. **Cytokines act primarily as mediators of immunological activity but they also have significant interactions with the nervous system**. They participate in, and inappropriate activity can have a variety of neurological implications. It is therefore possible that cytokine dysregulation contributes directly to neural dysfunction in ASD. Further, cytokine profiles change dramatically in the face of infection, disease, and toxic exposures.

273) https://www.ncbi.nlm.nih.gov/pubmed/23645137
- Evidence for a **dysregulated immune system** in the etiology of psychiatric disorders.
- Emerging evidence suggests that altered immune parameters may also be implicated in the neurobiological etiology of **autism spectrum disorders**.

274) http://www.jimmunol.org/content/181/6/3755.long
- Cutting Edge: **Alum Adjuvant Stimulates Inflammatory Dendritic Cells** through Activation of the NALP3 Inflammasome.
- In this study we show that **alum adjuvant induces the release of IL-1β** from macrophages and dendritic cells and that this is abrogated in cells lacking various NALP3 inflammasome components.

275) http://www.jneurosci.org/content/32/8/2588
- **Interleukin-1** Receptor Accessory Protein Organizes **Neuronal Synaptogenesis** as a Cell Adhesion Molecule.
- Interleukin-1 receptor accessory protein (IL-1RAcP) is the essential component of receptor complexes mediating **immune responses** to interleukin-1 family cytokines.
- These results suggest that IL-1RAcP isoforms function as trans-synaptic cell adhesion molecules in the brain and organize synapse formation. Thus, IL-1RAcP represents an interesting **molecular link between immune systems and synapse formation in the brain**.

276) https://www.pnas.org/content/113/15/4206
- Dopamine synapse is a **neuroligin-2–mediated contact** between dopaminergic presynaptic and GABAergic postsynaptic structures
- Intriguingly, neuroligin-2 expressed at the GABAergic postsynaptic structure **controls striatal synapse formation** by giving competitive advantage to heterologous dopamine synapses over conventional GABAergic synapses.

277) https://www.ncbi.nlm.nih.gov/pmc/articles/PMC4754719/
- **Neuroligin 1 regulates spines and synaptic plasticity** via LIMK1/cofilin-mediated actin reorganization.
- Our results provide a novel postsynaptic mechanism by which NLG1 regulates synapse development and function.

THIMEROSAL AS A MITOCHONDRIAL TOXIN; THE ROLE OF MITOCHONDRIAL DYSFUNCTION IN THE PATHOPHYSIOLOGY OF AUTISM SPECTRUM DISORDERS (ASD):

The study [260] below examined the toxicokinetics of ethylmercury from vaccines in human astrocyte cell mitochondria. In this study, thimerosal-derived mitochondrial damage in human astrocytes demonstrates a five-fold increase in Caspase-3. A good body of evidence [32, 122, 125, 160, 175] supports the assumption that thimerosal impairs mitochondrial function. There are other studies that that indicate a rise in Caspase-3 and caspace-9 (an indication of inflammation) following exposure to vaccine adjuvants such as thimerosal, aluminum, and neomycin [125, 256-277]. Given the current vaccination schedule, it is possible that repeated exposure to thimerosal along with other vaccine adjuvants can play a large role in the chronic impairment of normal mitochondrial function, which is associated with increased inflammation, particularly in the brain. Chronic and prolonged inflammation of the brain is a critical process in the pathophysiology of autism spectrum disorders, an implication strongly supported by the studies in the section below “Thimerosal Decreases Glutathione: Implications of the Chronic Inflammatory Response and Reduced Glutathione in the Autism Brain”.

278) https://www.ncbi.nlm.nih.gov/pubmed/22811707
- **Thimerosal-Derived Ethylmercury** Is a **Mitochondrial Toxin** in Human Astrocytes: Possible Role of Fenton Chemistry in the Oxidation and Breakage of mtDNA.
- We find that **ethylmercury not only inhibits mitochondrial respiration** leading to a drop in the steady state membrane potential, but also concurrent with these phenomena **increases the formation of superoxide**, hydrogen peroxide, and Fenton/Haber-Weiss generated hydroxyl radical.
- These mitochondria appear to have undergone a **permeability transition**, an observation supported by the five-fold increase in Caspase-3 activity observed **after Thimerosal treatment**.

THIMEROSAL DECREASES GLUTATHIONE: IMPLICATIONS OF THE CHRONIC INFLAMMATORY RESPONSE AND REDUCED GLUTATHIONE IN THE AUTISM BRAIN:

The study [279] below indicates that autism spectrum disorders (ASD) are associated with decreased glutathione levels, and impaired mitochondrial function; such as increased free-radical production (superoxide) and oxidative stress/damage. The study [278] above concluded that the formation of superoxide, along with other free radicals, is associated with thimerosal-derived ethylmercury exposure. With decreased anti-oxidants and increased free radicals, as well as impaired immune function due to aluminum, children exposed to vaccines could be put at a much greater risk of immunological infection than unvaccinated children. The studies in the next section [280-287] depict some of the clinically recorded manifestations of this exact and relatively common phenomenon. In a study [13], it was shown that thimerosal decreased cellular levels of glutathionylcobalamin and Methylcobalamin, further demonstrating its inhibitory effects

on glutathione antioxidant activity. Another study [79] showed that inorganic mercury [methylmercury] has a similar toxicity profile to organic mercury [ethylmercury] and that both can impair glutathione activity. There seems to be a good scientific consensus [124,142,174] that thimerosal-derived ethylmercury depletes glutathione antioxidant activity, and the implications of this effect can shed new light on the etiology of autism, which is a disease of chronic neuronal inflammation, which is concurrent with reduced antioxidant potential.

279) https://www.ncbi.nlm.nih.gov/pubmed/22781167
- Evidence of oxidative damage and inflammation associated with low glutathione redox status in the autism brain.
- Together, these results indicate that decreased GSH/GSSG redox/antioxidant capacity and increased oxidative stress in the autism brain may have functional consequence in terms of a chronic inflammatory response, **increased mitochondrial superoxide production**, and oxidative protein and DNA damage.

OUTBREAKS IN FULLY VACCINATED POPULATIONS:

280) http://cid.oxfordjournals.org/content/early/2012/05/23/cid.cis445.full
- Editorial Commentary: A Rare Event: A Measles Outbreak in a Population With High 2-Dose Measles Vaccine Coverage.
- In 15 child care centers, high vaccine effectiveness for 1 (95%) and 2 (100%) doses was unable to prevent 77 measles cases, because 43% of the outbreak cases occurred among unvaccinated children aged 12–14 months.

281) http://www.jpeds.com/article/S0022-3476(89)80643-2/abstract
- Persistence of pertussis in an immunized population: Results of the Nova Scotia Enhanced Pertussis Surveillance Program
- Peak incidence occurred among children 2 to 5 years of age; the highest morbidity rate was seen in children less than 1 year of age. Hospitalization was required for 22 (4.2%) patients; 14 (64%) of those hospitalized were less than 1 year of age. Most (91%) patients had received at least three doses of pertussis vaccine.
- We conclude that pertussis remains a significant health problem in Nova Scotia, despite nearly universal vaccination.

282) http://www.jpeds.com/article/S0022-3476(05)80726-7/abstract
- Mumps outbreak in a highly vaccinated population
- Of the 269 cases, 208 (77.3%) occurred among primary and secondary school students, of whom 203 (97.6%) had documentation of mumps vaccination.

283) http://www.ncbi.nlm.nih.gov/pubmed/1884314
- [Major measles epidemic in the region of Quebec despite a 99% vaccine coverage].
- The vaccination coverage among cases was at least 84.5%. Vaccination coverage for the total population was 99.0%. Incomplete vaccination coverage is not a valid explanation for the Quebec City measles outbreak.

284) http://www.ncbi.nlm.nih.gov/pubmed/8118532
- Outbreak of pertussis in a fully immunized adolescent and adult population.
- Laboratory evidence of B pertussis infection was found in eight (47%) of 17 immunized eighth-grade classmates and in three (23%) of 13 household contacts, all of whom were 12 years of age or older.

285) http://www.ncbi.nlm.nih.gov/pubmed/3821823
- Measles outbreak in a fully immunized secondary-school population.
- Fourteen of 74 seronegative students, all of whom had been vaccinated, contracted measles. In addition, three seronegative students seroconverted without experiencing any symptoms. We conclude that outbreaks of measles can occur in secondary schools, even when more than 99 percent of the students have been vaccinated and more than 95 percent are immune.

286) http://www.ncbi.nlm.nih.gov/pubmed/22819634
- California pertussis epidemic, 2010.
- Most pediatric cases were vaccinated according to national recommendations, although 9% of those aged 6 months to 18 years were completely unvaccinated against pertussis. High disease rates also were observed in fully vaccinated preadolescents, especially 10-year-olds.

287) http://www.ncbi.nlm.nih.gov/pubmed/17609829
- Outbreak of measles in primary school students with high first dose MMR vaccination coverage.
- 93 percent of students in the affected classes (n = 184) had prior documented evidence of receiving at least one dose of MMR vaccination, as compared to 96.5 percent for the entire school enrolment (n = 1,309).

NEOMYCIN & STREPTOMYCIN ADJUVANT TOXICITY:

Neomycin is a potent anti-biotic, that was once used to reduce gut flora populations [281] and today is used prevalently for other mechanisms of bactericidal action. It has shown a variety of toxic effects on the kidneys, liver, and brain [56-61] Along with the other aminoglycoside antibiotic streptomycin, neomycin is an ingredient in many vaccines, where additional compounds that have been demonstrated to possess a strong neurotoxic potential, such as aluminum, mercury, polysorbate 80, and ethylene glycol are also present. The possible concomitant toxicokinetics of these compounds alongside aminoglycosides in vaccines warrants further investigation, especially when taken into account that the intravenous use of neomycin was not permitted during the 1980's due to its "high-frequency of neurotoxic complications", yet today it is commonly intravenously administered to patients, many of which are children and pregnant women, who are particularly susceptible to its nephrotoxic [272, 280-285, 291] ototoxic (specifically to the hair cells of the cochlea) [273-275, 284-286, 277-279,], and even neurotoxic effects [270, 276, 287-290].

288) https://www.ncbi.nlm.nih.gov/pubmed/9697120
- Ca(2+)-dependent mechanisms of cell injury in cultured cortical neurons.
- The phospholipase inhibitor **neomycin decreased both arachidonate release and the phospholipid hydrolysis** catalysed by phospholipases C and D.
- The initial stage is characterized by a rapid loss of axonal morphology and increased phosphatidylinositol hydrolysis. An intermediate stage involves changes in cell body morphology plus the **degradation of neuronal protein and phosphatidylcholine**. In a later stage, the loss of plasma membrane integrity denotes neuronal death.

289) https://www.ncbi.nlm.nih.gov/pubmed/13769290
- [Neurotoxicity of neomycin].

290) https://www.ncbi.nlm.nih.gov/pubmed/16060389
- Prevention of **neomycin-induced nephrotoxic event** in pig proximal tubular epithelial cell line by apolipoprotein E3.

- Neomycin significantly **induced the extracellular release of lactate dehydrogenase**, but apoE3 successfully suppressed it.

291) https://www.ncbi.nlm.nih.gov/pubmed/16014323
- The **use of zebrafish** for assessing **ototoxic and otoprotective** agents.
- Various therapeutics, including gentamicin, cisplatin, vinblastine sulfate, quinine, and **neomycin**, which cause ototoxicity in humans, also resulted in hair cell loss in zebrafish.
- Our data indicate that results of ototoxicity and otoprotection in zebrafish **correlated with results in humans**, supporting use of zebrafish for preliminary drug screening.

292) https://www.ncbi.nlm.nih.gov/pubmed/17005344
- JNK signaling in neomycin-induced vestibular hair cell death.
- These results indicate that JNK plays an important role in **neomycin-induced vestibular hair cell death and caspase-9 activation**.

293) https://www.ncbi.nlm.nih.gov/pubmed/25739461
- The minimum peptides of IGF-1 and substance P protect vestibular hair cells against **neomycin ototoxicity.**
- The rate of survival of vestibular hair cells was significantly higher in the neomycin + SSSR and neomycin + SSSR + FGLM-NH2 groups than in the neomycin group. The results suggest that SSSR could protect hair cells against aminoglycoside ototoxicity.

294) https://www.ncbi.nlm.nih.gov/pubmed/9878779
- **Aminoglycoside neurotoxicity** involves **NMDA receptor** activation.
- Because aminoglycosides do not readily penetrate the blood brain barrier, we examined the effects of the aminoglycoside neomycin following intrastriatal injection. **Neomycin** (10-250 nmol) produced **dose-dependent striatal damage manifested as an increased gliosis** as measured by: (1) [3H]PK-11195 binding, (2) staining for the astrocytic marker glial fibrillary acidic protein (GFAP) and (3) staining for OX-6, an MHC class II antigen expressed by microglia and macrophages. Co-injection of subthreshhold doses of **NMDA** potentiates the striatal damage produced by neomycin (10 nmol). Moreover, neomycin-induced striatal damage is attenuated by a combination of the NMDA antagonists i**fenprodil and 5, 7-dichlorokynurenic acid.**
- These data support the hypothesis that aminoglycoside-induced ototoxicity is, in part, an excitotoxic process involving the activation of NMDA receptors. Moreover, aminoglycosides may damage the central nervous system in individuals with compromised blood brain barriers.

295) https://www.ncbi.nlm.nih.gov/pubmed/26561773
- Ecabet sodium alleviates **neomycin-induced hair cell damage**.
- Our data suggest that ES could protect against neomycin-induced hair cell loss possibly by reducing apoptosis, mitochondrial damages, and the ROS generation.

296) https://www.ncbi.nlm.nih.gov/pubmed/28274503
- Protective effect of an astaxanthin nanoemulsion against **neomycin-induced hair-cell damage in zebrafish.**
- The results of the current study performed using a zebra fish lateral-line, nano astaxanthin protected sensory hair cells against neomycin-induced death.

297) https://www.ncbi.nlm.nih.gov/pubmed/29214789
- microRNA-183 is Essential for Hair Cell Regeneration after **Neomycin Injury in Zebrafish**.

- Our work demonstrates that the miR-183 cluster is essential for the regeneration of hair cells following **ototoxic injury** in zebrafish larvae. Therefore, regulation of the miR-183 cluster can be a novel target for stimulation of hair cell regeneration.

298) https://cjasn.asnjournals.org/content/4/7/1275
- Renal Vulnerability to Drug Toxicity.
- Several drugs and toxins are more **highly nephrotoxic and can promote renal injury**, even with brief or low-level exposure. Examples include the aminoglycosides (**in particular neomycin**).
- This is reflected by the **greater nephrotoxicity of the neomycin** as compared with amikacin.

299) https://www.ncbi.nlm.nih.gov/pubmed/938230
- Neomycin toxicity revisited.
- This case serves as a reminder that neomycin can be absorbed systemically following its use as an irrigant solution. In such cases, it may produce an unsuspected form of "high output" **renal failure and concomitant hearing loss**. The renal failure is usually reversible, but the hearing loss is frequently permanent.

300) https://www.ncbi.nlm.nih.gov/pubmed/5681689
- Neomycin ototoxicity and nephrotoxicity. A case report following oral administration.
- The **ototoxicity and nephrotoxicity of neomycin** are well-known.
- The nephrotoxic effects in man and rat result in **proximal tubal necrosis**.
- The ototoxic effects of neomycin are confined to the cochlea.

301) https://www.ncbi.nlm.nih.gov/pmc/articles/PMC4270362/
- Drug-induced impairment of renal function
- Due to their cationic structure, AGs can undergo proximal tubule reabsorption by megalin-mediated endocytosis. This leads to a preferential accumulation of the drug in the cortical tubular cells, which results in tubular cytotoxicity. The risk for nephrotoxicity is directly proportional to the cationic charge. **Neomycin is the most toxic drug in this group**.

302) https://jamanetwork.com/journals/jama/article-abstract/657038
- **Audiotoxicity and Nephrotoxicity** Due to Orally Administered Neomycin.
- Reports of toxicity caused by orally administered neomycin have appeared only rarely in the literature, although the drug is used extensively as a bowel-sterilizing agent. The present report describes a patient treated orally with neomycin in whom complete eighth-nerve deafness developed, associated with acute renal failure.

303) https://www.hindawi.com/journals/ijoto/2011/937861/
- Mechanisms of Aminoglycoside Ototoxicity and Targets of Hair Cell Protection
- **Despite the nephro- and ototoxic side effects, AGs are still the most commonly prescribed antibiotics.**

304) https://jamanetwork.com/journals/jamaotolaryngology/article-abstract/598544
- Neomycin Ototoxicity: Report of a Case.
- Since **streptomycin, with its salts, has demonstrated such tuberculostatic** potential, many authors have cited its ototoxic propensity, viz.: Fowler and Seligman1; Carr et al.2; Shane and Laurie3; Glorig4; Heck, Lynch, and Graves,5 etc. Now another "mycin," neomycin, primarily bactericidal, adds to this ototoxic incidence. Preservation of human life commands continued "mycin" use, even at the risk of hearing impairment.

305) https://link.springer.com/chapter/10.1007/978-3-642-69132-4_92
- Aminoglycoside Antibiotics: A Study of Their **Neurotoxic Effects** at Peripheral Nerve Fibres.
- Some antibiotics with aminoglycoside structure (**streptomycin**, **neomycin**, gentamicin, kanamycin, sisomicin, amikacin) are endowed with a marked neurotropism. They have been investigated on myelinated nerve fibres isolated from the frog sciatic nerve. The drugs affect the electric activity of both sensory and motor fibres; their action has been evaluated comparatively.

306) https://www.ncbi.nlm.nih.gov/pmc/articles/PMC3175508/
- Neurotoxic effects associated with antibiotic use: management considerations
- **Antibiotic-induced neurotoxic side effects** can have a myriad of neurologic presentations. Patients with prior central nervous system (CNS) disease, renal insufficiency and advanced age may be particularly vulnerable. Treatment consists of discontinuation of the offending agent, use of antiepileptic drugs in the case of seizures or status epilepticus and haemodialysis in certain cases.

307) https://bpspubs.onlinelibrary.wiley.com/doi/full/10.1111/j.1365-2125.2011.03991.x
- Neurotoxic effects associated with antibiotic use: management considerations.
- Intrastriatal **neomycin is shown to cause gliosis** that was dose-dependent and diminished when NMDA antagonists were co-administered.
- Awareness of the potential neurotoxic clinical manifestations of various antibiotics and high degree of vigilance in critically ill patients is essential in identifying a potentially serious, though reversible complications of antibiotic therapy particularly with the advent of newer antimicrobial agents.

308) https://pdfs.semanticscholar.org/825b/f168b591f0bfb1e064d8357a9788a0412d11.pdf
- Quantitative biochemical studies on the effects of neomycin on central nervous system: An experimental study in albino rats.
- It was found that all the three cations i.e. sodium, potassium and calcium showed an increment in different regions of CNS and a zone of inhibition was observed after overnight incubation of CNS homogenate. Although there was a uniform response of different region of CNS for potassium concentration, the sodium was increased in the cerebrum, cerebellum and brain-stem while calcium was only increased in spinal cord. **It was concluded that neomycin penetrates the central nervous tissue** and central cause of muscular weakness after neomycin intoxication can't be ruled out.

309) http://www.annclinlabsci.org/content/12/1/1.full.pdf
- Mechanisms of Antibiotic-Induced Nephrotoxicity
- Neomycin, sometimes employed orally to reduce the gut flora, **is not administered intravenously** because of its high frequency of nephrotoxic complications.

POLYSORBATE 80 (TWEEN 80) ADJUVANT TOXICITY:

Polysorbate 80 is a commonly used surfactant, employed in cosmetics, pharmaceuticals, and processed foods. It has a tendency to enhance the permeability of certain compounds across the blood-brain-barrier (BBB) [267]. This peculiar biochemical property becomes an implication when **11 vaccines** in the current CDC schedule contain **polysorbate 80 alongside known heavy metals**, such as aluminum hydroxide and ethylmercury, which have been linked to neurotoxicity even in vaccine-relevant doses.

Vaccines containing polysorbate 80:

- **DTaP (Infanrix);**
- **DTaP—IPV (Kinrix);**
- **DTap-HepB-IPV (Pediarix)**
- **DTaP-IPV-Hib (Pentacel);**
- **Gardasil**
- **Influenza (Agriflu);**
- **Influenza (Fluarix);**
- **Meningococcal (MenB-Trumenba);**
- **Pneumococcal (PCV13—Prevnar13);**
- **Rotavirus (RotaTeq);**
- **Tdap (Boostrix)5**

Blood-Brain-Barrier Permeability and Toxicokinetics of Polysorbate 80:

310) https://www.ncbi.nlm.nih.gov/pubmed/29944099
- A Novel Delivery System of Cyclovirobuxine D for Brain Targeting: Angiopep-Conjugated Polysorbate 80-Coated Liposomes via Intranasal Administration.
- Polysorbate 80 (Tween 80, T80) plays a **special role in brain targeting**. Moreover, the nasal drug delivery method has attracted increased attention with its brain targeting capability in the clinical treatment of cerebrovascular diseases.
- This coadministration strategy can be utilized to **enhance the brain accumulation** in other cerebrovascular diseases.

311) https://www.ncbi.nlm.nih.gov/pubmed/30168052
- Effect of polysorbate 80 on the intranasal absorption and **brain distribution** of tetramethylpyrazine phosphate in rats.
- Upon intranasal administration, the addition of **polysorbate 80 significantly increased TMPP concentration in both plasma and brain** linearly up to polysorbate 80 concentration 2%. Based on drug targeting efficiency, drug targeting index, and nose-to-brain direct transport percentage, polysorbate 80 decreased the nose-to-brain direct transport ratio of TMPP in a polysorbate 80 concentration-dependent manner although the total brain targeting efficiency was unchanged, with significantly enhanced absolute drug concentration in the brain achieved.

312) https://www.ncbi.nlm.nih.gov/pubmed/12616296
- NTP Toxicology and Carcinogenesis Studies of Polysorbate 80 (CAS No. 9005-65-6) in F344/N Rats and B6C3F1 Mice (Feed Studies).
- **Administration of polysorbate 80 was associated with inflammation and squamous hyperplasia** of the forestomach in male and female mice, and with ulcers of the forestomach in female mice.

313) https://www.ncbi.nlm.nih.gov/pmc/articles/PMC539316/
- The Blood-Brain Barrier: Bottleneck in Brain Drug Development
- A dose of **polysorbate-80 of 3-30 mg/kg will cause BBB disruption in mice.** Analgesia with kyotorphin, a oligopeptide that normally does not cross the BBB, is possible following the peripheral administration of the peptide, providing Tween 80 is coadministered. Low doses of another surfactant, SDS, are frequently included in CNS drug diluents. However, doses of SDS as low as 1.0 μg/kg can cause disruption of the BBB for short periods. Immune adjuvants such as Freund's complete or incomplete adjuvant cause disruption of the BBB to circulating IgG that can persist for weeks. This is relevant to rodent vaccine models where active immunization is attempted as a new therapy for the treatment of brain

diseases. The vaccine for Alzheimer's disease was based on the administration of the Aβ peptide mixed in Freund's adjuvant to transgenic mice with brain amyloid. The adjuvant has two effects. First, it recruits the immune system to the injection site so that antibodies are made to the target peptide, in this case the Aβ. Second, the **immune adjuvant causes an inflammatory response** that results in **opening of the BBB.**

314) https://pdfs.semanticscholar.org/194a/0c69b7c381df182f20ad8c091e2421a3ae50.pdf
- Preparation and Therapeutic Efficacy of Polysorbate-80-Coated Amphotericin B/PLA-b-PEG Nanoparticles
- Furthermore, the **brain targeting** and curative effect of coated nanoparticles were also investigated. The entrapment efficiency was significantly enhanced when nanoparticles were **coated with Tween-80**. The prepared nanoparticles were spherical with homoge- neous distribution. Drug concentration in mice brain was greatly enhanced, which indicated that the **coated nanoparticles could get across the BBB.** Meanwhile, the AmB/PLA-b-PEG nanoparticles are able to reduce the toxicity of AmB to liver, kidney and blood system with improved therapeutic effect.

315) https://www.sciencedirect.com/science/article/pii/S2211383513000774
- Tween 80 containing lipid nanoemulsions for delivery of indinavir to brain
- The increased **brain specific accumulation** of indinavir from F5 is probably due to enhanced low density lipoprotein-mediated endocytosis and P-gp inhibition by Tween 80 at the BBB.

316) https://www.thelancet.com/journals/lancet/article/PIIS0140-6736(95)90963-X/fulltext
- Polysorbate 80 hypersensitivity

317) http://www.ijpsonline.com/articles/effect-of-surfactant-coating-on-brain-targeting-polymeric-nanoparticles-a-review-3448.html?view=mobile
- Effect of Surfactant Coating on Brain Targeting Polymeric Nanoparticles; a Review

318) https://link.springer.com/article/10.1007/s12325-018-0707-z
- Safety of Polysorbate 80 in the Oncology Setting
- However, polysorbate 80, like some other surfactants, is not an inert compound and has **been implicated in a number of systemic and injection- and infusion-site adverse events** (ISAEs). The current formulation of **intravenous fosaprepitant** has been associated with an increased risk of **hypersensitivity systemic reactions** (HSRs).

319) https://www.bibra-information.co.uk/downloads/toxicity-profile-for-polysorbate-80-1992/
- Toxicity profile for polysorbate 80 (1992)
- Polysorbate 80 probably induced a skin tumour in a mouse treated repeatedly by the dermal route. In oral and skin painting studies in mice, it increased the yield of tumours induced by established carcinogens.

320) https://www.ncbi.nlm.nih.gov/pubmed/8473002?dopt=Abstract
- Delayed effects of neonatal exposure to **Tween 80 on female reproductive organs** in rats.
- Treatment with Tween 80 accelerated maturation, prolonged the oestrus cycle, and induced persistent vaginal oestrus. The relative weight of the uterus and ovaries was decreased relative to the untreated controls. Squamous cell metaplasia of the epithelial lining of the uterus and cytological changes in the uterus were indicative of chronic oestrogenic stimulation.

MONOSODIUM GLUTAMATE (MSG) ADJUVANT TOXICITY:

Monosodium glutamate (MSG) is an excitotoxin. It overexcites neuronal glutamate receptors and causes severe oxidative damage, and eventually, neuronal degeneration. [292, 294, 295] This nasty molecule should not be alongside the many other brain-harming chemicals listed in this review that currently permeate the entire vaccination schedule. MSG has shown a variety of other negative side-effects, such as impairment of nitric oxide signaling pathways [290, 292]

321) https://www.ncbi.nlm.nih.gov/pubmed/29267217
- Chronic Monosodium Glutamate Administration **Induced Hyperalgesia** in Mice.
- We found that a dose of 300 mg/kg MSG given for 21 days reduces the pain threshold and is associated with a significant increase in brain NO level. The implications of these findings on food additive-drug interaction, and on pain perception in healthy humans, as well as in those suffering from affections involving chronic pain, are still to be investigated.

322) https://www.ncbi.nlm.nih.gov/pubmed/29402603
- Monosodium glutamate **impairs the contraction of uterine visceral smooth muscle** ex vivo of rat through augmentation of acetylcholine and nitric oxide signaling pathways.
- In conclusion, MSG potentiates the force and inhibits the frequency of contraction of UVSM, and the MSG induced effect is probably mediated through the **augmentation of acetylcholine and nitric oxide signaling pathways.**

323) https://www.ncbi.nlm.nih.gov/pubmed/29649467
- Monosodium glutamate ingestion during the development period **reduces aggression mediated by the vagus nerve** in a rat **model of attention deficit-hyperactivity disorder**.
- Finally, vagotomy at the sub-diaphragmatic level before MSG ingestion blocked its effect on aggressive behavior in the isolated SHR. The data suggest that MSG ingestion during the developmental period can reduce aggressive behavior in an attention deficit-hyperactivity disorder model rat, **mediated by gut-brain interaction**.

324) https://www.ncbi.nlm.nih.gov/pubmed/30244120
- The toxic effects of monosodium glutamate (MSG) - The involvement of nitric oxide, prostanoids and potassium channels in the **reactivity of thoracic arteries** in MSG-obese rats.
- In addition, down-regulation of KATP and BKCa channels influenced hyperpolarizing mechanisms. Our findings suggest that increased prostanoid production and hypersensitivity to thromboxane A2 together with **down-regulation of potassium channels** and **low nitric oxide bioavailability may contribute to the increase in blood pressure** found in adult MSG-obese male rats.

325) https://www.ncbi.nlm.nih.gov/pubmed/30273089
- Patho-physiological and Toxicological Aspects of Monosodium Glutamate.
- The effect of **MSG depends upon its dose**, route of administration and exposure time. Public awareness may play a major role in controlling the food adulteration by working in collaboration with National testing facilities to scrutinize each commercial food article from time to time. The aim of this review article is to highlight the **deleterious impact of MSG on human healt**h.

326) https://www.ncbi.nlm.nih.gov/pubmed/30277163
- Anaemogenic, Obesogenic and Thermogenic Potentials of **Graded Doses of Monosodium Glutamate Sub-acutely** Fed to Experimental Wistar Rats.

- The current data suggest that consumption of high doses/quantity of monosodium glutamate for a long duration of time **could lead to anaemia** due to a **decrease in red blood cell count** and packed cell volume and obesity resulting from an **increase in body weight gain**.

327) https://www.ncbi.nlm.nih.gov/pubmed/30285727
- Tinospora cordifolia as a potential neuroregenerative candidate against **glutamate induced excitotoxicity**: an in vitro perspective.
- These results suggest that B-TCE may have neuroprotective and neuroregenerative potential against catastrophic consequences of glutamate-mediated excitotoxicity and could be a potential therapeutic candidate for neurodegenerative diseases.

POLYETHYLENE GLYCOL (ANTIFREEZE ANALOG) ADJUVANT TOXICITY:

Ethylene glycol is antifreeze, and it has **known and well-published toxic effects on people**. Diethylene glycol is a less toxic form of antifreeze, but polyethylene glycol is a different molecule than the two. It has shown some toxic side effects, but more research is needed in its mechanism of toxicokinetic action.

328) https://www.ncbi.nlm.nih.gov/pubmed/31068982
- **Toxicity** and immunogenicity concerns related to **PEGylated-micelle carrier systems**: a review.
- However, in recent clinical contexts, **biopharmaceuticals' effects on immune responses** have come to light, requiring that researchers substantively explore the potential **negative side effects of nanocarrier systems** and of therapeutic proteins in order to develop nanocarrier systems suitable for clinical use. The present review describes current insights into both toxicological and immunological issues regarding polymeric-micelle carrier systems. The review focuses on immunogenicity issues of polymeric-micelle carrier systems possessing poly(ethylene glycol) (PEG).

329) https://www.ncbi.nlm.nih.gov/pubmed/30360676
- **Poly(ethylene glycol) induces cell toxicity in melanoma cells** by producing a hyperosmotic extracellular medium.
- Overall, the data suggest that poly(ethylene glycol) and poly(ethylene glycol)-like compounds have a distinct effect on cellular activity, presumably mediated in part by their osmotic effects, supporting the further investigation of these polymers as pharmaceutically active compounds.

330) https://www.ncbi.nlm.nih.gov/pubmed/30612011
- Polyethylene glycol 400 significantly **enhances the stimulation of 2-phenoxyethanol** on Vibrio qinghaiensis sp.-Q67 bioluminescence.
- The overall findings suggested toxicological interactions should be considered in the risk assessment of PCPs and their potential impacts on ecological balances.

331) https://www.ncbi.nlm.nih.gov/pubmed/21034757
- Assessing the toxic effects of ethylene glycol ethers using Quantitative Structure Toxicity Relationship models.
- “these compounds are predicted to be **developmental toxicants**.”

332) https://www.nejm.org/doi/10.1056/NEJMicm1704369?url_ver=Z39.88-2003&rfr_id=ori%3Arid%3Acrossref.org&rfr_dat=cr_pub%3Dwww.ncbi.nlm.nih.gov

- Calcium Oxalate Crystals in Ethylene Glycol Toxicity
- An 80-year-old man presented to the emergency department after a fall at home. Serum studies demonstrated an anion and osmolal gap. Examination of the urine sediment showed **calcium oxalate monohydrate crystals, suggestive of ethylene glycol toxicity**.

THE PRESSURE FOR MANDATORY VACCINATIONS:

The U.S. SENATE met recently to discuss the possibility of forced vaccinations. This is one of many "immunization mandates", yet this time at the FEDERAL level. The senate hearing was not entirely partial, as neither is the science. There ARE risks associated with vaccinations, and particularly in early childhood. This is because until around the age at which we reach puberty, (which I shall note has been suddenly decreasing; likely as a result of vaccinations among other endocrine disruptors such as petroleum-based bisphenols, trihalomethanes, fluoride, aluminum, mercurials, non-native EMF radiation..etc) our bodies go through a process of immune-building/tuning. The thymus gland is one of the few organs that shrinks with age, and it produces countless T-cells and other lymphocytes that protect us from the many foreign substances that we are exposed to. When a child receives a vaccination, due to the immune over-excitation or forced adaptive immune response it ensues, the thymus and other vital components of the immune system are overwhelmed and become subjective to inflammation and potentially cell damage. The CDC wants to push vaccinations for infants, just when their immune systems are at their most active and adept at dealing with pathogens in their natural surroundings. Measles has killed, but is generally a two-week cold that (should) naturally be evaded by a functioning immune system, as it is for every measles patient in good health. Some people say, "don't you know they eradicated the measles?".. That is an interesting concept given the fact that the measles vaccine was introduced in 1968, yet the outbreak had simmered to one quarter of what it was in the late 50's. Some also suggest the government took part in developing this disease and other such as polio after World War 2, when in operation paperclip, hundreds of nazi scientists were given American passports. Among them were aeronautical engineers, physicists, and experts in biological warfare. Regardless, vaccinations are a large impending threat to the health of earth's population and they have not been rigorously tested enough for their safety and efficacy. This is an IMMEDIATE issue and needs to reach the public's eye because this affects ALL of us. **Mandatory vaccinations will mean the government has direct access to your blood**.

Mandatory vaccinations are a direct violation of the United States Constitution. The first amendment states that "Congress shall make no law respecting an establishment of religion, or prohibiting the free exercise thereof . . ." and this mandate would abolish religious exemptions. Secondly, mandatory vaccinations violate the fourth amendment "The right of the people to be secure in their persons" because a refusal to vaccinate would entail health officers entering someone's home to enforce a zero-liability product likely made in china containing known neurotoxins and genetic poisons. Lastly, a federal vaccine mandate would infringe on the fourteenth amendment, which states "No State shall make or enforce any law which shall abridge the privileges or immunities of citizens of the United States; nor shall any State deprive any person of life, liberty, or property". Vaccines are a suppression of medical freedom, and a threat to one's life. It is clear that the current vaccine ingredient list needs to be "screened & greened" out of neurotoxins before the state can continue to push a schedule of 69 different vaccinations for children to attend school and another 18 to attend college in California. Individual states and their officials are falling prey to the coercion of pharma representatives, but most frequently, it is members of the senate or other official body of government itself that

are committing malpractice and corruption to push unregulated vaccinations, as they are accomplices in the agenda behind the systematic depopulation potential of immunizations. An agenda mainly operated through philanthropist elite organizations such as the Rockefeller Foundation and the Bill & Melinda Gates Foundations.

STANLEY PLOTKIN "GODFATHER OF VACCINES" UNDER OATH:

ATTY: Have you ever used orphans to study an experimental vaccine?

DR. PLOTKIN: Yes.

ATTY: Have you ever used the mentally handicapped to study an experimental vaccine?

DR. PLOTKIN: I don't recollect ever doing studies on mentally handicapped individuals. At the time, in the 1960s, it was not an uncommon practice.

ATTY: So you're saying — I'm not clear on your answer. I'm sorry. Have you ever used the mentally handicapped to study an experimental vaccine?

DR. PLOTKIN: What I'm saying is I don't recall specifically having done that, but that in the 1960s, it was not unusual to do that. And I wouldn't deny that I may have done so.

ATTY: Well, there's an article entitled "Attenuation of RA 27/3 Rubella Virus in WI38 Human Diploid Cells." Are you familiar with that article?

DR. PLOTKIN: Yes.

ATTY: In that article, one of the things it says is 13 seronegative mentally retarded children were given RA 27/3 vaccine?

DR. PLOTKIN: Okay. Well then, that's, in that case, that's what I did.

ATTY: Have you ever expressed that it's better to perform experiments on those less likely to be able to contribute to society, such as children with handicaps, than with children without or adults without handicaps?

DR. PLOTKIN: I don't remember specifically, but it's possible.

ATTY: Do you remember ever writing to the editor of "Ethics on Human Experimentation"?

DR. PLOTKIN: I don't remember specifically, but I may well have.

ATTY: I'm going to hand you what's been marked as Exhibit 43. Do you recognize this letter you wrote to the editor?

DR. PLOTKIN: Yes.

ALUMINUM THIMEROSAL FLAWS/INEFICACIES ASD AUTOIMMUNE ALLERGIC

ATTY: Did you write this letter?

DR. PLOTKIN: Yes.

ATTY: Is one of the things you wrote: “The question is whether we are to have experiments performed on fully functioning adults and on children who are potentially contributors to society or to perform initial studies in children and adults who are human in form but not in social potential?”

DR. PLOTKIN: Yes.

ATTY: Have you ever used babies of mothers in prison to study an experimental vaccine?

DR. PLOTKIN: Yes.

ATTY: Have you ever used individuals under colonial rule to study an experimental vaccine?

DR. PLOTKIN: Yes.

The dialogue in this transcript entails that vaccine researchers experimented on the handicapped and in imprisoned mothers. This is the epitome of medical malpractice as the doses administered were untested and contained unregulated known adjuvant toxicants. This is not the first time that government health agencies have been caught conducting unethical experimentation of untested chemicals on humans. In 1947 the highly toxic chemical known to cause gene alterations and damage, DDT, was sprayed on U.S. children, adults, and nursing women in public places, hospitals, and even in the streets. It was later determined to be extremely poisonous but the government had already established it in every store in america under many different names and products. The U.S. Military also dumped millions of gallons of it in Vietnam to clear jungles during the vietnam war, which left lasting genetic disorders on the vietnamese population as well as on U.S. troops handling the chemical. Additionally, permanent decimation of jungle and contamination of soil occured, and residents still suffer from ‘dead’ soils and birth defects.

PHYSICIANS OPPOSED TO VACCINATIONS:

Dr. High Fudenberg:

Dr High Fudenberg claimed 10 times the risk of developing Alzheimer’s disease in those over 55 years old who received the flu vaccine 5 years in a row. According to Dr. Fudenberg, **one of the world’s most prolific immunologists and 13th most quoted biologist of our times** (over 600 papers in peer review journals), he had this to say regarding the annual flu vaccine program:

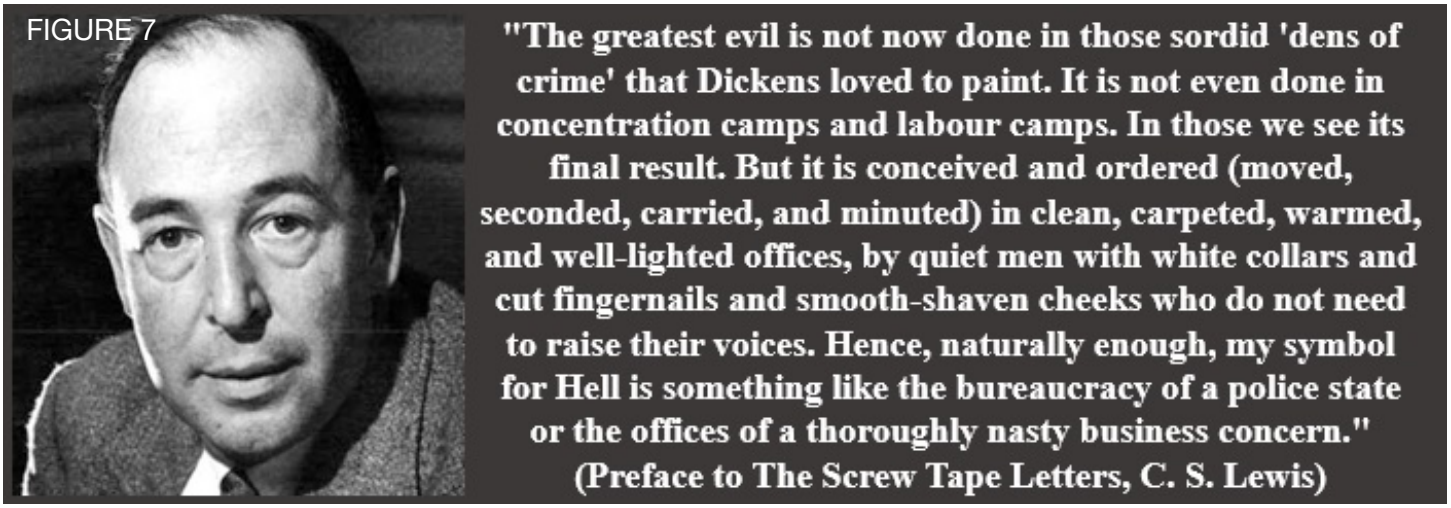
“If an individual has had 5 consecutive flu shots between 1970 – 1980 (the years of the study) his / her chance of developing Alzheimer’s Disease is 10 times greater than if they had one, two or no shots.” When asked why this is, Dr. Fudenberg stated that, “It is due to the mercury and aluminum buildup that is in every flu shot. The gradual

mercury and aluminum buildup in the brain causes cognitive dysfunction." -Dr. High Fudenberg

Dr. Suzanne Humphreys:

- "Even if vaccines can prevent some infections, considering what's in them, there's no way they can improve overall health," Dr. Humphries says. "And now they want to give vaccines to pregnant women, which in addition to these animal cells and associated genetic material also have aluminum in them."
- "The number of aluminum-containing vaccines children receive today has quadrupled over the past 30 years. In the 1970s, children got only four aluminum-containing vaccines in their first 18 months of life, but now they typically receive 17."
- "Alum has high neurotoxic potential, and planning administration of continuously escalating doses of this poorly biodegradable adjuvant in the population should be carefully evaluated by regulatory agencies since the compound may be insidiously unsafe. It is likely that good tolerance to alum may be challenged by a variety of factors including overimmunization, BBB [blood-brain barrier] immaturity, individual susceptibility factors, and aging, that may be associated with both subtle BBB alterations and a progressive increase of CCL2 [a protein-coding gene9] production."

FIGURE 7



Dr. Robert Cathcart M.D.:

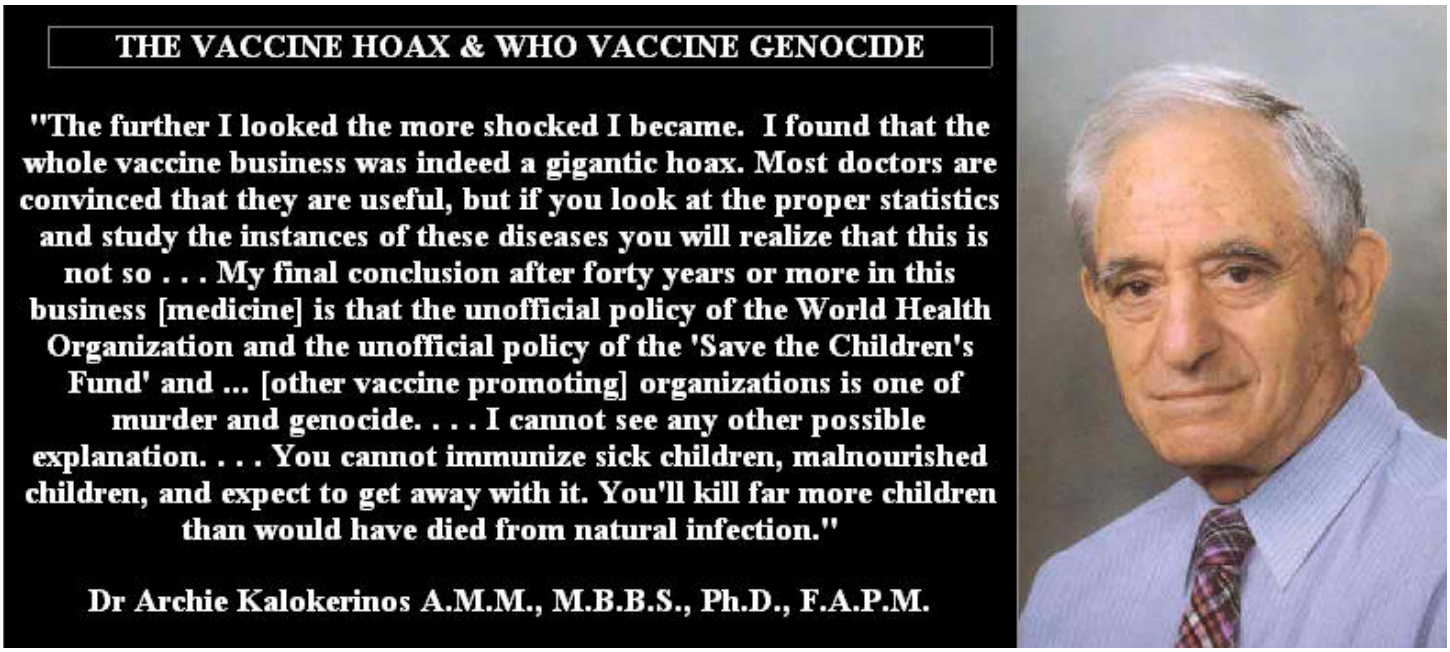
'The global effort is not to cure polio, which has already been done, but to keep this (vitamin c) cure secret.'

https://vaccinechoicecanada.com/doctors-speak/doctors-videos-documentaries/

- List of **well-respected doctors speaking about vaccination** and testifying that they are **neither safe nor effective** in videos and documentaries.

ALUMINUM THIMEROSAL FLAWS/INEFICACIES ASD AUTOIMMUNE ALLERGIC

FIGURE 8



In conclusion, vaccine industry standards are not only immoral and inhumane, but also highly unregulated and flawed. The most prevalent adjuvants all have been linked to serious chronic illnesses, most notably neurodegenerative disorders, autoimmune disorders, anaphylactic reactions, and even endocrine disruption, through possible insertional mutagenesis (human female & male fetal cells are used in vaccinations).

THIMEROSAL

The most obvious red flag, and incriminating piece of evidence with regards to vaccine industry & governmental health agency malice is the famous mercury-based adjuvant; thimerosal. It was one of the most prevalent adjuvants in vaccines before it was finally “determined” to cause neurological harm [1-24]. The link had always been known, but had yet to be admitted by public health authorities. Which have now been slowly and painfully ‘phasing it out’ of new vaccines. As always, there is medical misconduct; thimerosal still exists in a variety of vaccines labelled thimerosal-free [225]. Although it is in smaller doses, the current infant immunization schedule warrants numerous multi-conjugate vaccine combinations before a child reaches 10 years old, which still exceeds any safety guidelines established in prior studies [226, 227] regarding mercury exposure from thimerosal. Even more intriguing, these mislabeled vaccines are mainly vaccines administered to neonates and pregnant women. Additionally, many third world countries still administer regular-dose thimerosal vaccines to all populations.

Thimerosal is a potent mitochondrial toxin, damaging particularly glial cells of the nervous system and brain. [278] It increases formation of superoxide [279], and impairs glutathione production. [16] Decreased glutathione levels is also associated with autism spectrum disorders (ASD) [279] A consequence of low glutathione is severely decreased glutathionylcobalamin, which leaves the brain and nervous system even more vulnerable to chronic oxidative damage and inflammation, usually concurrent with neurodevelopmental/ neurodegenerative disorders.

ALUMINUM THIMEROSAL FLAWS/INEFICACIES ASD AUTOIMMUNE ALLERGIC

ALUMINUM

The most common adjuvants in use today are aluminum hydroxide and aluminum phosphate. Many thimerosal-containing vaccines also contain some form of aluminum adjuvant. [8] Aluminum adjuvants exist in many structures, all of which have displayed neurotoxicity. [10, 11, 16, 27, 29, 35, 51, 76, 83, 84].
Once injected intravenously, aluminum adjuvants quickly penetrate the blood-brain barrier (BBB) [78, 93, 97, 100, 197, (178, 201, 203)] and impinge themselves on neurons and glia [105, 140, 110] for unobstructed destruction. There are many mechanisms by which aluminum ends up in the brain, such as hitching a ride with the iron-transporting protein transferrin [87]. Whichever the mechanism, it is evident by the alarmingly high levels of aluminum, and in every single instance, chronic inflammation and oxidative damage in the brains of Alzheimers and autism spectrum disorder patients [88, 140, 268] that aluminum, especially in the form of adjuvants, cause chronic oxidative damage and inflammation, which sets the stage for a plethora of neurodegenerative disorders [258-277].

Other than by synergistic neurological damage and increased BBB permeability when in conjunction with polysorbate 80 [310, 311, 313] or thimerosal [8,10,11], the most notable process by which aluminum adjuvants permeate the brain and cause long-lasting inflammation is entrance through the lymphatics, by getting engulfed by macrophages. This “Trojan horse” mechanism has been implicated in the pathogenesis of a multitude of neurodegenerative and neurodevelopmental disorders.

FLAWS/INEFICACIES

The V.E. for a certain immunization preparation is the efficacy at which it can prevent the disease it is meant to provide immunity for. In some instances, as seen in the poliomyelitis outbreaks of 1953, a vaccine, usually made with a live-attenuated virus, is actually the culprit for mass outbreaks. [the last link under “testimonies & other resources”] There have been numerous recorded instances where large outbreaks occur in populations with extremely high vaccine coverage, some where schoolchildren received multiple booster shots and still “mysteriously” contracted the exact disease the vaccine was designed to prevent [280-287]. In these cases, the V.E. is a negative value. Other than the frequent “accidental infection”, due to their severe lack of safety or efficacy testing, especially against a true placebo, vaccines show a plethora of other side-effects [26, 101, 102, 107, 112, 119, 133, 181, 204, 210, 229] as well as inefficacies [25, 82, 148, 280-287], which is not surprising given the fact that vaccines, along with most pharmaceutical drugs, are made in china. I believe there is a bigger agenda at play, and the push for vaccinations, especially thimerosal-containing vaccines.. in 2019... in third world countries, is evident of a plan for depopulation, courtesy of the world’s wealthiest elite bloodlines and secret societies, which have strong influence over the media, pharmaceutical industries, and all facets of government. In my opinion, vaccines are not only flawed, but deliberately poisonous.

AUTISM SPECTRUM DISORDER (ASD)

Excessive vaccination has been stated a central mechanism in autism spectrum disorders [7]. This correlation is largely attributed to the strong neurotoxicity of commonly used vaccine adjuvants, namely thimerosal [18, 19, 24, 28, 224-227] , aluminum [258-277], polysorbate 80 [310-320], MSG [321-327], and neomycin [288-309].

Dysfunction in the elimination of heavy metals is associated with regressive autism [30, 44, 68, 127, 171], and heavy metals from vaccines, particularly aluminum and mercury, tend to accumulate and persist in the brain tissue, causing chronic inflammation and neurodegeneration. A positive association has been found between autism prevalence and childhood vaccinations [36, 40, 53, 66, 115, 178, 219-221, 241], and is largely implicated with aluminum accumulation in brain tissue [35, 95, 96, 98,] and consequently chronic auto-

immunity/inflammation. [172, 219,] Children with autism show many signs of auto-immunity [39, 41, 84 85, 134]. The most commonly used vaccine adjuvants are responsible for the onset of the newly discovered Auto-immune/Auto-inflammatory Syndrome Induced by Adjuvants (ASIA) [190, 191, 223, 237].

AUTOIMMUNE

The most widely-used vaccine adjuvants have been shown to cause inflammation and auto-immunity in humans [47, 48, 52, 63, 70, 72, 73, 85, 94, 120], especially neonates [190]. There are distinct pathological attributes about this adjuvant-induced chronic oxidative damage that deem it a specific name: ASIA (Autoimmune/auto-inflammatory Syndrome Induced by Adjuvants) Albeit it has a different name, this syndrome is a substrate for a plethora of neurodegenerative outcomes, including Autism Spectrum Disorder (ASD) [35, 47, 48, 123, 134, 217]. This syndrome is caused by the accumulation of aluminum in nervous tissue, which begins when aluminum from intravenous injection is drained by the lymph, then engulfed by macrophages. Once within phagocytes, the aluminum enters the circulatory system undetected. Once in the blood, the aluminum-loaded phagocytes reach the spleen, and eventually accumulate in the brain [29, 192, 194]. Another disorder associated with aluminum adjuvant accumulation in the brain is macrophagic myofasciitis (MMF), which exhibits symptoms homologous to ASIA and ASD [89, 90, 93, 97, 142, 192, 195, 243].

ALLERGIC/ANAPHYLACTIC

The most widely administered vaccine adjuvants, namely aluminum salts, mercurials, polysorbate 80, and MSG have been linked to a multitude of severe anaphylactoid reactions in humans [138, 202, 222, 316, 318, 324]. Vaccinated children have been found to have a significantly higher rate of allergies and NDD than homeschooled unvaccinated children [64]. These anaphylactic symptoms are often coincident with other neurodevelopmental outcomes [213, 216]. For instance, hypersensitivity to thimerosal [32] and allergy to aluminum [203, 205-211] following vaccination is common, and both thimerosal and aluminum adjuvant are held as instrumental agents in the pathogenesis of neurodegenerative diseases [103-106, 10-24]. Regardless if vaccine-adjuvant-induced allergies directly predispose a patient to a higher chance of neurodevelopmental outcomes, some of the symptoms associated with these anaphylactoid reactions are harmful enough on their own that further research is deeply warranted towards the development of safer and “greener” adjuvants [193].

MANIPULATED SCIENCE/CONFLICTS OF INTEREST:

333) https://www.ncbi.nlm.nih.gov/pubmed/19756911
- This study received grants from the U.S. Department of Health and Human Services.
- Fallacy: Neurotoxic vaccine adjuvants also present in thimerosal containing vaccines were not evaluated in this meta-analysis.

334) https://www.ncbi.nlm.nih.gov/pubmed/15184908
- Thimerosal’s neurotoxic effects are dependent on auto-immunity resistance in mice.
- This study received grants from the U.S. Department of Health and Human Services.
- Fallacy: The researchers utilized mice that have been selectively bred for increased susceptibility to inflammatory & autoimmune diseases, consequently rendering the control group’s auto-immune response as statistically insignificant.
- Mice used in this study: https://www.jax.org/strain/000686

335) https://www.ncbi.nlm.nih.gov/pubmed/15184908
- Inorganic mercury has greater immunotoxic effects than organic mercury.
- Fallacy: Various animal studies have demonstrated the the ability of thimerosal for also increasing concentrations of inorganic mercury in the brain.

336) https://jamanetwork.com/journals/jama/fullarticle/197365
- "In a recent independent review conducted by the Immunization Safety Committee, on behalf of the Institute of Medicine"

The national academy of medicine (NAM), formerly known as the Institute of Medicine, is composed of various doctors that have either worked with or are currently working with governmental health agencies & other bodies of the U.S. government.
Many of the doctors mentioned below are also involved in the Center for Biologics Evaluation and Research (CBER), which are supposed to investigate the efficacy and safety of vaccines.

LEAKED TRANSCRIPT: IMMUNIZATION SAFETY REVIEW COMMITTEE:
http://www.putchildrenfirst.org/media/6.4.pdf

Marie McCormick is the former chair of the panel that produced an IOM (NAM) report stating that vaccines are not linked with autism, but ironically she is currently serving as the co-chair of the vaccine safety working group. In the leaked transcript linked above, she clearly admits that the relationship between vaccines and autism is still a gray area and must undergo more rigorous testing before vaccines are deemed safe. However, after this panel in 2004 this committee still declared a "rejection of causation", a decision that pulled all federal funds and ceased any further investigation the toxicity of vaccines.
Lastly, due to a botched report by the NAM, the U.S. government withdrew all funding for further research on vaccine toxicity, and vaccines were erroneously labeled as safe.

McCormick's statements:

"CDC...wants us to declare, well, these things are pretty safe on a population basis."

(p. 33)

"...we are not ever going to come down that [autism] is a true side effect [of vaccines]"

(p. 97)

DR. MC CORMICK: I am not disagreeing with that, believe me. What I am trying to get at is, do we want to simply, on our gut, say looking at the significance of the wild disease that you are protecting, and the seriousness and potential association with the vaccine -- because we are not ever going to come down that it is a true side effect -- is that going to be sufficient for you to judge public health impact?

I am wondering, if we take this dual perspective, we may address more of the parent concerns, perhaps developing a better message if we think about what comes down the stream as opposed to CDC, which wants us to declare, well, these things are pretty safe on a population basis.

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OTHER DOUBLE AGENTS:

Mark McClelan:
- Current member of the NAM.
- Former senior policy director for health care economic issues within the white house.
- Former commissioner for the FDA.
- Administrator for centers of medicare & medicaid services in the U.S. department of health & human services.

Julie L. Gerberding:
- Current member of the NAM.
- Director for the Centers for Disease Control and Prevention (CDC).

Richard Platt:
- Current member of the NAM.
- Co-chair of the board of scientific counselors of the Centers for Disease Control and Prevention (CDC)'s center for infectious diseases.
- Contracts with the FDA's Center for Biologics Evaluation and Research.

Jennifer Taubert:
- Current member of the NAM.
- Chairwoman at Johnson & Johnson's Janssen pharmaceutical companies.
- Member of Pharmaceutical Group's operating committee, where she handles all commercial pharmaceutical operations in north America.

Leonard D Schaeffer:
- Current member of the NAM.
- Administrator at the centers for federal medicare and medicaid services.
- Assistant secretary for management and budget for the federal department of Health and Human services.

James Macrae:
- Current member of the NAM.
- Associate administrator for primary health care in the U.S. Department of Health and Human Services' Health Resources and Services Administration (HRSA) in May 2006.

John W. Rowe:
- Current member of the NAM.
- Serves on the board of trustees of the Rockefeller foundation.
- Former member of the Medicare Payment Advisory Commission.

David Blumenthal:
- Current member of the NAM.
- Is brothers with Richard Blumenthal, an attorney & politician serving the U.S. senate.

Johnathan B. Perlin:
- Current member of the NAM.
- Inaugural chair of the U.S. department of health & human services.

Patricia A. Gabow
- Current member of the NAM.

- Current member of the Federal Medicaid and CHIP payment and access commission.

Craig E. Sammit:
- Current member of the NAM.
- Serves as a Commissioner for MedPAC, a legislative branch agency established and appointed by the U.S. Government Accountability Office to advise Congress on policies governing health plans and health care providers serving America's Medicare beneficiaries.

Paul Grundy:
- Current member of the NAM.
- Served as a senior diplomat at the U.S. state department.

Richard E. Kuntz:
- Current member of the NAM.
- Founded HCRI, a research organization that coordinates clinical trials for the FDA & the NIH.

Debra B. Whitman:
- Current member of the NAM.
- Staff director for the U.S. Senate Special Committee on Aging.

Don Wright:
- Former member of the NAM.
- Assistant secretary for the U.S. department of health & human services.
- Director of the office of disease prevention and health promotion (ODPHP).

Murray N. Ross:
- Current member of the NAM.
- Served at the congressional budget office.
- Director of the Medicare Payment Advisory Commission.

THE FIRST EVER DIAGNOSED CASE OF AUTISM WAS OF A GIRL WHO RECEIVED THE FIRST EVER THIMEROSAL-CONTAINING DIPHTHERIA TOXOID VACCINE:
- https://www.rescuepost.com/files/library_kanner_1943.pdf
- https://www.ageofautism.com/2013/04/her-name-was-vivian-clues-from-the-age-of-autisms-first-born-child.html

MORE CDC & ELITE-ORGANIZATION/BIG-CORPORATION MEDICAL MALICE:

https://www.huffpost.com/entry/spider-bites-cdc-ethics-c_b_12525012
- CDC COLLUDES WITH COCA COLA TO FALSIFY DATA AND COVER UP HARMFUL EFFECTS ON CHILDREN.

https://www.collective-evolution.com/2018/11/21/4-billion-growing-u-s-payouts-for-vaccine-injuries-deaths-keep-climbing/
- In 2007 and 2008, DOJ attorneys exhibited "highly unethical and appallingly consequential official misconduct" during an Omnibus Autism Proceeding (OAP) orchestrated to determine the fate of 5,400 families who had filed claims for vaccine-induced autism. The potential value of the claims **exceeded $100 billion**—an amount that "would have bankrupted the [compensation] program many times over."

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https://childrenshealthdefense.org/child-health-topics/righting-wrongs/request-for-office-of-inspector-general-to-investigate-fraud-and-obstruction-of-justice/

- Request for **investigation of fraud and obstruction of justice** by HHS and the United States Department of Justice officials that **deprived over 5400 children of compensation** for their **vaccine injuries** in the Omnibus Autism Proceeding.

https://www.momsacrossamerica.com/fda_hides_information_on_glyphosate_in_vaccines

- FDA HIDES INFORMATION ON GLYPHOSATE IN VACCINES.
- "The MMR vaccine was twenty-five times higher than the other childhood vaccines, and this was extremely disturbing. We shared this information with a close circle of scientists that we know, and one of them tested fourteen more vaccines, and he released that information to the CDC and the FDA last year. Because he had confirmed our results, we then went ahead and also released our information to the CDC and the FDA. They came back and said, vaccines are totally safe. They did not answer our question when they responded about whether or not they would test for glyphosate in vaccines. They just completely did not answer the question at all. They just said vaccines are highly tested...very safe. A big problem, right? The FDA also came back and said that they were discontinuing further testing for glyphosate in anything...they said anything because they questioned the reliability of the methodology."

https://www.momsacrossamerica.com/glyphosate_in_childhood_vaccines

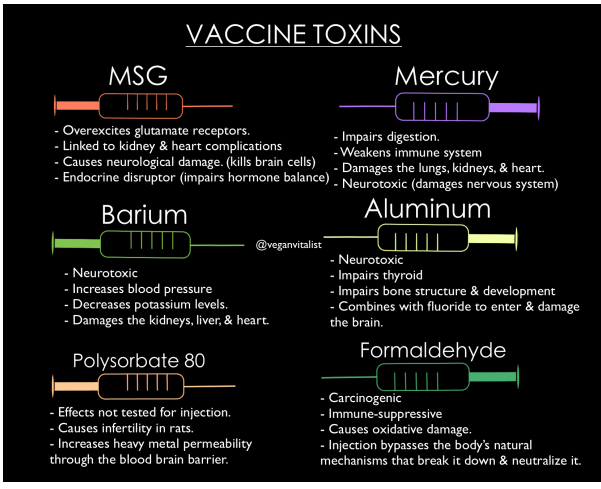
- GLYPHOSATE IN CHILDHOOD VACCINES
- MOMS & SCIENTISTS DEMAND FDA & CDC TEST VACCINES FOR GLYPHOSATE.

Glyphosate in vaccines report:
https://d3n8a8pro7vhmx.cloudfront.net/yesmaam/pages/1707/attachments/original/1473130173/FullGlyphosateinVaccinesReport_(6).pdf?1473130173

Multiple Infant Vaccines Linked To Dramatically Increased Mortality:
http://vaccineimpact.com/2013/multiple-infant-vaccines-linked-to-dramatically-increased-mortality/
https://www.ncbi.nlm.nih.gov/pmc/articles/PMC3170075/

- Infant mortality rates regressed against number of vaccine doses routinely given: Is there a biochemical or synergistic toxicity?
- Linear regression analysis of unweighted mean IMRs showed a high statistically significant correlation between increasing number of vaccine doses and increasing infant mortality rates, with $r = 0.992$ ($p = 0.0009$). Using the Tukey-Kramer test, statistically significant differences in mean IMRs were found between nations giving 12–14 vaccine doses and those giving 21–23, and 24–26 doses.

With toxins like glyphosate, MSG, DDT, BPA, PCB's, SLS, and many others commonly found not only in vaccines but in our food supply, it is clear there either is an agenda for global depopulation or lawmakers are being prostituted by wealthy corporations, who may very well want depopulation, or not. Either way, the modern human lifestyle needs attention. Our delicate biochemistry is adaptive and will use its very soul if it needs in order to maintain homeostasis, but we can make life easier, and prevent the over-exposure of any harmful xenobiotic or toxicant as possible, specifically through repeated acute intravenous injection, which has shown to be the most damaging. [138, 281, 268]



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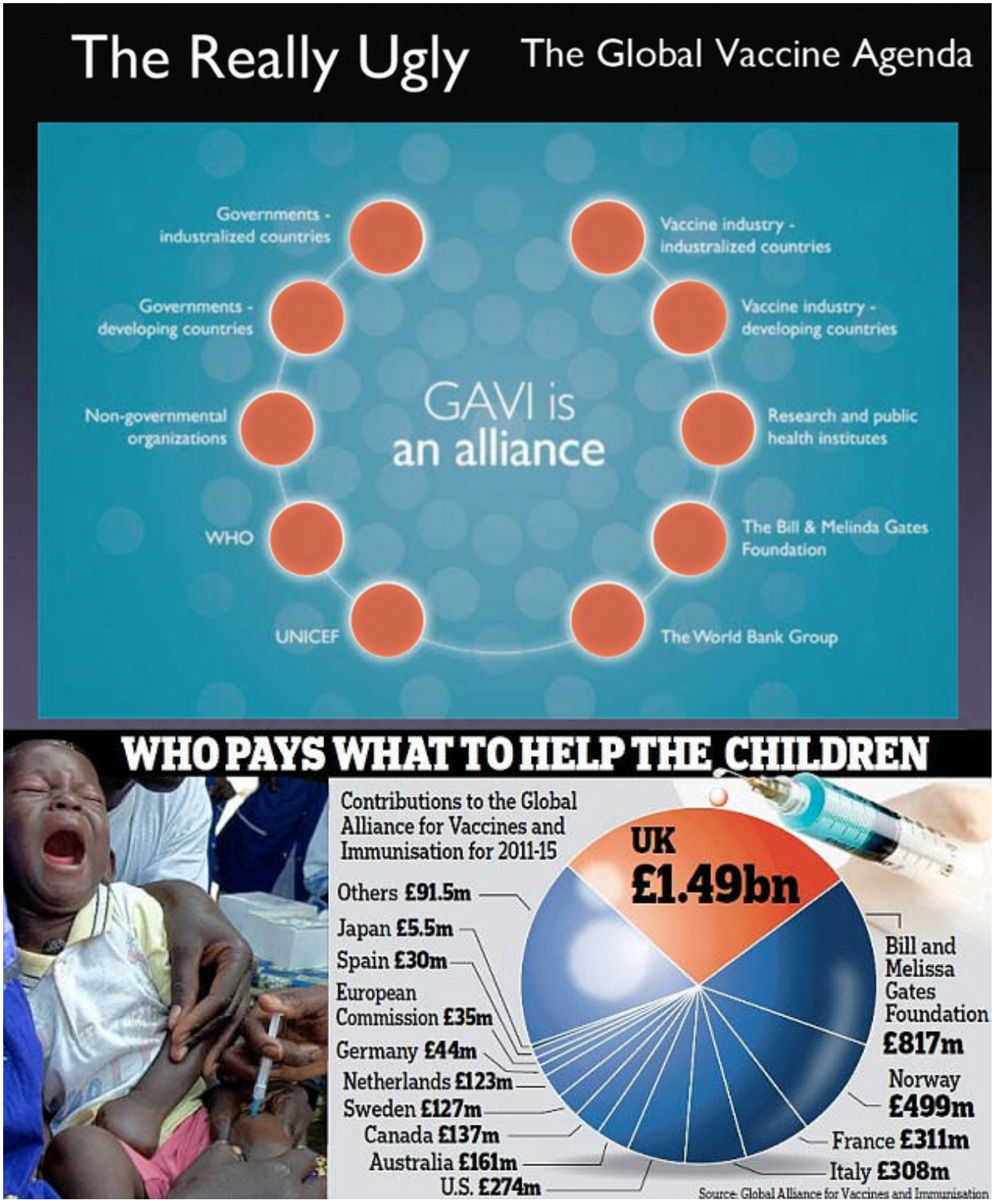

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TESTIMONIES & OTHER RESOURCES:

https://vactruth.com/2015/02/26/infant-dies-after-8-vaccines/?utm_source=The+Vaccine+Truth+Newsletter&utm_campaign=450707eeeb-02_26_2015_cremated&utm_medium=email&utm_term=0_ce7860ee83-450707eeeb-408191746
- California Infant Dies after 8 Vaccines, Family Gets Him Back from Hospital Cremated

https://www.nvic.org
- National Vaccine Information Center

https://www.nvic.org/Vaccine-Memorial.aspx
- International memorial for vaccine victims

https://www.nvic.org/forms/vaccine-failure-wall.aspx
- Vaccine Failure Wall

http://www.whale.to/vaccine/gavi.html
- The Global Alliance for Vaccines and Immunization (GAVI)

https://www.learntherisk.org/stories/perfectly-healthy-until-the-mmr-vaccine-gabriels-story/
- A PERFECTLY HEALTHY BABY UNTIL THE MMR VACCINE

https://www.stopmandatoryvaccination.com/vaccine-dangers/vaccine-injury-stories/
- Vaccine Injury & Death Stories

https://avoiceforchoiceadvocacy.org/vaccine-injury-story/
- Shared vaccine injury stories.

https://childrenshealthdefense.org/uncategorized/vaccine-injury-stories-touches-families-united-states/
- Vaccine Injury Touches Families Throughout the U.S.

https://vaccinechoicecanada.com/personal-stories/
- Personal Stories.

https://www.cbc.ca/player/play/1814511606
- Jonas Salk, the **developer of the polio vaccine**, testifies that the polio vaccine was **responsible for multiple polio outbreaks** and that it caused paralysis.

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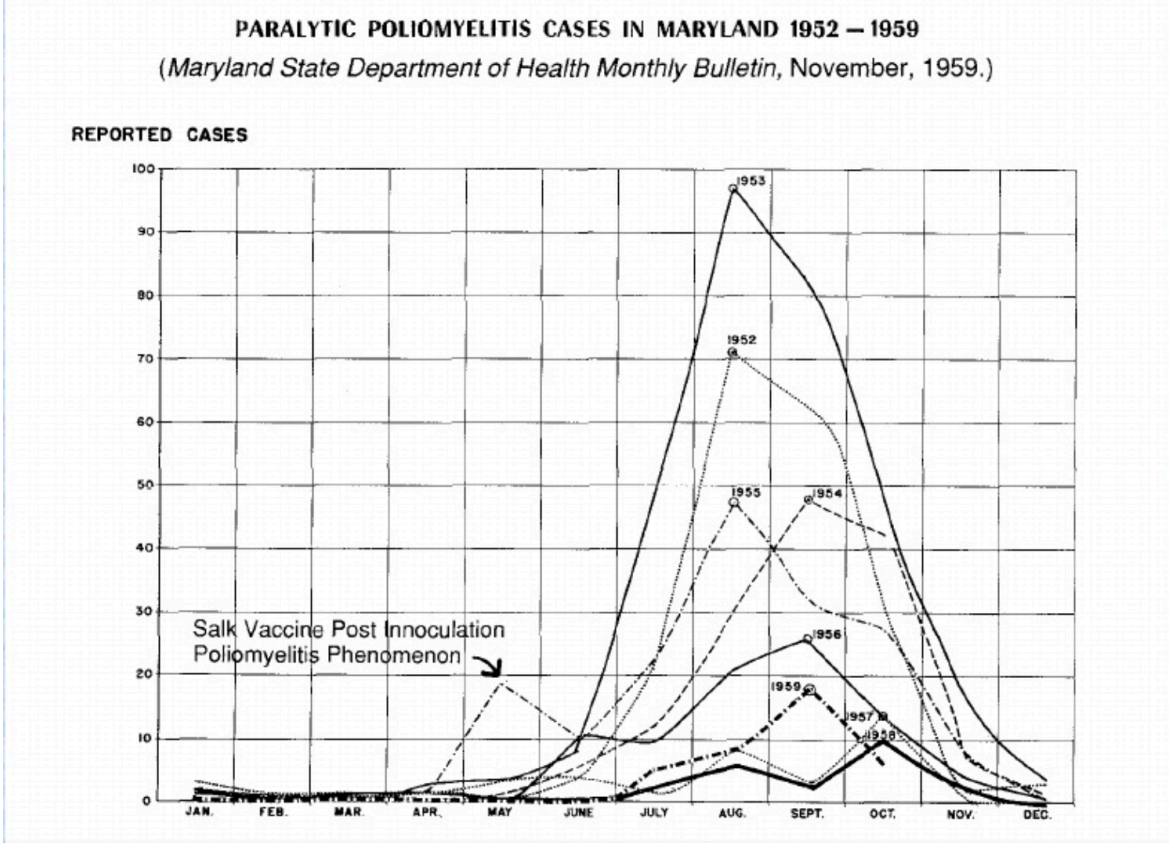

Vaccines are accredited to “saving” mankind from horrendous diseases, when really the greatest successes in modern medicine are biomedical technology, surgical procedures & precision diagnostic procedures, as well as drastically improved sanitation, hygiene, and increased genetic homogeneity & multi-cultural exposure. Yet vaccines, which are a no-strings-attached, zero-liability, billion-dollar market.The four companies that make all 72 vaccines in the current schedule are all convicted felons. They have paid billions in compensation to the vaccine injured, and Harvard analysts show that the VAERS database only reflects 1% of all vaccine injury cases, due to the extreme bureaucracy that it is to file an injury claim and have it approved. As the graph above indicates, as well as figures 1 & 2 on this document,

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Any questions or concerns about this meta-analysis should be addressed to veganvitalist at:
- veganvitalist.wordpress.com
- instagram.com/veganvitalist

Learn the risk, read the label, demand placebo testing, eat clean, anti-inflammatory and alkaline-forming foods. Use herbal medications instead of eternal-refill prescription poison made in china. Any drug with a TV commercial will only mask symptoms on the surface-level, like a band-aid. You gotta clean the cut, herbs and a clean diet and cleansing ritual will get your lymph filtering like it needs to for your immune system to function properly. We are not made by chance, and our body is tailored to fight ravenous diseases, equipped with perhaps one of the most complex biological/macromolecular systems in the literature of today; the human immune system. Through proper fasting, detoxification regimens, and regular exercise, one is able to regenerate leukocyte production, which can in some cases cure even mild allergies. Vaccinations, although truly revolutionary in their sense, need to be “screened & greened” before they can be administered. They are currently not necessary in the majority of cases. Measles for instance is, in most cases, a flu and a rash that lasts about two weeks. In a healthy person, this can be reduced to under a week. Health authorities are begging us to vaccinate in the midst of a “measles epidemic”, and the vaccine, being made with live attenuated viruses, often causes the disease it is trying to prevent. The world is very deceitful once one begins to understand the poisons all around oneself. 90% of the produce in the grocery stores is produced by 7 major companies. All these products are infested with surfactants, emulsifiers, preservatives, artificial colorings, artificial flavors, and a plethora of other carcinogens. If a child grows up in a public school in the Unites States, they are most likely fed chicken nuggets (bathed in vegetable, canola, or soybean oil, all toxic, and the nuggets are made from highly processed and chemically treated spare chicken meat parts), GMO glyphosate-infested corn (glyphosate a carcinogen under the court of law, but also the main ingredient in the world’s most popular pesticide, RoundUp. It is produced by Monsanto which is now owned by Bayer pharmaceuticals. This fact makes one ponder on the intent of the pharmaceutical industry towards public health. The utter collusion that goes on in the shadows of these major health and governmental organizations is appalling. The billions stolen from innocent victims of drug addiction and abuse. The sick children, adults, and elderly “patiently” waiting for an elusive

cure, while the wealth from the institutionalized peddling of opiates, benzodiazepines, barbiturates, stimulants, and narcotic drugs is built on the backs of their dis-ease, all-while enslaving them to a lifetime of chronic illness, and often times a lifetime of prescription drug addiction. If patients were cured and discharged as soon as possible, and a healthy diet was promoted by governmental health authorities, healthcare centers would not have any customers. Disease is, after all, their business.

Much love, health, happiness, and freedom.

-veganvitalist