"The number of viral matches and their locations make the occurrence of side autoimmune cross-reactions in the human host following HPV16-based vaccination almost unavoidable."
– Darja Kanduc

"If Wakefield is right, and the case against him is really based on lies, obfuscations, and deliberate cover-ups, the UK government and others indeed face a huge liability. They may be the ones guilty of a callous, perhaps even criminal disregard of serious adverse vaccine reactions."
– Jane M. Orient, M.D.

"These public servants are often shareholders in, grant recipients from, and paid consultants to vaccine manufacturers, and, occasionally, patent holders of the very vaccines they vote to approve. Those conflicts motivate them to recommend ever more vaccines with minimal support from evidence-based science."
– Robert F Kennedy, Jr.

"Vaccination is a barbarous practice and one of the most fatal of all the delusions current in our time."
– Mahatma Gandhi

1 Introduction

Vaccines are a big business. The global vaccine market has been growing dramatically over the past decade, and is estimated to be worth $59 billion by 2020. Vaccine mandates issued by governments provide a huge market with no need for advertising costs. In the United States, the companies take no risk on vaccine injuries, and vaccine safety trials prior to a market release are woefully inadequate. Those who are supposed to be monitoring vaccine safety, such as the Centers for Disease Control (CDC), are benefitting financially from the sales of vaccines via multiple vaccine patents. This is a case of the fox guarding the hen house.

In the early 1980's, a crisis was brewing in the vaccine industry because multiple children were getting injured by vaccines, particularly the DPT (dyphtheria, pertussis and tetanus) vaccine, and the industry was becoming concerned that runaway lawsuits would cause sufficient monetary losses to convince them to stop manufacturing the problematic vaccines altogether. I remember reading the book, "DPT: A Shot int the Dark" by Harris L Coulter and Barbara Fisher, shortly after it came out in 1986. This book left a lasting impression

on me, which was why vaccines were the first thing I studied when I began to seriously address the autism issue.

In response to this crisis, President Reagan enacted into law in 1986 the National Childhood Vaccine Injury Act (NCVIA), which gave the industry free license to produce unsafe vaccines with no financial repercussions, because any future vaccine injuries related to the scheduled vaccines would be handled by a special "vaccine court" set up by the U.S. government. Any cases that were successfully adjudicated would be paid for out of U.S. tax money contributed by the citizenry. As might be predicted, a study from 2018 found that vaccine adverse events were statistically significantly more severe for vaccines that were licensed after 1986 [1]. Without a need to assure safety, the industry could afford to become much more lax about the toxic ingredients in their products.

If you have time to read only one book on vaccines, I recommend "Dissolving Illusions," which was published in 2014 by Suzanne Humphries and Roman Bystrianyk. The illusions that are dissolved by the book are the false belief that vaccines are the main reason why terrible diseases such as smallpox and polio disappeared. These authors delved deep into the history of vaccines to show that dissent and hesitation were always present, and that other factors, such as the introduction of sophisticated sewer systems, water treatment plants and better nutrition, were far more important than vaccines in reducing infectious disease. The infant's immune system is not even mature enough early in life to respond to exposures to antigens, so it appears problematic that vaccines are administered very early in life, even on the first day of life, as is the case for the Hep-B vaccine.

There are now many books available that show the dark side of vaccines, and these are some of my favorites:

1. Dissolving Illusions: Disease, Vaccines, and The Forgotten History by Dr. Suzanne Humphries and Roman Bystrianyk.
2. HPV Vaccine on Trial by Mary Holland, Kim Mack Rosenberg and Eileen Iorio.
3. Vaccines, Autoimmunity, and the Changing Nature of Childhood Illness by Dr. Thomas Cowan.
4. How to End the Autism Epidemic by J.B. Handley.
5. Vaccine Whistleblower: Exposing Autism Research Fraud at the CDC by Kevin Barry.
6. Vaccines: A Reappraisal by Richard Moskowitz.
7. Vaccine Illusion by Dr. Tetyana Obukhanych.

8. Jabbed: How the Vaccine Industry, Medical Establishment, and Government Stick It to You and Your Family by Brett Wilcox.

9. The Autism Vaccine by Forrest Maready.

10. Gardasil. Faith and Propaganda versus Hard Evidence by Nicole Delépine and Gérard Delépine.

I have read many of these books, and my new-found knowledge has caused a dramatic shift in the way I now view vaccines. Of course, in a single chapter I can not hope to capture all the complexity of vaccines, but I will focus my attention on vaccines and autoimmune disease, as well as showing how glyphosate works synergistically with vaccines to increase their potential for harm. I have selected two vaccines to single out for increased attention, because these illustrate the complexity of the vaccine manufacturing process and the opportunities for pitfalls leading to unintended consequences. These two are the Measles, Mumps and Rubella vaccine (MMR) and the HPV vaccine (Gardasil®).

2 Children are Sick

The United States has the most comprehensive vaccine schedule in the world. We also have a dismal record in terms of infant mortality. Children born in the U.S. are 76% more likely to die before their first birthday than infants born in 19 other wealthy nations. The infant mortality rate in the U.S. is two to three times as high as the rate in Japan. Japan's vaccination system is entirely voluntary (no mandates). The child receives no vaccines at birth, nor does the mother receive either the DTaP or the flu vaccine during pregnancy, as is becoming common practice in the U.S. Japan also does not administer the MMR vaccine, but instead offers measles together with rubella but without mumps. Japan has essentially abandoned the HPV vaccine administered to teenagers as being too high risk.

Our children are also suffering from multiple chronic diseases at rates that keep going up over time. Many of these are autoimmune diseases, and, as we have seen in previous chapters, these can be directly related to exposure to allergenic peptides that induce an immune attack on human tissues via the mechanism of molecular mimicry [2]. A study published in 2011 determined that over half of the children in the US suffer from at least one chronic disease. These authors wrote in the abstract: "An estimated 43% of US children (32 million) currently have at least 1 of 20 chronic health conditions assessed, increasing to 54.1% when overweight, obesity, or being at risk for developmental delays are included." The key conditions they identified include obesity, developmental delay, environmental al-

lergies, learning disability, asthma, ADHD, behavioral problems, food allergies, anxiety and depression.

Autism is probably the most devastating among the diseases children now suffer from. A study published by Gayle DeLong in 2011 looked for and found a statistically significant correlation between the percentage of children who received the recommended vaccines by age 2 years in each of the 50 states of the United States and the reported rate of autism or speech and language impairment in that state [3]. On average, every 1% increase in vaccination coverage was associated with an additional 680 children being diagnosed with autism or speech delay.

Many other autoimmune diseases are rapidly rising among children in the US, including type 1 diabetes, eczema, asthma, multiple food allergies, etc. I believe that vaccines are designed by their very nature to force a child to adopt an *adapative* immune response approach to infectious disease management, which results in an overabundant production of antibodies that are then potential agents for autoimmune disease through molecular mimicry [4]. Vaccines thus collaborate with glyphosate, which, as we've seen, weakens innate immunity, to cause immune function to over-rely on production of antibodies to fight infectious disease. This can lead to an autoantibody-based attack on cellular tissues.

We saw from <Chapter Heart> that macrophages that are missing a functional PEPCK protein naturally evolve into a proinflammatory M1 phenotype [5]. A fascinating paper published in 2019 by a group of researchers from Singapore investigated how different people respond to a Yellow Fever vaccine, and looked at differences in protein expression between the group that responded with a fever and symptoms of an infection versus those who did not [6]. Strikingly, they found that the sensitive group had biological markers in their immune cells that indicated reduced activity of the citric acid cycle subsequent to vaccination, reflecting mitochondrial insufficiency. They also expressed indicators of a condition called "ER stress" – the endoplastic reticulum (ER) becomes overloaded with misfolded proteins and is unable to clear them fast enough, so it sends out a stress signal.

It turns out that the ER and mitochondria are in close communication, and ER stress induces upregulation of the mitochondrial citric acid cycle, in order to produce more ATP due to high demand [7]. The live virus vaccine involved a weakened version of the virus, but nonetheless it induced increased protein synthesis in infected cells, necessary for the replication of the virus. An inability to increase citric acid cycle machinery in response to metabolic demand led to a failure in energy supply, which then induced an inflammatory response that caused the symptoms of disease. It seems plausible to me that glyphosate would cause the mitochondrial insufficiency in part due to its suppression of PEPCK, as has been discussed multiple times in this book, and that it would also cause ER stress, through its misincorporation into other proteins, leading to their misfolding, followed by

resistance to clearance. Hence, chronic glyphosate exposure would arguably cause a person to be much more sensitive to an adverse reaction to a vaccine.

An obvious question to ask is whether children who don't receive any vaccines have lower rates of these autoimmune diseases. This question was addressed in two papers published by Anthony Mawson et al. in 2017 [8, 9]. These authors used a survey questionnaire to gather information on the health status of children in a home-schooled population, comparing the rates of various conditions in the fully vaccinated subset with the rates in the unvaccinated subset. They found stunning differences in the frequencies of allergic rhinitis, food allergies, ADHD, autism, eczema, learning disabilities, and neurodevelopmental delay, with the vaccinated in all cases showing statistically more frequent prevalence of these disorders.

One feature of vaccination that most people are not aware of is that vaccines generally cause a weakening of the body's innate immune system. While they offer specific protection against the viruses whose antigen is included in the vaccine, they may make the person less able to fight off other viruses not present in the vaccine. This effect is compounded by the effects of glyphosate on innate immune function. A paper published by Cannell et al. in 2008 examined many questions around the epidemiology of influenza in relation to the flu vaccine [10]. These authors noted that, during the 1980's and 1990's, when there was a rapid increase in the number of elderly people who were vaccinated with the flu vaccine, there was no evidence of a decline in death rate among the same population from flu-related illness. They made a case for a deficiency in vitamin D as being a major causal factor in flu susceptibility. Immune cells in the mucosa release cationic peptides in response to a viral threat, but this release depends on vitamin D. The innate immune response to flu is very powerful if the innate immune system is strong, and it is a generic capability, not dependent on any development of antibodies. Glyphosate interferes with the activation of vitamin D through its effect on CYP enzymes, and it probably disrupts cationic peptide function, as was discussed in <Chapter Autoimmune>. These are probably key reasons why flu appears to have become a greater threat to health in recent years.

A placebo-controlled trial involving 115 children in Hong Kong monitored the vaccinated and unvaccinated children over the course of the next nine months [11]. They found that those who received a flu vaccine were at a 4.4-fold increased risk to infection with other respiratory viruses such as syncytial virus, a virus that causes flu-like symptoms.

3 Political Corruption

Robert F Kennedy, Jr. has been a tireless advocate for child safety and one of his missions is to bring accountability to the vaccine industry. In 2018, he filed a successful lawsuit forcing the Health and Human Services department to admit that they had never conducted

regular vaccine safety reviews that had been mandated as part of the 1986 law that excused the industry from any accountabilty for vaccine damage. An article was posted on the Children's Health Defense website on February 11, 2019, in which he lambasted the government for negligence involving the CDC's recommendation that pregnant women should receive the DTaP and the flu vaccine. The article was titled, "FDA Sued as CDC Recommends Untested, Unlicensed Flu Vaccine for Pregnant Women"[1].

This lawsuit was filed by Kennedy to bring to light the fact that the FDA has never determined whether either of these vaccines is safe for pregnant women. Despite this, the CDC has actively recommended flu vaccine during pregnancy since 2004, and TDaP since 2011. The flu vaccine often has mercury as an ingredient, and TDaP always has aluminum as an adjuvant. Both are neurotoxic. It is paramount to avoid any toxic exposures during pregnancy, and it seems foolhardy to actively inject poisons such as these metals into a pregnant woman's body. A Kaiser study from 2017 on over 45,000 women showed an elevated risk of birth defects and a 20% higher risk of autism in children whose mothers received a flu shot in the first trimester [12]. The authors used an inappropriate methodological trick to reduce the apparent significance of the result. A CDC study showed that women who received multiple flu shots in the years from 2010 to 2012 had a 7.7 fold greater risk of miscarriage compared to those who got no flu vaccines [13].

Companies operating on the US Stock Market are required by law to submit a 10-K form every year detailing the total sales of their various products, and this information is made publicly available by the Securities and Exchange Commission (SEC). Merck is a company whose products mostly consist of prescription drugs and vaccines. The most recent report from the SEC on Merck's product sales according to the 10-K form for 2018 showed that their two top-selling products were a cancer drug, Keytruda, and a diabetes drug, Janumet. Keytruda has been approved for treatment of non-Hodgkin's lymphoma, which is sufficiently well linked to glyphosate to support winning lawsuits. Glyphosate usage on core crops is strongly correlated with the rise in diabetes over the past two decades. Thus, it appears that Merck benefits greatly financially from chronic glyphosate poisoning of the population.

However, Merck's third best seller is Gardasil, and several vaccines, including ProQad, MMR, Varivax, and Pneumovax, showed up among its short list of best sellers. Altogether, sales for these vaccines totaled $5.9 billion. Vaccines are a great product line because, unlike prescription drugs, there are no losses due to lawsuits from adverse events, because of the 1986 law that exempted the pharmaceutical companies from accountability. Vaccines are also much less costly to develop, because they don't require nearly as stringent testing for

[1] childrenshealthdefense.org/news/fda-admits-that-government-is-recommending-untested-unlicensed-vaccines-for-pregnant-women

safety prior to approval by the FDA. Furthermore, mandates assure that nearly every child in the population receives the vaccine, thus providing a huge consumer base.

Thus, it is in Merck's best interest for states to maintain aggressive vaccine mandates so as to push the percentage of the population receiving its vaccines up as close to 100% as possible. The prescription drug industry is arguably the most powerful lobby group, spending more than any other industry on lobbying to influence legislative decisions in favor of their products. As a result of such influence, state legislators become vested in the goal of making sure the population is highly vaccinated, and this introduces a political bias that prevents politicians from recognizing the dark side of vaccines.

4 Measles Infection and MMR Vaccine

We are misled to believe that measles is a much more dangerous disease than it actually is. The odds of dying from measles in 1962, the year before the vaccine was introduced, was less than the odds of dying in 2000 from drowning in a bathtub or a swimming pool, or falling out of a building. And a measles infection as a child may be protective against chronic diseases much later in life. According to a large population-based study in Japan, prior childhood infection with measles, as well as mumps, was associated with a significant *decrease* in mortality from cardiovascular disease and stroke [14]. The most effective way to safeguard against dying from measles is to maintain a healthy lifestyle with wholesome nutrient dense organic food and plenty of sunlight exposure.

There is a remarkable natural process that works to exploit the mother's immune system to protect infants from infectious diseases during the first year of life. The mother passes on immunoglobulin G antibodies to the fetus during pregnancy, and then, later, she passes on immunoglobulin A antibodies in breast milk by nursing the baby [15]. Vaccine-based antibodies wane over time, and therefore vaccinated moms are sometimes not able to protect their child from infectious diseases during the vulnerable first year of life. It has been demonstrated that mothers in highly vaccinated populations were less able to pass protective antibodies on to their newborn child [16]. So the infant of a vaccinated mother has little recourse to protect itself from a highly infectious disease such as measles during an outbreak. When natural immunity was the norm, those most at risk to death or permanent damage from measles were protected through their mom's antibodies. This is no longer true because of the near universal vaccination policy.

Intravenous immunoglobulin therapy is an important treatment option for immunocompromised patients [17]. Fortuitously, the US FDA has issued a regulatory requirement that donor immunoglobulins must pass a test for a minimal cutoff level of measles antibody to qualify for administration. As a consequence, we have data on the levels of measles

antibodies in cohorts in different age groups, and it becomes possible then to observe the effect of the measles vaccine on antibody levels. A study published in 2017 confirmed that there was a substantial drop in antibody levels following the introduction of the massive vaccination campaign [18]. There was rougly a 3-fold decline in measles virus antibody concentrations for those born after 1968 compared to before that date. Interestingly, after a two-dose regimen was introduced in 1989, the levels dropped even further. The authors conducted their own study where they vaccinated donors at the time of their donation, and then tracked their antibody levels into the future. They found that the vaccine initially doubled the antibody titers, but, by six months later, the levels were back to where they were before the booster shot.

Part of the problem is that it used to be the case that antibodies got boosted by continued exposure to measles virus circulating among the population, an effect termed "antigenic boosting." Having all but wiped out the virus, we now no longer get the continued exposure necessary to maintain antibody levels. It can be expected, looking forward, that the number of infants and adults who catch the measles will continue to escalate, despite aggressive campaigns to approach 100% vaccination coverage. A paper published back in 1994 studied patterns of measles outbreaks and found that measles outbreaks were commonly occurring in nearly fully vaccinated populations, defying the notion of herd immunity [19]. They found 18 reports of measles outbreaks where *all* of the measles cases occurred in immunized students. They concluded that, as measles vaccination rates rise, measles becomes a disease of immunized persons.

A study from China published in 2014 reported that 707 measles outbreaks occurred throughout China between 2009 and 2012, but there was a steep upward trend in 2013 [20]. The authors wrote: "The number of measles cases reported in the first 10 months of 2013 – 26,443 – was three times the number reported in the whole of 2012." This occurred despite an increasing trend in measles vaccination rate throughout the country, reaching upwards of 90% coverage since 2009. An earlier study from China hypothesized that the natural measles strain was mutating into a new variant that was not sufficiently well matched by the vaccine strain [21]

China is one of the few countries that require the first measles vaccine to be given at 8 months of age. A booster shot is administered usually shortly before the second birthday, and, in major cities, a third vaccine is administered to 4-6 year olds. In a case-series surveillance system based in Tianjin, China, monitoring 500 measles cases from 2009 to 2013, it was found that 54% of the cases had had at least one measles vaccine. Those who had received only one dose of measles vaccine were as susceptible to measles as the fully unvaccinated, suggesting that this early dose is administered before the child's immune system is mature enough to respond [22].

A child in Croatia was vaccinated with the MMR vaccine in 2010, and he developed a rash eight days post-vaccination. Tests verified live vaccine-type measles virus in a throat swab and in his urine [23]. This means that a vaccinated child can catch measles from the vaccine and potentially infect another child through vaccine shedding.

Despite the fact that it is widely believed that VAERS, a voluntary system, only captures 1% of vaccine adverse events, there were nearly 94,000 adverse events reported for MMR as of February, 2019. This included 1,810 disabilities, 6,902 hospitalizations, and 463 deaths. There have been at most just a handful of deaths attributed to measles infection in the United States over the past decade.

The CDC reported in October 2018 about a measles outbreak in Israel in an adult population with a high percentage of at least 2-dose vaccination coverage [24]. Research verified that"the primary patient had documentation of receipt of 3 doses of measles-containing vaccine, one each at ages 1, 2, and 6 years, per the vaccination schedule in Ukraine." This is clearly a case of vaccine failure, either due to a waning response over time or a failure to develop antibodies at all due to a defective immune response.

5 Autism and Vaccines

One reason why the U.S. may have higher rates of autism is because we require substantially more vaccines. In fact, the U.S. has the highest number of vaccine requirements in the world, along with one of the highest rates of autism. The U.S. CDC recommends 3 doses of the hepatitis B vaccine for children before they start kindergarten as well as two doses of Hepatitis A and two or three doses of oral rotavirus vaccine. None of these are required in Denmark. The first Hepatitis B vaccine is usually administered at birth, and this vaccine contains as an adjuvant the neurotoxin aluminum.

A study published in 2010, focusing on boys, used National Health Interview Survey data from 1997 to 2002 to obtain information on autism diagnoses [25]. They found that boys who were vaccinated with Hepatitis B as neonates had a 3-fold increased risk to autism, compared to boys who got the vaccine after the age of one month or never received the vaccine. A recnet study on autism brains post-mortem found an alarmingly high level of aluminum in multiple brain samples [26].

An experiment conducted in China involved injecting mice neonatally with the Hepatitis B vaccine and comparing them to control mice injected with phosphate-buffered saline [27]. Exposure to the vaccine resulted in a decrease in neurogenesis in the hippocampus in the first weeks of life and increased expression of cytokines indicative of brain inflammation, along with neurobehavioral impairments. The hepatitis B vaccine is administered to more than 70% of neonates worldwide, and this may be causing developmental damage leading

More Common Before 2003			
Reaction	Count <2003	Count $\geq$ 2003	p-value
arthritis	52	18	0.045
joint pain	175	75	0.012
More Common After 2002			
Reaction	Count <2003	Count $\geq$ 2003	p-value
hospitalization	132	423	0.00041
seizures	314	534	0.0055
dyspnea	139	279	0.0086
hives	444	654	0.011
anaphylactic shock	28	91	0.017
eczema	10	47	0.028
autism	105	184	0.031
hyperventilation	18	57	0.035
general infection	77	136	0.044
asthma	22	58	0.046
immunoglobulin G	0	17	0.048
ear infection	32	72	0.048
heart rate irregular	11	39	0.049

Table 1: Statistical analysis of frequency of various adverse reactions to MMR before and after January, 2003. The p-values are computed according to a chi-square goodness of fit test [28]

to lifelong deficits in brain function.

6 A Possible Mechanism for MMR and Autism

Vijendra Singh has devoted most of his career to the idea that autism is an autoimmune disease. There has been considerable controversy surrounding his work, particularly because he argued that there could be a link between the MMR vaccine and autism via an autoimmune response through molecular mimicry. In the 1990's and 2000's, he published, together with colleagues, a series of papers where they measured antibodies from children with autism and compared the levels with those of normal controls. In order for the vaccine to "take," the child is expected to develop antibodies to measles haemagglutinin, which is

a protein produced by the virus. Singh looked at both antibodies to measles haemagglutinin and antibodies to myelin basic protein, a common protein in nerve fibers that plays an important role in maintaining the insulating function of the myelin sheath. These two proteins have specific peptide sequences that overlap considerably, supporting the argument that the antibodies could get confused and attack the myelin sheath by mistake. His paper, published with colleagues in 2002, was the most compelling, as it showed that 60% of the autistic children had abnormally high antibody titers to measles haemagglutinin, and that nearly all of these children also had autoantibodies to myelin basic protein in the brain [29]. He also showed that they had antibodies to haemagglutinin in their cerebrospinal fluid, whereas the other children did not. None of the control children had high titers to measles and none had antibodies to haemagglutinin in the brain or autoantibodies to myelin basic protein. This is one of the strongest contrastive metrics I have seen on autistic vs non-autistic children.

Predictably, others tried to discredit his work, and most of their arguments were based on a claim that his methods to detect the antibodies were flawed. His detractors also argued that autism is not an autoimmune disease. However, autism does seem to be associated with immune dysfunction, including both impaired immune function and increased autoimmunity, as seen by the increased risk to food allergies among autistic children. A study from 2018 found significant increased risk to food allergies, skin allergies and respiratory allegies in autistic children compared to controls [30]. Food allergy was nearly 3 times as common among the autistic children.

MMR is not the only vaccine that causes a demyelinating disease. A paper from 2014 discussed 71 documented cases of inflammatory demyelinating diseases following vaccines, including the flu vaccine, HPV, hepatitis A and B, rabies, measles, rubella, yellow fever, anthrax, meningococcus and tetanus [31]. By far the most cases (21) were subsequent to flu vaccine, probably because it is so commonly administered. Usually symptoms developed within days or weeks of vaccination, but some did not begin to appear until five months later. This likely means that many of these links to vaccines and demyelinating diseases go unnoticed.

7 MMR and Glyphosate

Once I realized that collagen is highly enriched in glycine, I became aware of the possibility that collagen-derived nutrients would likely be contaminated with glyphosate. I also knew that many of the vaccines are based on a live virus that is grown in culture, and that gelatin is typically an important nutrient in the culture. Fetal bovine serum is another nutrient frequently used to grow viruses in culture, and this too is likely to be contaminated with

glyphosate. Furthermore, the culture contains fibroblasts derived from chick embryos, and these too are likely to have been exposed to glyphosate. It then becomes logical that live-virus vaccines might also have glyphosate in them as a contaminant. The manufacturing process for vaccines is complex, and it is difficult to guarantee that no unwanted ingredients are present. Italian researchers have been discovering that there are many different metal contaminants in vaccines that were not put there intentionally [32]. While it might be hard to believe that glyphosate is in vaccines, why would we have reason to believe that it's not possible?

I also reasoned that, if glyphosate is a contaminant, it is almost certainly a bigger problem now than it was 20 years ago. This makes sense just because there is much more glyphosate in the environment today. If this is true, then we'd expect the vaccine to have a more severe adverse reaction profile recently compared to the early days of the vaccine. To attempt to answer this question, I divided the MMR adverse event data in VAERS into two groups of equal time duration: those events reported before 2003 and those reported in 2003 or later. Drawing from a sampled subset with equivalent age distribution, I compared the frequency of various adverse reactions in the early set against the frequency in the late set.

The results, which were presented in a paper that was published jointly with Anthony Samsel, our sixth joint paper on glyphosate [28], are reproduced here in Table 1. Many severe adverse reactions, including hospitalization, seizures, hives, eczema, asthma, anaphylactic shock, and, notably, autism, were statistically significantly more frequently observed in the later data subset. Many of these reactions are indicative of autoimmune disease. Only two reactions were more common in the early set, and they were arthritis and joint pain. These are indicators that the vaccine adjuvant is going into the joints rather than into the brain, and suggests that the brain barrier may have been less easily breached in the earlier data set, causing the toxins in the vaccine to be more likely to reach the joints. Since glyphosate opens up barriers, it is logical that the brain is more accessible to the virus when the child is chronically exposed to glyphosate.

We have already seen from previous chapters of this book that glyphosate excites the NMDA receptors in the hippocampus, causing neuroexcitotoxicity. Together with glutamate, it activates the receptor through its action as a glycine analogue, and it also prevents glutamate from being cleared from the synapse due to its disruption of astrocytic conversion of glutamate to glutamine. The measles vaccine contains significant amounts of glutamate, as a component of the gelatin listed as an ingredient. If it is also contaminated with glyphosate, one can expect serious damage to the hippocampus through glutamate/glyphosate collaboration.

But there is another ominous possibility for glyphosate enhancing MMR's toxicity re-

Peptide	Sequence
Measles haemagglutinin	EISDNL**G**QE**G**RASTS**G**TP
Myelin basic protein	EISFKL**G**QE**G**RDSRS**G**TP

Table 2: Similar peptide sequences in measles haemagglutinin and myelin basic protein that can lead to brain injury through molecular mimicry. Note that each sequence contains three glycine residues. (See Oldstone, 2005 [33], p. 7.

lated to the haemagglutinin protein. Measles haemagglutinin has an 18-residue peptide sequence that is over 70% identical to a peptide sequence found in myelin basic protein [33], p. 7. This seems like high risk for autoimmune attack on myelin basic protein through molecular mimicry. These two peptides are shown in alignment in Table 2. Notice that there are three glycine residues that are aligned in both proteins. Each of these is an opportunity for glyphosate to substitute, making the protein more difficult to break down and more allergenic.

8 HPV: High Risk/Benefit Ratio

The HPV vaccine (Gardasil) was introduced on the market worldwide in 2008. Many countries have added it to the list of vaccines routinely administered to their teenage population, both male and female. The claim is that administering this vaccine to teenagers will prevent cervical cancer decades later. This claim has never been proven. It has been heralded as the first of hopefully many more vaccines on the horizon that can be administered to prevent cancer, a Holy Grail kind of idea that has enormous appeal.

However, it is not at all clear that HPV is actually protecting young women from cervical cancer. Proof of its effectiveness was never attempted, because it would take decades to wait until these women reached the age of 50 or more where cervical cancer usually strikes. Much could happen in the intervening years in terms of waning immunity and/or mutations in the virus that cause it to no longer match the vaccine strain. In fact, the original HPV vaccine only targeted four strains of HPV. A newer vaccine has been rolled out recently covering the 9 most common strains, and having more than twice as much aluminum. Still, there are over 100 different strains of HPV, and any of these other strains can have an opportunistic field day once its more common competitors are taken out by the vaccine.

While the rates of cervical cancer are extremely rare in young women, nonetheless it is important to study trends in this age group to see if an early view of the success of HPV vaccine can be detected. In a paper published in 2018, it was observed that a highly

Symptoms	**HPV vaccine #**	**Control #**	***p*-value**
Seizures	538	150	0.00010
Loss of Consciousness	393	119	0.00046
Depression	109	11	0.029
Fatigue	351	167	0.042
Miscarriage	97	12	0.0044
Anxiety	170	56	0.0058
Asthma	142	49	0.0095
Death	35	7	0.04

Table 3: Counts of the number of adverse events where the vaccine was the HPV vaccine, compared to a sampled age-matched control set of events where the vaccine was not the HPV vaccine, along with the associated p-value, indicating the likelihood that this distribution could have occurred by chance.

statistically significant *increase* in diagnoses of cervical cancer among women in their early 20's had occurred in the UK between 2012 and 2014 ($p = 0.0006$) [34]. Given that the HPV vaccine had been introduced in the UK in 2008, many people anticipated that the rates should fall by 2014, the exact opposite of what actually happened. Dr. Nicole Delépine has generalized this observation by conducting an interesting analysis of HPV vaccine uptake in various countries in Europe and elsewhere around the world and their corresponding rates of cervical cancer[2]. She observed an interesting pattern that countries with more aggressive HPV vaccination campaigns consistently had *rising* rates of cervical cancer, whereas France, a country where HPV adoption has been much slower, saw a *decrease* in the rates for young women. Why might this be? My suspicion is that the other opportunistic strains not covered in the vaccine are taking advantage of the vaccuum set up by the vaccine, and that these turn out to be more virulent than the strains they are replacing.

Young women are reporting all kinds of adverse reactions to HPV vaccine in the VAERS database. Most alarming are reports of abnormal PAPS smear, cervical dysplasia and cervical cancer, suggesting that the vaccine may actually be *causing* cancer. "Death" is also reported in VAERS following HPV in 439 case reports (up to October, 2018). A huge number of reports mention "emergency room" and "hospitalization," as well as, ominously, "did not recover."

Back in 2012, I did an analysis of the adverse reactions to the HPV vaccine in the

[2]See: http://docteur.nicoledelepine.fr/gardasil-faith-and-propaganda-versus-hard-evidence/

VAERS database, comparing frequency of mentions of various adverse events in HPV with the frequency in all other vaccines administered to people in the same age group. Table 3 shows symptoms that were statistically significantly more frequent for HPV. These include seizures, loss of consciousness, depression, fatigue, miscarriage, anxiety, asthma, and death.

A paper published in 2014 examined a case study of 6 patients who developed postural tachycardia syndrome (POTS) following HPV vaccination [35]. The symptoms of this condition include weight loss, dizziness, fatigue, nausea, tachycardia and exercise intolerance. Another study published by Gayle DeLong in 2018 showed an alarmingly low reproductive rate for young women aged 25 to 29 who had been vaccinated with HPV compared to those who had not [36]. About 60% of the women who did not receive the HPV vaccine had been pregnant at least once compared to only 35% of women who had received the vaccine. She calculated that, if the statistics hold true for the general US population, 100% coverage of HPV vaccine would result in an additional 2 million women who had never conceived.

A study published in 2017 was extremely critical of the process by which HPV was evaluated for safety and effectiveness, and it pointed out that the calculated risk/benefit ratio for HPV does not support its widespread adoption [37]. Most of the pre-licensure randomized trials used aluminum in the so-called placebo, but nonetheless, two of the largest trials found significantly more severe adverse events in the vaccine arm. A bivalent HPV vaccine caused significantly more deaths than the aluminum placebo control group (14 vs. 3, p= 0.012). Another trial, comparing the 9-valent vaccine with the earlier 4-valent vaccine, found a significant increase in adverse reactions (p = 0.01) in the 9-valent dose group. Multiple severe post-marketing adverse events are showing up in countries around the world, and Japan's government in particular was proactive to stop recommending HPV vaccine for the general population.

Robert F. Kennedy Jr. has been a strong advocate against the mandatory adoption of HPV vaccine for teenagers in the U.S. He produced an excellent video presentation in May of 2019 (https://www.youtube.com/watch?v=iL4SD5f2toQ) where he made a strong case for the absurdity of the present situation where young girls are being harmed by the vaccine in much greater numbers than could be justified by any expected gains forty years hence.

9 HPV and Molecular Mimicry

Aside from its ineffectiveness, HPV has another serious problem which is its aluminum adjuvant, which uses new technology involving aluminum nanoparticles that are much more effective to induce an immune response. These particles apparently can also bind DNA and make it very difficult to remove the DNA during preparation of the vaccine. A sophisticated new methodology has been developed for the production of HPV vaccine, and

it involves recombinant technology whereby viral genes coding for HPV proteins produced by the selected strains are inserted into the genome of yeast. A supposedly highly effective patented process removes all contaminating components, including viral and plasmid DNA [38]. However, it appears that viral DNA is actually getting into the vaccine, and this is very disconcerting as it can lead to severe autoimmune disease. Sin Hang Lee published a remarkable paper in 2012 showing that viral DNA was found in multiple HPV vaccine samples, and hypothesizing that this was due to chemical binding between naked DNA fragments and aluminum-based adjuvant to form a highly stable complex [39].

A physician from Mexico named Dr. Manuel Martínez-Lavin has defined a new syndrome which he calls "HPV vaccination syndrome." It is a rare disease that appears usually a few weeks after an HPV vaccine is administered. It has shown up among young girls in many countries around the world, and is characterized by pain in the muscles and joints, involntary movements, dizziness and syncopy, headache, fatigue and nausea [40]. It is associated with antibodies to receptors in the autonomic nervous system. It resembles many other syndromes considered to be autoimmune diseases, such as postural orthostatic tachycardia syndrome (POTS), chronic fatigue syndrome, and fibromyalgia, as well as the condition called macrophagic myofasciitis identified as a post-vaccination syndrome by researchers in France [41].

As you already know from <Chapter Autoimmune> and from the above discussion on the MMR vaccine, autoimmune disease often develops through the mechanism of molecular mimicry, whereby a peptide sequence found in a foreign protein closely matches a peptide sequence found in a native protein, and the immune cells get confused and attack the native protein. A fascinating paper by Darja Kanduc looked systematically at the proteins found in the HPV virus (specifically, the most common strain HPV16) [42]. She found that there were 82 heptapeptides (peptides containing a sequence of 7 amino acids) that were also present in various human proteins that perform a wide range of functions. A quote from the abstract shows the potential seriousness of these similarities: "The number of viral matches and their locations make the occurrence of side autoimmune cross-reactions in the human host following HPV16-based vaccination almost unavoidable."

Table 1 in the paper is a long and detailed accounting of all of the 82 proteins that have various heptapeptide matches. Most of the sequences match only a single human protein, and a few match two or three human proteins. However, there is one sequence that stands out against all the others, because it has exact matches within 16 different human proteins, which collectively play vital roles in human physiology. This sequence is: SGGSGGG, containing only serines and glycines. If you remember from <Chapter Cancer>, serine residues are phosphorylation sites in many proteins, and phosphorylation of the serine residue typically dramatically changes protein behavior. Glyphosate substi-

tution for glycine emulates serine phosphorylation. And glyphosate substitution adjacent to a serine residue will also probably block serine phosphorylation. So any serine phosphorylation within these SGGSGGG sequences would almost certainly be highly disrupted by glyphosate, and therefore susceptible to immune activation through the foreign-like appearance of a glyphosate-substituted peptide sequence. This is all speculation at this time, but it is certainly food for thought.

10 ASIA

Autoimmune Syndrome Induced by Adjuvants (ASIA) is the name given to a newly recognized syndrome that characterizes a generalized phenomenon of autoimmune disease arising from exposure to an adjuvant [43]. Multiple studies have shown that various vaccines can induce autoimmune disease in rare cases, and that the adjuvants in the vaccines play a crucial role. Unfortunately, adjuvants are a necessary component of many vaccines, because the antigen alone is not sufficient to trigger an antibody response. Aluminum is most commonly used as an adjuvant, but squalene and glycerol are lipids that can also cause an autoimmune reaction. Two conditions, macrophagic myofasciitis [41] and the Gulf War Syndrome [44], have both been linked to vaccine-induced autoantibodies attacking human tissues. Antiphospholipid syndrome, which was described and attributed to glyphosate in <Chapter Autoimmune>, has been shown to be linked to the tetanus vaccine. A study on mice demonstrated emphatically that both glycerol and aluminum hydroxide used as adjuvants in the tetanus vaccine could induce antiphospholipid syndrome via molecular mimicry [45, 46]. The amount of aluminum contained in the eight doses of vaccines administered to a 2-month-old baby in the U.S. is 1,225 mcg. It is sobering to find that 25 mcg. is the upper limit for the amount of aluminum permitted in intravenous feeding formulations for children. The vaccine dose of aluminum at 2 months is nearly 50 times as much.

An excellent paper to read if you want to learn about all the science behind the toxicity of aluminum adjuvant is a 33-page open access publication by Gerwyn Morris et al. published in 2017 [47]. Aluminum has a complex effect on the brain, causing "microglial activation," which turns on the immune cells in the brain to launch an inflammatory response, inducing excess glutamate synthesis, as well as the release of proinflammatory cytokines, proteinases, complement, and reactive oxygen species. This response-to-injury reaction causes neuronal damage that could lead to permanent loss of brain function in unpredictable ways. The concluding sentence of the abstract was: "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."

Bystander activation is another mechanism by which an adjuvanted vaccine could cause

Autoimmune Disease	**Vaccine(s)**
Systemic lupus erythematosus	Hep-B, tetanus, anthrax
Rheumatoid arthritis	Hep-B, tetanus, typhoid/parathypoid, MMR
Multiple sclerosis	Hep-B
Reactive arthritis	BCG, typhoid, DPT, MMR, Hep-B influenza
Polymiositis/ dermatomyositis	BCG, smallpox, diphtheria, DPT
Polyarteritis nodosa	Influenza, pertussis, Hep-B
Guillain-Barré syndrome	Influenza, polio, tetanus
Diabetes mellitus-type I	HIB
Idiopathic thrombocytopenia	MMR, Hep-B
Hashimoto thyroiditis	Hep-B

Table 4: Examples of associations between vaccines and various autoimmune diseases. [Adapted from [48]]

autoimmune disease [49, 48]. For example, the adjuvant, such as aluminum, might be so toxic to the cells at the site of injection that they die abruptly without a chance to adequately dispose of their contents in a graceful way through a programmed shut-down procedure (apoptosis). As a consequence, cellular debris that is antigenic (can induce an immune response) is exposed to the immune cells, and they respond by developing antibodies to the debris, that can then attack other cells elsewhere in the body that produce those same antigens. This is possibly how antibodies to DNA can be developed in association with lupus. An autoimmune disease already present but in a quiescent state can be exasperated by a vaccine to reignite symptoms. Table 4 lists several examples of cases where specific vaccines were linked to provocation of specific autoimmune diseases. The paper by Vadalá et al. provides references for all of these examples [48].

Immune thrombocytopenia is a condition that falls under the auspices of ASIA, affecting mostly young children. It is characterized by a precipitous drop in blood platelets and cutaneous bleeding with purple-colored dots (purpura) showing up on the skin. It leads to internal bleeding, most ominously with the potential for intracranial hemorrhage, which can be fatal. A study on over a million children showed that 76% of cases of immune thrombocytopenia among children aged 1 to 2 were attributable to the MMR vaccine [50].

11 Recapitulation

While we have been led to believe that vaccines are one of the most important components of a modern approach to fighting infection, the story is in fact much more complex. Improved sanitation and nutrition were the most important factors in reducing the risk of infectious disease outbreaks during the 1900's. Vaccination is an artificial way to acquire immunity, and protection wanes over time, leaving infants vulnerable to infection at a critical life stage because their mothers can no longer provide antibodies in utero and through breast milk. Vaccines are premised on the notion of acquiring antibodies to the specific antigens, and such antibodies can lead to autoimmune disease through molecular mimicry. It is far better, it results in a much more general immune protection, if the innate immune system, which does not require antibodies, is strong and healthy, such that infections can be kept in check without ever requiring antibody production. We still don't understand the role of viruses in disease and health - infection with measles and mumps early in life affords protection much later in life against diseases like stroke and cardiovascular disease. Vaccines are loaded with various toxic adjuvants that are required for them to work properly, and are also contaminated with unintended toxic ingredients like DNA, toxic metals and glyphosate. Parents should make sure that their children eat a healthy organic whole foods diet with great variety, and that they get out in the sunlight frequently to maintain high levels of vitamin D. These simple steps would be far better than injecting toxins into their bodies as a means to acquire protection from infections.

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