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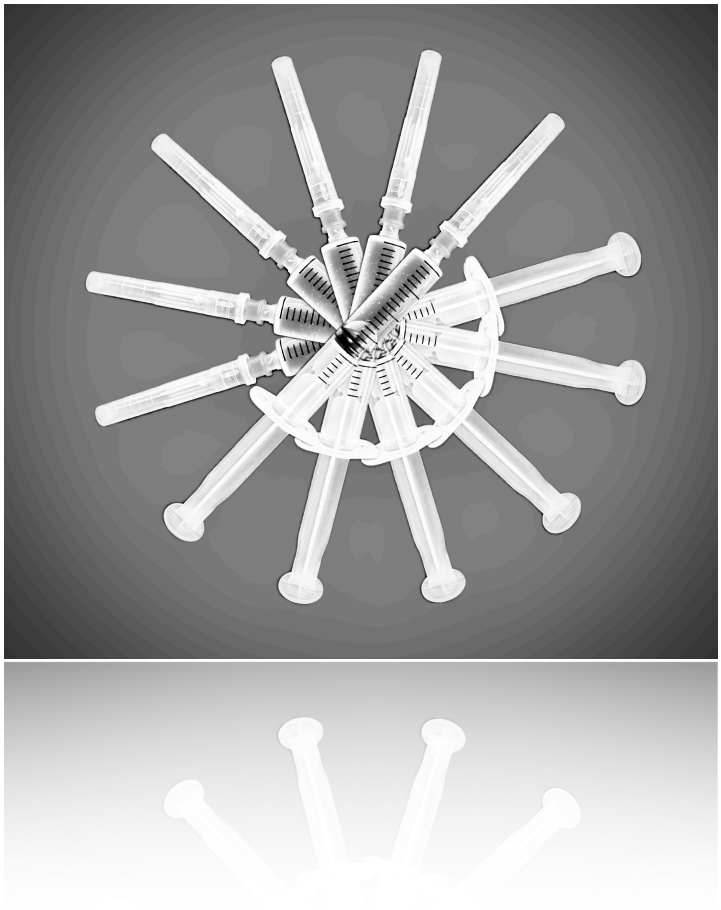

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A little history

It was about 150 years ago. In 1876, Robert Koch cultivated Bacillus anthracis, the anthrax pathogen. A few years later, in 1882, he cultivated the tuberculosis pathogen, Mycobacterium tuberculosis. A year later, the cholera pathogen, Vibrio cholerae, was cultivated. Louis Pasteur, who was 20 years older than Robert Koch, had already studied microorganisms, explained yeast fermentation, and developed vaccines against poultry cholera, anthrax, swine erysipelas, and rabies. At the end of the 19th century, Emil von Behring brought the diphtheria antiserum to market. Paul Ehrlich was involved in the development. They were all famous, award-winning scientists, researching the causes of infectious diseases, supposedly with the primary goal of helping sick people. In their treatment of both humans and animals, they were anything but squeamish. Their empathy extended neither to the laboratory animals nor to the people themselves. Robert Koch's activities in the German colonies were particularly questionable[1], but the other leading figures were not much better.
The Henle-Koch postulates, often simply called Koch's postulates, historically describe the cause-and-effect relationship between a parasite, its host, and the resulting disease, and were long considered dogmatic in infectious disease theory. While these postulates are historically valid, this dogma no longer aligns with current findings in evolutionary and molecular biology. Ultimately, however, arguing about it is pointless, as definitions on this topic are always based on the knowledge available at the time.

Life is a complex network in which information is transmitted and communication takes place, and all of this has followed certain evolutionary rules since time immemorial. These rules, which we still don't fully understand, have been at work for millions of years—affecting us as well. We don't need dogmatic fixations from a time when we could barely identify particles but had no understanding of how they interacted. It should also be remembered that the dogmas of an era are always created to generate (and justify) profit, as seen in the disastrous vaccination experiments since Pasteur, Koch and Behring and others, and the current dogmas in pharmacology.

But the scientific conquest of the world of microbes was fascinating, exciting, constantly yielding new discoveries—and generating considerable profits for the emerging pharmaceutical industry. As early as 1895, Emil von Behring generated over 700,000 Reichsmark in net profit from the production of diphtheria serum at the Hoechst Farben Werke.

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[1] Eckart WU: Die Kolonie als Laboratorium. in: Griesecke B, Krause M, Pethes N, Sabisch K: Kulturgeschichte des Menschenversuchs im 20. Jahrhundert. S. 199–227; Suhrkamp; Frankfurt/Main 2009 (German)

Technical advances expanded these findings. In 1926, the first viruses—bacteriophages—were described by Felix d'Hérelle, a French Canadian, and in 1939, a virus was visualized for the first time using an electron microscope. It was the structure of the tobacco mosaic virus.

The wars of the first half of the 20th century, with their casualties, provided optimal conditions for field trials. And the plight of the population suffering from the consequences of war provided the best conditions for spreading diseases of various kinds and their research. This was indeed a blessing for research, a win for the pharmaceutical industry, and for people? At first, everything seemed quite good.

From then on, the pharmaceutical industry tried to provide a medicinal response to every new discovery, and vaccination against every conceivable pathogen proved to be a particularly profitable field. Therefore, research was conducted particularly diligently in this area.

The Change

Times have changed. Over 250 years of vaccination history are now being contrasted with insights from Evolutionary Biology and Molecular Biology that shed new light on the significance of microbes and viruses. Microbes and viruses are not just pathogenic factors, but also control elements of our evolution, indeed of our lives. We live in a virusphere, a "microbiosphere," and are directly dependent on it. Many doctors and scientists struggle with this realization and cling to the traditional "war" against viruses and microbes, especially since it generates considerable profits.

If I base my understanding on the evolutionary biological concept of *Luis P. Villarreal* and others[2], namely that all life is based on a primordial RNA world that is now responsible for the shaping and imaging of DNA information (epigenetic mechanisms), the logical consequence arises that as soon as I introduce synthetic RNA into the body (and additionally immune-active adjuvants in vaccinations), various complex evolutionarily foreign reactions will be triggered. We recognize only a fraction of it because our recognition depends on the search algorithms. Any intervention in a highly complex system, built over millions of years and regulated, among other things, by equilibrium reactions using addiction modules (toxin/antitoxin, regulation/restriction, etc.), must have drastic consequences, consequences that we can barely comprehend.
Of course, this also applies in principle to any infection with microbes, viruses, or contact with viral relics, but the circumstances are different here because there is already an evolutionary connection, which is evident in pathogen-associated molecular patterns (PAMPs) and pattern-recognition receptors (PRRs). In early childhood, our immune system is significantly shaped by these evolutionary guidelines, the developing microbiome, the Peyer patches in the small intestine area, and the thymus.

Our Immune System

We possess an *innate immune system* with its monocytes and macrophages, granulocytes, mast cells, dendritic cells, and killer cells—essentially, our built-in immune system.
In addition, there is an *adaptive immune system* with its lymphocytes, B cells, and T cells.

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[2] INFECTIOUS THOUGHTS, Discovering Biology as a Social Science Dialogues, Books, Symposia, Articles
Luis P. Villarreal & Guenther Witzany © Luis P. Villarreal and Guenther Witzany, 2024, DOI: 10.13140/RG.2.2.35183.66725

B cells are the "antibody rail." When activated by an antigen, they develop into plasma cells, which are specialized to synthesize large quantities of immunoglobulins/antibodies.
T cells consist of two subgroups: T helper cells and cytotoxic T cells (killer lymphocytes, CTLs). T helper cells optimize the immune response by activating B cells to produce antibodies and assisting macrophages in killing microorganisms in the body. Some T helper cells later become "memory cells," in which the signature of an antigen contact is stored for future antigen encounters. Such an antigen could, for example, be a specific sequence of amino acids on the envelope of a virus. In addition, there are regulatory T helper cells that act in the opposite way, suppressing the immune response to prevent an excessive reaction.
Vaccinations primarily work via the adaptive immune system by inducing the production of specific memory cells and antibodies. This has been confirmed by molecular biological studies; that is, this process occurs in the body following vaccination. However, it is not yet clear for all vaccines whether this results in a health benefit or ultimately even a disadvantage.

Hypothetically, vaccines simulate an infection to build up long-term, targeted immunity without causing the specific disease. Overall, the innate and adaptive systems work together, as the innate system initiates the adaptive response. The innate immune system immediately recognizes vaccine antigens non-specifically via pattern recognition receptors (PRRs) such as Toll-like receptors and triggers an initial inflammatory response. This activates dendritic cells, which present antigens and thus stimulate adaptive immunity.
Vaccines not only elicit classic immune responses of the adaptive immune system, such as antibody production, but also lead to long-lasting epigenetic changes in defense cells of the innate immune system. Following injections of modified-mRNA (mod mRNA), epigenetic changes in the innate immune system were observed through mechanisms such as histone acetylation. This was interpreted positively, as a kind of "training" of the innate immune system, making the defense broader and faster, but it could also be responsible for the sometimes significant side effects after mod mRNA injections.[3,4]
Traditional vaccines such as BCG (live vaccine against tuberculosis) also induce lasting epigenetic effects, which are interpreted as "trained immunity" and reprogram the innate system. This has been investigated for both "vaccine types," with the mod mRNA effects appearing novel and potentially broader in scope, but not exclusive. This will be explained in more detail below:

Epigenetic Effects of mRNA Vaccines
Studies show that mod-mRNA vaccines (e.g., against COVID-19) can induce epigenetic markings in monocytes and precursor cells detectable for up to six months, enabling an enhanced response to infections. These changes occur through histone acetylation (histones are components of chromatin that are essential for packaging DNA and for expressing the genes encoded on it), reportedly without altering the DNA sequence, and could provide long-term protection beyond adaptive antibodies. Larger clinical studies are currently examining the durability and, in particular, whether the stability of the DNA sequence is truly maintained.

Effects of Traditional Vaccines
Stable epigenetic changes in DNA methylation and chromatin opening have also been demonstrated in conventional vaccines (inactivated or attenuated vaccines), which "train" immune cells to

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[3] *Simonis, A., Theobald, S.J., Koch, A.E. et al. Persistent epigenetic memory of SARS-CoV-2 mRNA vaccination in monocyte-derived macrophages. Mol Syst Biol **21**, 341–360 (2025). https://doi.org/10.1038/s44320-025-00093-6*

[4] *https://www.hackenberg-hm.de/c-downloads/en/Post-Vac-Orientation-guide.pdf*

recognize different pathogens. These effects vary individually and have been researched for years, for example, as the basis for cross-specific protection. Many, though not all, inflammatory processes act epigenetically via acetylation; other mechanisms such as methylation or non-coding RNAs also have an influence.

What happens behind the scenes?

This isn't about the question of a health benefit, but rather about understanding the mechanisms that also occur "behind the scenes" of vaccinations. These mechanisms aren't specific to vaccinations but occur in many inflammatory processes.

Inflammatory *histone acetyltransferases (HATs)* are enzymes that play a key role in the epigenetic regulation of inflammatory processes. They acetylate histone proteins, which loosens (opens up) the DNA structure and makes pro-inflammatory genes more easily transcribed.

Here are the key facts about inflammatory HATs:

- Function: They add acetyl groups to histones in chromatin. This process relaxes the DNA packaging, allowing transcription factors to increase the expression of genes that code for inflammatory mediators.
- Mechanism of action: In response to inflammatory stimuli (e.g., cytokines such as tumor necrosis factor-alpha), these HATs are activated and recruited to activate promoters of inflammatory genes.
- Antagonists: Histone deacetylases (HDACs) exert an anti-inflammatory effect by removing these acetyl groups, effectively "switching off" the genes.
- Medical significance: Dysregulation of HATs plays a role in the development of a variety of chronic inflammatory diseases, cancer, and asthma. Research is investigating how HAT inhibitors can be used to reduce inflammation.

In summary, inflammatory HATs are non-specific "gene switches" that, during the immune response, ensure that inflammatory reactions are initiated and maintained at the cellular level.

Adaptive Immune System

The adaptive immune system forms the core of the vaccine's effect: B cells produce specific antibodies, while T cells eliminate infected cells and create memory cells for rapid responses upon re-exposure. This process takes days to weeks and ensures long-term protection. Vaccines train precisely these specific, adaptive components.

Innate Immune System

Vaccines utilize the innate immune system as an initial trigger and amplifier.

Interaction of Both Systems

Vaccinations always activate both arms, as the innate system forms the bridge to the adaptive system – it limits pathogens and initiates the specific response. Without this coordination, effective immunity, as seen in natural infections, would not be possible. This interaction maximizes protection and minimizes risks.

Administration of Vaccines

A crucial problem, however, is that most vaccinations do not follow the same route as a natural infection, but are usually injected intramuscularly or subcutaneously.

For example, a natural infection with respiratory viruses primarily challenges the immune barrier of the respiratory mucosa. This system is located in and beneath the mucous membranes of our airways and functions independently of the immune cells that protect our internal organs.
There is thus a functional separation between mucosal, epidermal, and systemic immunity. This is evident, among other things, in the type of antibodies produced by plasma cells located directly beneath the mucous membranes. These antibodies – secretory immunoglobulin A (sIgA) – are released onto the surface of the mucous membranes. They act directly at the site of infection against airborne viruses (e.g., via aerosols). In this way, they can often directly prevent these viruses from binding to and infecting cells in the mucous membranes. The same protective effect applies to the digestive tract.
In contrast, IgG and circulating IgA are the most important antibodies in the bloodstream. They cannot prevent viruses from entering cells lining the respiratory tract or intestines and can, at best, counteract their spread if these viruses enter the bloodstream.[5]

Evolutionary Aspects
The innate immune system is not a static module, but an evolutionarily structured and continuously evolving recognition and communication system whose architecture is constantly modified through mutation, selection, co-evolution with the virome/microbiome, and the integration of exogenous genetic elements—primarily across generations and less through individual experience.
One could put it this way: The innate immune system stores history, the adaptive immune system stores experiences.
If one considers the immune system not as a "kit of ready-made modules," but as a historically developed information architecture, then an evolutionary link between the innate and adaptive systems is not only plausible, but essential. The impression of separation is more an artifact of our hypotheses than of biology itself. The adaptive immune system is then not an independent invention, but a recursive extension of the same system—coupled via RNA-based regulation, epigenetic programming, and intercellular communication.

This raises an important question:
Is the immune system primarily a defense mechanism – or an evolutionarily developed interface for integrating exogenous genetic and epigenetic information (viruses, microbiome, environment) into the host biology? Vaccinations should be considered from this perspective. Currently, they tend to follow an ideological line of reasoning.

Classical vaccination ideology versus mod-mRNA platform
The classical, historical vaccination ideology refers to an exogenous antigen presented for a limited time, without any active intervention in gene regulation. This no longer reflects the current state of knowledge. Interventions in gene regulation occur via epigenetic control mechanisms.

Modified mRNA vaccines differ fundamentally, not just gradually. They deliver information, not structure; they utilize cellular translation, RNA stability, and stress response systems; and they inevitably interact with RNA regulatory networks. This is not a value judgment, but a biophysical fact. The chemically stabilized modified mRNA (e.g., through modified nucleosides) is translation-optimized, partially "camouflaged" before RNA recognition by the innate immune system, and packaged in lipid nanoparticles. The goal is stable, efficient protein expression. This inevitably leads to interactions with RNA control systems. It is fundamentally unavoidable that foreign or

[5] *McGhee, J.R. et al. (1992) The mucosal immune system: from fundamental concepts to vaccine development. Vaccine 10:75-88*

modified mRNA competes for ribosomes, RNA-binding proteins, and stress granules. It can act as a ceRNA (competing endogenous RNAs are RNA molecules that regulate gene expression by competing for the binding of shared microRNAs. They function like "sponges" by containing miRNA recognition elements that bind miRNAs and thus prevent the repression of other target RNAs) and thereby indirectly influences miRNA availability. This is not speculation, but standard RNA biology. For this reason, an influence on cancer development is plausible!

The application of classical vaccination ideology to the mod-mRNA platform assumes that mod-mRNA is like a blueprint that is briefly read and then gone. From a molecular biology perspective, this is inaccurate, because RNA is not a passive PDF (Portable Document Format, as a data format in the literal sense), but rather it is part of dynamic networks, and every stable RNA acts systemically.

Ideology oversimplifies to ensure acceptance, but biology knows no ideologies! An intervention that is statistically safe cannot be trivial for an individual! This is not anti-vaccine sentiment, but biology.

RNA networks are also influenced by or dependent on various factors: pre-existing conditions, inflammatory status, virome, microbiome, epigenetic state, and also age.

In summary:
Modified mRNA inevitably interferes with RNA regulatory networks. Classical vaccine ideology underestimates this systemic dimension and does not consider it, while molecular biology views it as unavoidable.
This may be because the two underlying systems of thought are incompatible. Bacteriology, virology, and evolutionary biology examine the molecular biological foundations very precisely from a scientific perspective (or should do so), whereas vaccine communication is based on public health, statistics, the profit orientation of the pharmaceutical industry, and wishful thinking about minimizing the risk of even minor infections.

Viruses

Viruses initially played a minor role in medicine after World War II. The term was usually associated with exotic diseases or the common viral childhood illnesses. These were the diseases children "went through" as children; complications were rare, and if they did occur, they were usually secondary bacterial infections, for which effective antibiotics existed. Serious complications were extremely rare, especially during the immediate course of the illness.

Viruses have often been called into question, even existentially, described as cell products, or attributed to exosomes. These discussions, despite all the electron microscopic images and insights gained from cell cultures, remain unresolved to this day. In reality, however, it makes no difference whether we speak of viruses, exosome derivatives, or other vesicles—or rather, vehicles. We now know that the functional pathways of these vehicles are essential for our lives. But this understanding is and remains dynamic, evolving with every megabyte of new information.

The term "virus" generally refers only to the protective capsid made of proteins that envelops the viral genome information in the extracellular environment. This infectious particle is known as the virion and is generally considered dead. Virions are entities that invade cellular organisms and take

control of them in order to produce more virions. The virion is the extracellular step in a virus's life cycle. It is the dormant and inactive form of viral genetic information. However, the actual virus is more than just its dead shell in the environment. It is part of a living organism once it is inside a host cell.
Most viruses require a specific receptor to bind to a cell, but some can also fuse directly with a cell's membrane. The binding process to the receptor is energy-independent, whereas penetration of the cell wall requires energy. And the cell provides the energy for this. This is actually quite strange. What if this mechanism were intended by evolution?
Regardless of the life status, viruses are part of the constantly evolving biosphere and therefore a relevant factor in a wide variety of evolutionary processes. Almost 10% of our genome consists of retroviral genes. Endogenous retroviruses have embedded themselves in our genome since ancient times and have assumed crucial evolutionary functions.
A further analysis of our genome quickly reveals that a large portion of what was previously referred to as junk DNA encodes relics of viral, retroviral, and microbial elements. These relics are the core elements of epigenetic mechanisms. Some, such as the retrotransposon-derived neuronal *Arc gene*, encode proteins that form virus-like capsids. The *Arc protein* is essential to our cognitive processes in the brain. The "virus-like" behavior mediated by exosomes is crucial for its effects in the brain.[6]

However, the previous discussion that only retroviruses are capable of embedding themselves in the genome is long considered outdated. Today, we know that non-reverse transcriptase viruses, both RNA and DNA viruses, can also be integrated into our genome and can assume long-term functions in our system, and do so permanently. And much more: via non-coding RNA, via miRNAs, viruses influence the regulatory mechanisms of our genome and thus promote the organism's phenotypic adaptation to constantly changing environmental conditions.

Viruses contain the information for their reproduction, but not the necessary cellular prerequisites. Viruses do not have their own metabolism and depend on the metabolism of an intact host cell to reproduce. Viruses contain only one type of nucleic acid: RNA or DNA. In many textbooks, viruses are referred to as parasites. According to recent findings, this is not generally true. Viruses can also be considered symbionts. And like all life forms, viruses serve a purpose in the course of evolution. They can be safely described as the USB sticks of evolution—that is, as information carriers that constantly supply us with new genes.

A Trip into Genetics

Our genetic system is not a rigid "blueprint," but a dynamic system that is constantly regulated, adapted, and influenced. The most important influencing factors can be summarized as follows:

We inherit our DNA from our parents. It determines which genes are fundamentally present. This is the framework—but not the complete blueprint. From an evolutionary perspective, many genes originate from viruses and bacteria that have been integrated into our genome over millions of years. In addition to the classic genes in the chromosomes of the cell nucleus, there is also extranuclear genetic material. For example, mitochondria possess their own small DNA (mtDNA) that is inherited maternally. As a result, all of the child's mitochondria originate from the mother. The egg cell provides the cytoplasm and thus most of the non-nuclear genetic information, while the

[6] https://www.cell.com/action/showPdf?pii=S0092-8674%2817%2931504-0#page87

sperm primarily contributes nuclear DNA. Evolutionarily, this stabilizes cellular functions, prevents conflicts between organelle genomes, and ensures consistent early development.

Not all genes are always active. Cells switch genes on or off as needed. Liver, nerve, and immune cells have the same DNA, but use it differently.
Epigenetics regulates these switching processes. Chemical markers on the DNA or the proteins that encapsulate it influence how strongly genes are expressed. These markers can change due to diet, stress, environmental factors, and lifestyle—sometimes even long-term. Environmental factors include pollutants, UV radiation, medications, temperature, oxygen, noise, etc. They can all influence gene activity directly or indirectly.
Diet and metabolism also play an important role. Nutrients not only provide energy but also send signals. Vitamins, fatty acids, and sugars influence which genes are active and how cells function.
A very important factor is the microbiome and also the virome. The trillions of bacteria, viruses, and fungi in and on our bodies constantly send signals to our cells. They influence the immune system, inflammatory processes, hormone balance, and thus also gene regulation.
Our immune system and the inflammatory processes it controls specifically alter the gene activity of cells to respond to threats. Chronic inflammation can permanently disrupt this regulation.
Development and life stages are further factors: embryonic development, puberty, pregnancy, and old age are phases with particularly strong genetic reprogramming.
And finally, chance and cell history also play a role. Small differences in cell division or molecular processes can have long-term effects.
Genes provide the tools—but environment, lifestyle, microbiome, immune system, and experiences determine how these tools are used.

Epigenetic regulatory factors ensure that body cells remain functionally stable. RNA is an active, structured, competitive, and feedback component of cellular regulatory networks. When cells deviate from these normal patterns, certain genes are activated to prevent uncontrolled cell growth. *Tumor suppressor genes* are among those involved in this process. These genes encode proteins that control cell growth and prevent tumor formation. Also known as *antoncogenes*, they act like a brake on the cell cycle, regulating it by inhibiting growth factors or halting the cycle in the event of DNA damage. They are recessive and typically only lose their function when mutations occur on both alleles. P53 is a key tumor suppressor gene, known as the "guardian of the genome," which is activated upon DNA damage and stops the cell cycle. Additionally, in cases of irreparable defects, it induces apoptosis via genes such as BAX (a protein that acts as a cofactor for p53) and PUMA (p53 upregulated modulator of apoptosis, a pro-apoptotic protein) to eliminate defective cells and ensure cancer prevention.

We humans, like all other life forms, are the product of our genes, and not just the protein-coding ones, which make up only about 1.5% of the entire genome, but also a multitude of other genetic and epigenetic factors that ultimately determine our phenotype. And because we are the product of our genes and genetic factors, we should also be aware that we owe this to evolution, to the shaping of life on this planet over millions of years.
We sit at the end of a branch of the tree of life. Our genes are the product of trillions of influences, mixings, and transformations during the course of evolution up to the present day. Whether we like it or not, we are somehow related to all other life forms on this planet, right down to the last archaic single-celled organism. The entire micro- and macroworld of life is a single, tightly woven network.

In fact, viruses in particular, but also bacteria and eukaryotes, have significantly shaped our genome by directly integrating themselves into it for millions of years and continue to do so. As mentioned above, almost 10% of our genome consists of endogenous retroviruses—viruses that are now so firmly integrated into our genome that they have taken over vital functions within our system. The mitochondria, our cellular energy factories, are descendants of rickettsia-like bacteria and possess their own genetic material, which is passed on maternally from generation to generation and is only indirectly linked to our nuclear genome. Our cellular functions are entirely dependent on these endosymbionts.
We are not the endpoint of an evolutionary history that makes us the crowning achievement of some kind of creation. The genome has always been subject to constant change, both externally and internally. We must not believe that evolution has ceased to operate within us. We remain subject to their rules and changes, whether we like it or not.

Day after day, we come into contact with billions of microbes and viruses. Day after day, our bodies, mostly unnoticed, interact with these other life forms and are constantly being altered and shaped by them in an evolutionary sense. These interactions can sometimes make us ill, but ultimately they are always adaptation processes to the relentlessly changing environment. These adaptation processes permanently and continuously influence our genome. And the genome itself is not static internally.
One example is transposable elements (TEs), also known as "jumping genes." These are discrete pieces of DNA that can move from place to place within and sometimes between genomes. The way they interact with their genomic environment is the subject of current research. It is now known that almost half of our genome is derived from such transposable elements, and this is likely an underestimate, as many of these elements have changed beyond recognition over time. These elements also originate predominantly from other life forms, mostly viruses or bacteria.
Their influences are phenomenal: They generate insertion mutations, genomic instability, changes in gene expression, and contribute to genetic innovation. In doing so, they affect epigenetic mechanisms, lead to changes in our phenotype, and, together with the constantly arriving new genes from outside (for example, through viruses), enable adaptations to the changing environment. This makes us, as a species, more resilient. As the sequences of human and other primate genomes are analyzed in ever greater detail, we are gradually beginning to understand the extent and complexity of the past and present contribution of these elements to genomic change in the human lineage.

Microbiome

Every higher life form has its own microbiome. This applies to the plant world as well as the animal world. Place a bouquet of flowers in a vase of water and, after a week, examine a drop of this water under a microscope! This drop is suddenly teeming with life. This life is based on the microbiome of the flowers in the vase.

The majority of the plant microbiome, however, operates underground in the root area. The microbiome in the so-called rhizosphere plays a central role in the life and growth of plants. It is a complex community of viruses, bacteria, fungi, algae, and other microorganisms that live in the immediate vicinity of the roots and interact closely with the plant. These microorganisms have a positive effect on the plant in several ways. They help with nutrient uptake, protect against disease, promote growth, make plants resistant to stress, and serve as a signal transmitter in interplant communication.

The situation of our lives is therefore much more complicated than the common perception of our existence. Our genetically structured system, as such, isn't capable of surviving on its own. How, you might ask? We come into the world as living beings, breathing, crying, and moving. In fact, that's enough for our first breath. From that moment on, however, our organism, just like all other life forms, requires the interaction of a multitude of microbes—bacteria, fungi, parasites, and viruses. This microbiome is absolutely vital to our survival. Without the microbiome, a newborn would die very quickly.

The microbiome quickly colonizes our skin, mucous membranes, respiratory tract, intestines, and even individual tissues of the body. There are approximately 39 trillion bacteria and fungi compared to our 30 to 32 trillion body cells in adults, and if we include viruses, the microbiome expands by a factor of 10. For every gene encoded in the human genome, there are 1,000 microbial genes in our body, and these can encode a multitude of molecules that directly or indirectly influence the development, maintenance, and function of the immune system, the nervous system, and other areas of the body.
Metagenomic studies have now shown that almost all pathogenic bacterial subgroups and many pathogenic virus species are already present in our holomicrobiome, but without causing damage in a "healthy" organism.
The interplay between the microbiome, the virome, and our body is so comprehensive that there is practically no metabolic process in which microbes or viruses are not involved: the gut-brain axis, the gut-lung axis, and the gut-skin axis all point to these intensive connections.
Isn't it astonishing that the bacterial colonization of our digestive tract is capable of influencing our cognitive abilities? And if the gut microbiome is unhealthy, our central nervous system can also become unhealthy as a result. The genomes of certain intestinal bacteria have even been detected in arteriosclerotic plaques, and cancer cells also have their own microbiome.

The bacteria of the gut microbiome assist in the digestion of food, provide us with essential amino acids that we cannot produce ourselves, supply us with vitamins, and ensure that the environment in the gut is optimized for digestive processes. Any disruption of this system makes us ill, alters the permeability of the intestinal wall barrier, and affects the function of our immune system, even leading to the provocation of malignant diseases.

But it's not just the influence of the intestinal microbiome on metabolic processes and the immune system that is of fundamental importance. The skin microbiome, in conjunction with the products of our sweat glands and sebaceous glands, protects us from damage caused by external factors and from the pathogenic effects of certain microbes. Antimicrobial peptides (AMPs) or defensins can be mobilized at the epithelial surfaces as needed. These peptides, usually less than 50 amino acids long, are found in all animals and also in plants. They are generally positively charged and have a hydrophobic or amphipathic (hydrophilic and simultaneously lipophilic) domain in their folded structures. They exhibit a broad spectrum of antibiotic activity, capable of killing or inactivating bacteria, fungi, some parasites, and even certain enveloped viruses, something difficult to achieve even with the most modern antiviral medications.
In a healthy state, the system cleverly utilizes the natural functions of certain bacterial species, thus ensuring a state of equilibrium that enables the life and survival of all involved. Not only our own skin cells communicate with the microbiome, but also the microbes themselves. Sophisticated techniques, such as *quorum sensing*, regulate the population density in our skin microbiome via highly specific signaling molecules, thus ensuring, among other things, an optimal, protective pH range in the individual skin and mucous membrane regions.

The importance of the skin microbiome becomes even more profound when we consider that it also influences communication within our species. Even though we have lost many of our olfactory abilities over the course of evolution, our sense of smell still plays a major role in partner selection. Being able to "smell" or "not smell" someone is crucial for whether or not the brain can transmit a "sympathy signal." Choosing the right partner can be a decisive factor for positive evolutionary selection.

Microbiome research is still young, having gained importance in the last 20 years. But the importance of the interaction between individual microbes, viruses, and our body cells is becoming increasingly clear. Viruses are in our gut, in the form of bacteriophages, an essential, yet often invisible, part of our internal ecosystem. They regulate bacterial populations, shape the composition of the microbiome, enable genetic exchange between bacteria, and influence immune responses through direct modulation of the innate and adaptive immune systems. Phages influence which bacteria can live permanently in the body. If a bacterium is frequently attacked by phages, its population remains small. This allows other bacteria to establish themselves more easily. In this way, phages shape the composition of our microbiome in the long term. This means that not only the bacteria themselves, but also their viruses determine the composition of our microbiome. Without phages, our microbiome would be significantly more unstable – and probably also less adaptable.

Vaccination

As early as the 17th and 18th centuries, so-called variola inoculation was used. This involved injecting serum from the pustules of individuals with smallpox into the skin of healthy individuals. It often resulted in fatal cases, sometimes with a hemorrhagic course, which was previously virtually unknown; even epidemics were triggered this way. Only with the use of inoculation did smallpox become a serious disease. Previously, it was considered more of a childhood disease, like measles. However, the overall mortality rate from childhood diseases was much higher at that time than it is today. At the end of the 18th century, following Edward Jenner's alleged initiative, inoculation with cowpox pus was introduced in many European countries.

Ultimately, smallpox vaccination remained mandatory until modern times, despite some serious side effects such as encephalitis, although it was historically controversial whether all so-called smallpox epidemics of recent centuries could actually be attributed to the variola virus.

Starting with initially purely empirical medical successes (or failures), vaccination gained increasing importance after World War II. With the research into antibodies, first described in 1948 by the Swedish immunologist Astrid Fagraeus, a correlate for "vaccination success" was finally established, and this correlate became increasingly important, even more important than the frequency of new disease occurrence in people who had already been vaccinated. To this day, the error persists that vaccination only requires sufficient antibody production to provide perfect protection against infection. However, this simplistic way of thinking does not do justice to the complexity of our immune system.

Routine vaccination

Routine vaccination programs for children were developed, and new vaccines were added year after year. Vaccination scandals have become almost normal. Even recently, deaths have been observed in connection with multiple vaccinations.
The antibody titers measured are often based on the added adjuvants, which are not necessary for live vaccines because weakened, live pathogens themselves possess sufficient immunogenic potential. A look at the American database of reported vaccine injuries shows that multiple vaccinations are generally associated with problems. The more vaccinations a child receives at the same time and the younger the child, the greater the risk of hospitalization due to vaccine injuries and the higher the risk of death. Other scandals relate to Hexavac, Ticovac, Rotarix, Rotatec, and Pandemrix – all vaccinations with sometimes serious side effects that nevertheless remained on the market for a long time and often caused more harm than good.

Monovalent vaccines became polyvalent mixed vaccines, with sometimes bizarre consequences. The introduction of a "mandatory measles vaccination" in Germany in March 2020 effectively became mandatory vaccination against measles, mumps, and rubella, simply because the industry no longer offers a monovalent measles vaccine. Whether all of this could have negative long-term effects is completely ignored. Politicians dutifully follow the influence of a powerful pharmaceutical lobby.

34 and more Vaccinations

Today, children in Germany receive 34 vaccinations by the end of their second year of life and 50 vaccinations by the age of 18. We vaccinate against rotavirus, tetanus, diphtheria, pertussis, Haemophilus influenzae B, polio, hepatitis B, pneumococcus, meningococcus, measles, mumps, rubella, varicella, HPV, herpes zoster, influenza, and COVID-19.

In the US, the number of routine vaccinations was significantly higher until the end of 2025: 84–88 against 17 diseases (18 if monoclonal RSV antibodies like Beyfortus are included). The US Centers for Disease Control and Prevention (CDC) has since updated its vaccination schedule. The new CDC routine schedule (2026) includes approximately 30 routine doses against 10–11 diseases and is based on international consensus. Around 55 routine doses have been removed, but no vaccines have been banned or withdrawn from the market. The following vaccines are no longer routinely recommended for all children: COVID-19, influenza (flu), hepatitis A, hepatitis B, rotavirus, meningococcal ACWY, and meningococcal B.

This demonstrates that government agencies are indeed capable of overcoming the lobbying efforts of the pharmaceutical industry. Whether Germany will follow, however, remains to be seen.

Now, one might argue that vaccination is being done for the good of humanity, for our health, that problems sometimes only become apparent later, and that the positive effects have mostly outweighed the negative ones. At least since the coronavirus pandemic, it should be clear to everyone that this isn't the case. Even staunch vaccination advocates are gradually recognizing the lobbying influence that vaccination policy is under.

Based on the number of vaccinations, people should be much healthier today than they were 70 years ago, life expectancy should have steadily increased, and infectious diseases should essentially

no longer play a role on this planet. But is this actually the case? Are people healthier today than they were in the 1960s or 1970s?

No, they aren't! In fact, people are sicker on average today, which is particularly evident in the USA. Even life expectancy has declined in many developed countries in recent years, and not just since COVID. On the other hand, diseases that were previously largely unknown have increased, sometimes dramatically. Autism, fatty liver hepatitis, chronic obesity, dementia and other neurological disorders, autoimmune diseases with their sometimes complex metabolic effects, and malignant diseases are just a few examples. Few people really consider why this is the case. Smoking, obesity due to poor diet, lack of exercise, environmental pollutants like glyphosate, and even climate change are cited as causes, and yes, these may all play a role, but this realization has actually changed almost nothing.

Studies in the US comparing vaccinated and unvaccinated children have shown that vaccinated children are significantly more likely to be diagnosed with bacterial infections, allergies, and neurodevelopmental disorders (NDDs) than unvaccinated children.[7,8]
This does not automatically prove a harmful effect of vaccination. Methodological errors in the studies, social factors, nutrition, natural stimulation of the immune system in early childhood, environmental factors, or other health variables can also explain such findings. Nevertheless, such study results should not simply be dismissed but carefully analyzed.

Autoimmune diseases

These diseases are of particular importance. The prevalence of autoimmune diseases in Germany has increased significantly over the past decade. Between 2012 and 2022, the proportion of statutory health insurance patients with at least one diagnosed autoimmune disease increased from 7.06% to 8.61%, a relative increase of 22%. In 2022, over 6.3 million people were affected.
Vaccine-associated autoimmune diseases are usually explained by homologous amino acid sequences in various proteins. When the body produces antibodies through vaccination, these antibodies can also attack protein structures that contain such "matching" amino acid sequences (molecular mimicry). Molecular mimicry occurs when viral or bacterial proteins in vaccines have homologous amino acid sequences with the body's own proteins. Such reactions include Guillain-Barré syndrome (GBS) following influenza vaccination, as well as numerous autoimmune reactions resulting from antibody formation against the spike protein following COVID vaccination. However, similar autoimmune reactions can also occur after infections.

There is now a proven link between *opsoclonus-myoclonus ataxia* (POMA, also OMS or OMAs) and vaccinations (COVID, rubella, HPV, and others), which is also based on molecular mimicry. The diagnosis was previously predominantly known as paraneoplastic syndrome, in which the body has produced antibodies, for example, against a tumor oncoprotein.
In this situation, a neuronal RNA-binding protein called NOVA1 is particularly affected. This protein is expressed in the central nervous system and is essential for human survival and normal development. This NOVA1 also plays an important role in language development. It cannot be ruled

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[7] *John W. Oller et al. (2025), A Peer -Review of the Vaccinated vs. Unvaccinated Study Discussed at the Senate Hearing on September 9, 2025, International Journal of Vaccine Theory, Practice, and Research 4(1) https://doi.org/10.56098/vse7qq65 December 9, 2025 | Page 1609*

[8] *Lois Lamerato et al. (2020) Impact of Childhood Vaccination on Short and Long-Term Chronic Health Outcomes in Children: A Birth Cohort Study (was allegedly not published for fear of job loss)*

out that autoantibodies against this NOVA1 protein in the brain also play a role in vaccine-associated autism with speech disorders.

An investigation of such a specific connection would be particularly indicated in the USA, even though some studies by vaccine manufacturers have allegedly found no link between vaccinations and autism. After all, the study published in "Science, Public Health Policy and the Law" in January 2025, titled "Vaccination and Neurodevelopmental Disorders: A Study of Nine-Year-Old Children Enrolled in Medicaid," comes to alarming conclusions. The statistical analyses of the health data of children examined over a period of nine years show a clear correlation between the number of vaccination appointments and the diagnosis of autism spectrum disorders (ASD). The relative risk increases stepwise: With a single vaccination appointment, the risk increases by 1.7 times; with eleven or more vaccination appointments, the risk increases by 4.4 times. And what is autism? It is a Neurodevelopmental Disorder….

Synergistic adverse effects

It cannot be ruled out that vaccination, in conjunction with other factors such as environmental pollutants such as glyphosate and other toxins, may play a crucial role in a variety of diseases. Should we perhaps even assume a long-term failure of the vaccination ideology? Could it be that there are other, previously unconsidered factors that influence the initial success of vaccination in the long term, factors that bring about vaccine-related negative effects on people's health?

It is not out of the question that vaccination, possibly in conjunction with other factors such as environmental pollutants like glyphosate and other toxins, plays a crucial role in a variety of diseases. Must we perhaps even assume a long-term failure of the vaccination ideology due to the increasing poisoning of our environment?
Vaccines often contain *aluminum hydroxide* as an adjuvant. *Glyphosate*, as a chelating agent, complexes aluminum (whether from vaccines or from the air via chemtrails is irrelevant) and allows it to more easily cross the blood-brain barrier. In the brain, aluminum has a neuroinflammatory effect. Risks in children include neurological developmental disorders, even autism; in adults, amyloid deposits can lead to dementia. Aluminum is also found in our food, including baby food.
Paracetamol (acetaminophen) is widely used as a fever reducer and pain reliever, including for pain and fever after vaccinations. However, its breakdown produces a dangerous metabolite (N-acetyl-p-benzoquinoneimine) that is extremely reactive, damages liver cells, and can easily cross the blood-brain barrier. Because it generates free oxygen radicals there, it depletes the important antioxidant peptide glutathione; the consequences include neuroinflammation, potentially leading to autism, and in adults, amyloid deposits, potentially resulting in dementia.

Additionally, glyphosate has indirect effects via the gut microbiome, including possible deficiencies in essential amino acids, B vitamins, leaky gut syndrome, etc.

Government-mandated Phase 4 trials to clarify interactions with other substances or between medications are very rarely conducted.
The additive effects of substances such as aluminum, paracetamol, and glyphosate have never been investigated. Synergies are particularly relevant from a toxicological perspective when substances have different entry points but common endpoints. This is the case with the substances mentioned!

Could it be that there are other, as yet unconsidered factors that influence the initial success of vaccination in the long term, factors that bring about negative effects on people's health due to vaccination?

Back to Vaccination

The invention of the wheel was perhaps the most decisive advance for us humans, a development that ultimately led to the automobile and the airplane. But humans had to recognize that this progress had consequences, risks and dangers, even for life. Environmental pollution, smog, and exhaust fumes made people sick. But humans eventually learned and sought improvements, from exhaust filters for cars to improved fuels with fewer pollutants to electric propulsion. This progress brought ecological and economic benefits.

The idea of vaccination is over 200 years old, always associated with the notion that it could prevent the spread of an infectious disease. The discovery of bacteria and viruses fit perfectly with the idea of vaccination, and the suppression of microbes became the primary goal, supported by a nearly omnipotent pharmaceutical industry that derived infinite profits from it. We now know much more about microbes. We know that our organism is a holobiont that needs not only its own body cells to survive, but also the billions of microbes and viruses that belong to it.

In light of these findings, isn't it high time to completely rethink the concept of vaccination, just as we had to rethink the consequences of our mobility? It is becoming increasingly clear that certain infections in childhood have a vital, if not evolutionary, role.
Experiencing measles, mumps, and rubella provides significant protection against cardiovascular disease in adulthood. Measles infection protects to a certain extent against certain types of cancer. There is also evidence that after several "childhood vaccinations," diabetes, ulcerative colitis, and Crohn's disease occur more frequently later in life, so conversely, natural infections may have a protective effect here.

The presence of certain viruses in the body, such as cytomegalovirus, improves the immune defense against other infections. Seropositivity for cytomegalovirus is associated with a reduced risk of multiple sclerosis. For example, the latent herpes virus present in the body has a protective effect against Listeria monocytogenes and Yersinia pestis infections, thus protecting against plague. Fusobacteria in the oropharyngeal microbiome protect against certain squamous cell carcinomas in this area and are now even used therapeutically.

What underlies these effects that have been known for years? Infections cause long-lasting epigenetic changes in defense cells of the innate immune system even more than vaccinations do. The number of epitopes, that is, the defined molecular structures or molecular segments of an antigen that can trigger an immune response, is limited even when considering the many different species, which is reflected in the evolutionary relationships within the "recognition matrix" for molecular signatures of our innate immune system. It is therefore very likely that cross-immunities can exist across different species, with connections and mechanisms of the microbiome most likely being involved during the development phase of the immune system. This knowledge is based on research from the past 30 years.

Regulatory factors may also be involved. Mice latently infected with herpesviruses are more resistant to bacterial infections than uninfected mice.[9] The latency-induced protection is not antigen-specific but correlates with the production of interferon-γ and the systemic activation of macrophages. Since interferon also induces the production of interleukin-15, which stimulates memory CTLs (cytotoxic T lymphocytes), chronic viral infections in which interferon is continuously produced may contribute to maintaining immune memory.

Some vaccines may be lifesaving, such as the tetanus toxoid vaccine or perhaps the rabies vaccine, which serves as pre-exposure prophylaxis when traveling to countries where rabies is prevalent, although it seems that the pharmaceutical industry prioritizes profit over human health even in this case. However, most vaccinations today are not primarily life-saving, at least not in countries with a sufficiently high standard of living. In most cases, the diseases against which vaccinations are currently available in these countries had declined, if not completely disappeared, long before the introduction of a vaccine.

Insights into important vaccinations

Influenza

Every winter, influenza is blown up into a life-threatening epidemic in our country, particularly by the pharmaceutical industry, which, together with doctors, profits handsomely from the annual flu vaccination. The Spanish Flu (1918-1919) is often mentioned, with its incredible number of deaths resulting from infection with the H1N1 influenza virus. Hardly anyone is aware that in 1918, viruses had not yet been detected, and it was only in the 1990s that researchers were able to examine tissue samples from exhumed bodies from the permafrost of Alaska (not from Europe!) that had been buried during the pandemic. The well-preserved tissue samples contained traces of a virus. Researchers sequenced the virus's genome, and the results showed that the virus belonged to the H1N1 subgroup of influenza viruses. The sequencing was published in 2005 in a study by Taubenberger et al. Even though the virus strain detected at that time was phylogenetically distinct, this does not mean that all of the many patients who died at that time were infected. There is no evidence of the virus from previous suspected influenza epidemics. In fact, the Spanish Flu was not primarily the result of a particularly deadly H1N1 virus, but predominantly the result of a combination of wartime conditions, malnutrition, secondary bacterial infections, and possibly existing diseases such as tuberculosis. This makes it difficult to separate the exact influence of the virus from other factors. It is therefore risky to derive the influenza vaccination recommendation from this history.
Flu vaccinations do not provide complete protection because influenza viruses mutate rapidly and the annual vaccine is based on predictions that do not always match perfectly. Effectiveness typically ranges from 20 to 80 percent, depending on the season, virus match, and individual factors.

Measles

One of the most well-known typical childhood diseases is measles, an infection caused by a virus from the paramyxovirus family (single-stranded RNA viruses). The measles virus belongs to the

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[9] Barton ES, et al. (2007) Herpesvirus latency confers symbiotic protection from bacterial infection. Nature. 2007 May 17;447(7142):326-9. doi: 10.1038/nature05762. PMID: 17507983.

neurotropic viruses, as it can enter the central nervous system along peripheral nerves and usually hematogenously across the blood-brain barrier. A measles infection usually runs harmlessly with fever, conjunctivitis (light sensitivity), bronchitis, and rhinitis. Pathognomonic signs are the rash and the so-called Koplik spots on the buccal mucosa, usually opposite the molars and not removable with a spatula. Serious courses with pneumonia, croup, myocarditis, and/or encephalitis do occur, but they are rare (1:2,000 to 1:10,000). Subacute sclerosing panencephalitis (SSPE) is considered a very rare but serious complication, occurring in approximately 1 in 100,000 cases, which can arise several years (6-10 years) after measles infection. The serious cases are currently being heavily exaggerated by the media as part of vaccine propaganda.

The measles vaccine was introduced in Germany in 1966 (USA 1963). Regardless, at this point, the incidence of measles had already significantly decreased, obviously due to better healthcare and improved hygiene practices.
Since March 2020, there has been a vaccination mandate against measles in Germany, the introduction of which does not appear logical in all respects and is therefore subject to a variety of criticism. Since a monovalent measles vaccine is not available, but only a combined mumps-measles-rubella vaccine (MMR), this vaccination mandate (strictly speaking, an "immunity proof requirement") is essentially a vaccination mandate against MMR.[10]

While it was previously assumed that measles could only be transmitted by unvaccinated, non-immune individuals, it is now known that people vaccinated against measles can still contract the disease and transmit it to others.
We now also know that infections during childhood serve a valuable function and can be necessary for the normal development of the immune system. For example, a large Japanese cohort study by Kubota and colleagues found that a history of measles and mumps in childhood significantly protects against fatal heart attacks and strokes in adulthood.[11] Children who had measles were significantly less likely to develop allergy symptoms to common inhalant or food allergens.[12]

In the past, virtually every age group in Europe and the USA was affected by measles. Children usually contracted measles in preschool or early school age (between 4 and 9 years old). The risk of the dreaded central nervous system complications and the later development of SSPE is extremely low worldwide at this age (1 in 100,000) and plays practically no role in Germany.
If one relates the SSPE figures to the average measles cases in Germany of approximately 650 per year (average of the last 14 years) and assumes the "global textbook estimate" of 1 in 100,000 cases, this results in practically zero cases (0.0065) per year. Purely statistically, the SSPE burden in Germany has been significantly lower than the burden of vaccination complications since 2010.

A new study from February 2026, currently available as a preprint, provides a serious safety signal indicating increased mortality following MMR/MMRV vaccinations in the USA. Since 1995, there have been 193 reported deaths in the USA related to these vaccinations with identifiable data,

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[10] Beate Bahner, (2025) Masernimpfung und Masernschutzgesetz – Zwischen Recht und Medizin, Vernunft und Mythos Kopp Verlag“ (German)

[11] Kubota Y, Iso H, et al. (2015) Association of measles and mumps with cardiovascular disease: the Japan Collaborative Cohort (JACC) study. Atherosclerosis 2015 Jun 18; 241(2): 682-86.

[12] Rosenlund H, et al. (2009) Allergic disease and atopic sensitization in children in relation to measles vaccination and measles infection. Pediatrics 2009 Mar; 123(3): 771-78.

compared to 7 deaths resulting from measles infections during the same period.[13] Comparable data from Germany are currently unavailable.

Since the introduction of the vaccine, measles outbreaks have also affected adolescents and even adults. Furthermore, infants and toddlers (1-2 years of age) are more frequently affected in *unvaccinated groups* because, on the one hand, they lack the protective buffer of an infected environment. On the other hand, infants of measles-vaccinated mothers receive, on average, fewer and shorter-lasting transplacental measles IgG antibodies than infants of mothers who have naturally contracted measles.[14] This explains part of the shift towards more infections in the first and second year of life in *outbreak clusters of unvaccinated communities* (and thus the relatively higher SSPE incidence per measles case in this age group[15]). Worldwide, but not in Germany, infections at this age carry a later SSPE risk of 1 in 2,000 to 1 in 3,000.

Publicly available figures on the exact number of measles cases in unvaccinated one- to two-year-olds in Germany have been incomplete since 2010. In 2022, there were 6 cases in this age group, meaning that, purely mathematically, 0.003 cases with later SSPE would be expected, which again equates to practically 0 cases per year. Based on long-term reporting in Germany (1988 to 2015), 4-10 children contract SSPE annually. However, reliable data has not been available since 2016. In contrast, in Germany there have been an estimated 1,500 fatal accidents involving children under 15 years of age every year over the last ten years.

This clearly demonstrates a problem:
Even extremely rare medical conditions are used by the vaccine industry and the lobbying-influenced health authorities to pressure people into vaccinations.

Regarding the measles situation, it is striking that severe cases and subsequent SSPE have *increased numerically worldwide* since the introduction of the measles vaccine. This is because most young mothers in Western countries are now vaccinated against measles and no longer transmit reliable passive immunity, thus increasing the incidence of measles in the early age group of unvaccinated children. This situation will be passed on to the next generations. In other words: Once the measles vaccination of mothers has begun, according to vaccination proponents, the necessity arises to vaccinate children early in order to prevent the extremely rare high-risk cases in them. Vaccinated children lose the immunomodulatory benefits of measles infection. In principle, this problem also applies to all other vaccinations against childhood diseases.

Polio

Most people who are infected with the poliovirus show no visible symptoms. About 1 in 4 people develop flu-like symptoms. These symptoms usually last 2 to 5 days and then disappear on their own. Less than 1% of people develop weakness or paralysis in the arms and/or legs. Very rarely,

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[13] Kirstin Cosgrove et al. (2026) Deaths Following MMR and MMRV Vaccination in the United States; DOI 10.5281/zenodo.18671461

[14] Waaijenborg S, et al. (2013) Waning of maternal antibodies against measles, mumps, rubella, and varicella in communities with contrasting vaccination coverage. J Infect Dis. 2013 Jul;208(1):10-6. doi: 10.1093/infdis/jit143. Epub 2013 May 8. PMID: 23661802; PMCID: PMC4043230.

[15] Kristen A. Wendorf et al. (2017) Subacute Sclerosing Panencephalitis: The Devastating Measles Complication That Might Be More Common Than Previously Estimated, Clinical Infectious Diseases, Volume 65, Issue 2, 15 July 2017, Pages 226–232, https://doi.org/10.1093/cid/cix302

paralysis leads to permanent disability or even death. The incubation period of the poliovirus for non-paralytic symptoms is 3 to 6 days. In the very unusual case that paralysis occurs due to polio at all (which happens in less than 1% of cases), it usually appears 7 to 21 days after the infection.

The polio virus is actually a commensal and belongs to our virome as an enterovirus. It is found in the intestines of many people without causing harm. Metagenomic studies, such as those of wastewater, are used to encourage the population to receive a booster for the polio vaccination, even though the vaccination offers a very long-lasting, likely lifelong protection.
Since 1999, no suspected cases of wild-type polio have been reported in Germany. Due to high polio vaccination rates over the years, the fact that long-term, probably lifelong immunity develops after vaccination, and the good hygiene conditions in Germany, the probability of polio infection is low. Routine booster vaccination is therefore only advisable in isolated cases.

In recent years, however, isolated cases of paralysis caused by circulating vaccine-derived polioviruses (cVDPV1 and cVDPV2) have been reported worldwide. In 2022, there were 877 cases of polio due to cVDPV, in 2023 there were 528 cases, and by November 2024, 224 cases had been registered. In Germany, there have been no serious cases of cVDPV-related illness to date.
cVDPV2 develops when the attenuated vaccine virus from the oral polio vaccine (OPV) mutates and becomes neurovirulent again. In fact, the polioviruses detected in the wastewater of German cities are all vaccine-derived poliovirus type 2 (cVDPV2), i.e., they occur in wastewater as a result of the oral polio vaccination. They provide no indication of an increased risk of polio from the wild strain or the presence of an epidemic.
In the worst case, vaccine-induced polio can be as severe as an infection with the wild-type poliovirus, but in practice, this plays virtually no role. It should be noted that cVDPV2 was introduced into the world by us, and this must be taken into account when administering the vaccination.
Since existing polio vaccinations offer protection against both cVDPV2 and WPV, the risk to the population in Germany is minimal. Unvaccinated refugee children are most at risk. The inactivated polio vaccine reliably protects against poliomyelitis, but not against the replication of polioviruses in the intestines. This means that a person vaccinated in this way can theoretically transmit the virus if infected – a disadvantage compared to the oral polio vaccine (OPV), which also strengthens intestinal immunity but subsequently causes increased cVDPV2 excretion.
Nevertheless, there is evidence suggesting a connection between polio symptoms and the use of DDT (dichlorodiphenyltrichloroethane) in African countries. Neurotoxic pesticides such as DDT, but also arsenic and lead, can mimic polio symptoms even at relatively low doses, and there are historical correlations for this.

There is a hypothesis that environmental toxins make the blood-brain barrier more permeable or weaken the immune system, thus promoting a more severe course of poliovirus infection. Exposure to organophosphate or DDT itself can lead to paralysis. It is therefore possible that some cases diagnosed as polio are actually caused by such environmental toxins. Classic polio, however, is proven to be the result of the polio enterovirus, which can be isolated accordingly. Since the polio virus is part of our virome, the question arises as to which factors could be responsible for a sudden polio illness: The interaction of multiple factors? Neurotoxic pesticides? Other viruses? Released vaccine viruses?

HPV – "Primum non nocere" – What's wrong with the human papillomavirus (HPV) vaccination?

The human papillomavirus (HPV) belongs to the Papillomaviridae family of viruses and is part of the DNA virus group. HPV primarily infects epithelial cells of the skin and mucous membranes. Some types (e.g., HPV 16 and 18) are high-risk oncogenic and can contribute to the development of cervical cancer and other carcinomas. Other types (e.g., HPV 6 and 11) are considered low-risk and usually cause benign genital warts. HPV, like probably all DNA viruses, can persist in the cell and even integrate into the cellular genome. Studies on this have been conducted particularly for the high-risk HPV types (HPV 16 and 18).
In papillomavirus-typical infections, HPV usually replicates episomally, i.e., outside the chromosomes. The episome is a special type of plasmid that remains as part of the eukaryotic genome without integration. Episomes can replicate along with the rest of the genome and subsequently associate with metaphase chromosomes during mitosis. This integration into the cellular genome is not a necessary part of the HPV life cycle, but rather an accidental occurrence, which, however, occurs remarkably frequently in progressive lesions of epithelial cells. If integration does occur, the viral E2 regulatory gene is often disrupted, which has a braking function on the oncogenic E6/E7 proteins of HPV. This leads to overexpression of E6 and E7. These oncogenic E6/E7 proteins of HPV interfere with the tumor suppressor genes p53 and RB1, promoting cell cycle derailment and genome instability, thus leading to tumorigenesis.

Due to a lawsuit against Merck in the USA, in which *Jennifer Robi's* vaccine damage following a **Gardasil** vaccination is being treated, this vaccine has once again come into the spotlight. Today, Jennifer Robi suffers from constant uncontrolled neuromuscular contractions (twitches), POTS, and many other symptoms of systemic autoimmune dysregulation. She has been disabled for over a decade and is wheelchair-bound.

The report by Danish physician *Dr. Peter C. Gøtzsche* caused quite a stir. It demonstrated that the approval studies for the vaccine had significant flaws. These ranged from the omission of landmark results to misinterpretations and misrepresentations. It is time to take a closer look at this vaccine.
In 2023, approximately 110,000 women in Germany died from the consequences of cancer. This corresponds to approximately 46% of all cancer deaths that year, out of a total of approximately 240,000 deaths from cancer. For breast cancer, this amounts to approximately 17,460 deaths per year. Approximately 4,400 women develop cervical cancer each year. Approximately 1,600 women die from it each year, representing just under 1.5% of all cancer deaths in women.
These figures are based on current estimates from the Robert Koch Institute (RKI) and the Center for Cancer Registry Data (ZfKD). The incidence has decreased in recent decades due to improved screening (Pap tests, HPV testing), but the mortality rate remains relatively high or unchanged compared to other Western countries. Part of the decline in incidence is attributed to the HPV vaccination of young girls since 2006.

However, the situation is not so easy to assess. The average age of onset for invasive cervical cancer is around 55 years. The highest incidence is observed in the age group between 40 and 59 years. Precancerous lesions (carcinoma in situ) are primarily diagnosed in women between the ages of 35 and 40.
In Europe, the HPV vaccine was approved by the European Medicines Agency (EMA) in September 2006. Most vaccinations were administered to girls and boys between the ages of 9 and 14. Today, those vaccinated are between the ages of 28 and 33.

Due to the timescale alone, it is difficult to estimate the actual success of the HPV vaccination to date. Cervical cancer develops from cervical intraepithelial neoplasia (CIN), and depending on the severity of the CIN, it takes an average of 10 years for cancer to develop. In lower-grade lesions, it may take significantly longer, or even not develop at all. This raises the question of the actual prevalence of high-grade dysplasia in adolescents and also the influence of medical education on this topic.

In the US, the incidence of cervical cancer among 18- to 20-year-olds has surprisingly remained the same despite high vaccination rates (Centers for Disease Control and Prevention, CDC). Studies from 2021 and 2022 show that, despite an HPV vaccination rate of approximately 70%, cases of advanced cervical cancer in the US have increased by 1.3 percent annually. In the 30-34 age group, the increase in the aggressive form of cancer was up to 3.39 percent per year. Women of color are particularly affected. Since the introduction of the HPV vaccination, HPV-associated cancers have by no means declined. In Germany, the screening smear test may have contributed in particular to the reduction in incidence.
To date, Merck has not proven any influence of immunization on cervical cancer and deaths. Since it takes 10 to 30 years after infection for cervical cancer to develop via the formation of CIN, and vaccines have only been approved in Europe and, for example, the USA since 2006, it will take years to clarify this issue. There is now even discussion that vaccination increases the risk of cervical cancer.
Examinations of Gardasil from packages from various countries showed that the vaccine contained fragments of HPV-11 DNA or HPV-18 DNA, or a mixture of DNA fragments from both genotypes. HPV-18 is a high-risk oncogenic type, while HPV-11 is a low-risk HPV type, which primarily causes benign changes. The detected HPV DNA was tightly bound to an insoluble, proteinase-resistant fraction, presumably to the amorphous aluminum hydroxyphosphate sulfate (AAHS) nanoparticles used as adjuvant. Although the clinical significance of these fragments has not yet been fully clarified, it was strange that vaccinated young girls who had never previously been exposed to HPV suddenly became seropositive for HPV after receiving the HPV vaccination.

The EMA and other health authorities such as the CDC have stated that there is no association between HPV vaccines and autoimmune diseases or postural orthostatic tachycardia syndrome. This contradicts the current study results.
Looking at the overall situation, it quickly becomes clear that the HPV vaccine is yet another modern vaccination whose efficacy and safety must be questioned. Relying solely on the statements of the pharmaceutical industry is beyond reckless. In 2024, Merck & Co. generated sales of $8.6 billion with its HPV vaccine Gardasil, or more than $23.5 million per day. This clearly demonstrates that the industry is doing everything it can to maintain profits.

RSV

Nowadays, vaccinations against respiratory infections and classic childhood diseases, in particular, should be re-evaluated, as should vaccinations against diseases that are generally harmless, such as RSV infections, even if the risks of RSV infection are exaggerated in the relevant media. It must be mentioned that the current RSV vaccination for infants (*Nirsevimab*, trade name *Beyfortus*) is not a normal vaccination at all. A monoclonal antibody is injected, and its effects on the infant's still-developing immune system are far from clear.

After market introduction, a slightly increased risk of GBS was observed with protein-based RSV vaccines (such as Arexvy, Abrysvo) in the USA (about 7-10 additional cases per million vaccine doses), although underreporting is likely.

Since the end of 2024, Moderna has been offering the mRNA-RSV vaccine VmRESVIA, which, like the protein-based vaccines Abrysvo and Arexvy, targets the fusion (F) glycoprotein of the RSV virus. However, for mRESVIA - as well as for the other two vaccines - there is insufficient evidence of benefit regarding the endpoints declared by the STIKO as vaccination goals, such as reducing severe RSV cases and the resulting consequences (hospitalizations and deaths) from randomized studies. mRESVIA shows noticeably many side effects: In the approval study, 59% and 48% of local and systemic vaccination reactions are reported (placebo 16% and 33%). In the real-world application of the vaccines, critical safety signals have emerged, including fatalities, particularly with Moderna's mod-RNA-RSV vaccine. These risks are not documented in the package inserts.[16]

Reassessment of Vaccination Ideology

The introduction of a vaccine into the body always influences our holomicrobiome. And if this affects the microbiome or virome, our genetic system is also affected. Antibodies forcibly produced in the body, against any germ, without any connection to an infection, must logically disrupt the balance within functional systems, from metabolic processes to effects on genetic processes such as chromatin folding and thus the readability of individual genes.
But instead of incorporating these considerations into a reassessment of vaccination ideology, the mainstream media, under the leadership of the pharmaceutical industry, continues to primarily stoke fear of infectious diseases with the goal of bringing more vaccinations to people.

Also, with regard to the polio story, we should remember that the decisive step for health is not the eradication of a virus, but maintaining the balance between pathogenic and health-protective factors in our system. The use of, for example, Glyphosate, DDT or other environmental toxins destroys this balance.

Fixation on an antibody response after vaccination

Whenever a discussion about vaccination takes place, the focus is on antibodies that are formed following the injection of a vaccine. These antibodies are intended to provide limited or lifelong protection against reinfection with a pathogen. Some vaccinations also incorporate memory cells into their mechanism of action, but there isn't much more explanation about the mechanism of action and why most vaccinations have less long-term effectiveness compared to a infection. Scientific findings have been available for years that allow a more critical examination of immune efficiency after a previous infection compared to the reduced vaccination efficiency.

Viruses and Exosomes

It is known that exosomes and other extracellular vesicles (EVs) can also act as depots for viral material – not only during an acute infection, but potentially also in the longer term. There are studies that show that exosomes can contain viral RNA or DNA.

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[16] Bao, Z. et al. (2025). Post-marketing safety monitoring of RSV vaccines: A real-world study based on the Vaccine Adverse Event Reporting System (VAERS). Human Vaccines & Immunotherapeutics, 21(1). https://doi.org/10.1080/21645515.2025.2550857

Examples: HIV: Exosomes from infected cells contain viral RNA fragments and sometimes even intact RNA genomes; Hepatitis C: Exosomes can transport complete infectious HCV genomes – and even protect them from neutralizing antibodies; Epstein-Barr virus: EBV-infected B cells release exosomes containing viral mRNA and miRNA, which modulate gene expression in non-infected cells; proteins such as viral capsid or membrane proteins have also been detected in exosomes, e.g., the glycosylated envelope protein of the HI virus (gp120) or Latent Membrane Protein 1 (LMP1), a viral oncoprotein in EBV.

This is often interpreted as a game of hide-and-seek from the immune system, as exosomes carry endogenous membrane markers that are not immediately recognized by antibodies or the complement system like free virus particles. This masking can allow viral material to circulate longer in the organism. In hepatitis A, it is known that even completely intact viruses can be exported in an exosome-like membrane envelope ("quasi-enveloped viruses"), thereby evading the immune system.

Exosomes can therefore be long-lasting storage sites in the body, meaning they can remain in certain tissues or the extracellular matrix for longer periods before being taken up by target cells. There appear to be no precise studies on the duration of their persistence. However, in chronic infections (e.g., HIV, EBV, CMV, HCV), this appears to lead to a kind of persistent reservoir that persists even after a significant reduction in the free viral load. There is evidence that exosomes can also deposit viral material in non-permissive cells that don't actually support active viral replication, turning these cells into latent viral repositories.
Some studies describe that exosomes can deliver viral RNA/DNA, which, after uptake by target cells, is translated into proteins there—without the need for traditional viral entry, essentially acting as an extended transmission route. In enteric viruses (e.g., rotavirus) and retroviruses, there are even reports that exosomes can transport entire infectious units.[17,18,19,20]

This ultimately appears to be how evolutionary viral alignment between organisms occurs. This does not occur at all with conventional vaccines, especially split vaccines, which only contain different virus fragments. Subunit vaccines, such as influenza vaccines, often contain only a single protein, e.g., hemagglutinin. The argument is that these fragments can no longer cause infection, but are still recognized as foreign by the immune system and trigger an immune response, which is only demonstrated by antibody formation. This is simultaneously considered a safety factor. However, one overlooks the positive effects that occur after many endured infections (e.g. measles) and can

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[17] *Schorey, Jeffrey S. et al. (2016) Extracellular vesicles and infectious diseases: new complexity to an old story; J Clin Invest. 2016;126(4):1181-1189. https://doi.org/10.1172/JCI81132.*

[18] *Shuang Li et al. (2019) Exosomes Modulate the Viral Replication and Host Immune Responses in HBV Infection; Hindawi BioMed Research International Volume 2019, Article ID 2103943, 9 pages https://doi.org/10.1155/2019/2103943*

[19] *Yucel Aydin et al. (2021) Extracellular Vesicle Release Promotes Viral Replication during Persistent HCV Infection; Cells 2021, 10, 984. https://doi.org/10.3390/cells10050984; https://www.mdpi.com/journal/cells*

[20] *Yiqiu Peng et al. (2023) Exosome and virus infection; Front. Immunol. 14:1154217. doi: 10.3389/fimmu.2023.1154217*

be attributed to the exosome-mediated diverse influences of viruses and their components on the immune system.[21,22,23,24,25,26]

The chaos with the mod-mRNA producing the SARS-CoV-2 spike-related antibodies needs no further mention (https://www.hackenberg-hm.de/c-downloads/en/Post-Vac-Orientation-guide.pdf). It only reinforces the impression that economic interests are at odds with the understanding of the virus-organism relationship.
None of this is unusual; it likely occurs in all viral infections. The purpose is to spread the immunologically active viral components to as many areas as possible. This is how retroviruses ultimately persist, and this is how retroviruses reach the gonosomes to later continue to exist as endogenous retroviruses in the genome of a species for generations, which is a prerequisite for the evolution of life.

In my interpretation, the reactions in the organism aim to achieve a rapid balance between the strain/adaptation of the immune system and tolerance. Tolerance is especially relevant when the viral genome contains evolutionarily advantageous genes, and it makes sense for it to remain in the body.

Immune efficiency after infection versus immune efficiency after vaccination

In summary, the question why immune efficacy is significantly greater and more sustained after a previous infection than after vaccination can be answered as follows:

During a *natural infection*, the immune system is confronted with the entire diversity of viral structures – surface proteins, internal proteins, non-structural proteins, RNA/DNA fragments. This results in both broad T cell responses (CD4+ helper and CD8+ killer cells) and B cell responses against many different epitopes.
During *vaccination* with conventional vaccines (e.g., mRNA or protein-based), usually only a single antigen is presented (such as the spike protein in SARS-CoV-2). The immune system therefore recognizes a narrower spectrum, resulting in less diverse immunity.

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[21] *Takahisa Kouwaki et al. (2017) Extracellular Vesicles Deliver Host and Virus RNA and Regulate Innate Immune Response; Int. J. Mol. Sci. 2017, 18, 666; doi:10.3390/ijms18030666 www.mdpi.com/journal/ijms*

[22] *Chaudhari, Pinal et al. (2022) Multifunctional role of exosomes in viral diseases: From transmission to diagnosis and therapy; https://doi.org/10.1016/j.cellsig.2022.110325; 0898-6568/© 2022 Published by Elsevier Inc.*

[23] *Mardi, Narges et al. (2023) Exosomal transmission of viruses, a two-edged biological sword; Cell Communication and Signaling (2023) 21:19 https://doi.org/10.1186/s12964-022-01037-5*

[24] *Gheitasi, Hamidreza et al. (2024) Exosome-mediated regulation of inflammatory pathway during respiratory viral disease; Virology Journal (2024) 21:30 https://doi.org/10.1186/s12985-024-02297-y*

[25] *Gorgzadeh, Amirsasan et al. (2024) A state-of-the-art review of the recent advances in exosome isolation and detection methods in viral infection; Virology Journal (2024) 21:34 https://doi.org/10.1186/s12985-024-02301-5*

[26] *Bello-Morales, Raquel et al. (2020) Extracellular Vesicles in Viral Spread and Antiviral Response; Viruses 2020, 12, 623; doi:10.3390/v12060623 www.mdpi.com/journal/viruses*

During *infection*, the viruses actively replicate and trigger strong danger signals (e.g., through RNA sensors (PRRs), cell death, inflammation). The immune system enters a kind of "alarm mode" that promotes particularly robust memory responses.
During *vaccination*, these danger signals are only partially imitated by adjuvants or lipid nanoparticles. This triggers an immune response, but does not achieve the same intensity or duration.

Furthermore, location and duration of antigen exposure play a crucial role.
During *infection*, a pathogen persists for a certain period of time, meaning repeated antigen presentation occurs. The immune cells see the pathogen where it naturally replicates, i.e., in the mucous membranes of the lungs or intestines. Mucosal immunity (IgA, tissue-resident T cells) is particularly important here.
During *vaccination*, an antigen is often only available for a short time, and the application site (muscle) is not identical to the entry point for many viruses, with the consequence that local immunity in the mucous membranes is hardly developed.

Infection typically leads to long-lived plasma cells in the bone marrow, as well as a large number of memory-forming T and B cells. This effect is generally weaker and shorter-lasting with *vaccination*, especially when only one antigen is present or in a sterile environment without true inflammation.

From an evolutionary perspective, the immune system has been designed for millions of years to use infections as a "trainer" and to import new genes in the process. Vaccinations, on the other hand, are a relatively young, technical concept aimed at simulating an infection, yet they naturally do not provide a diversity of signals. The import of genetic material from viruses as well as from bacteria is not an exception but the rule, and it serves the epigenetic adaptation of the organism.

Do vaccinations make sense or not?

Ultimately, it's not about whether vaccinations are effective or have more or fewer side effects. It's about whether vaccinations are even useful in relation to the potential danger of an infectious disease.
Most vaccinations used in children today are used against diseases that 30 or 40 years ago were considered relatively harmless childhood illnesses and only very rarely resulted in serious complications. The dangers of these diseases have been exaggerated in the media over the years, controlled by vaccine developers and supported by some doctors who ultimately value profit more than people's health. Today, it is necessary to carefully consider whether the harms caused by vaccinations outweigh the risks of disease, especially in light of the synergistic effects of a multitude of pollutants to which humans are increasingly exposed today, such as insecticides, herbicides (glyphosate), phthalates, PFA and more.[27,28]
The study "*Impact of Childhood Vaccination on Short and Long-Term Chronic Health Outcomes in Children: A Birth Cohort Study*" by Marcus J. Zervos, MD (ABIM - The American Board of Internal Medicine - Infectious Disease), which was only released in September 2025 and examined

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[27] *Protano C, et al. (2024) Exposure to Pollutants and Vaccines' Effectiveness: A Systematic Review. Vaccines (Basel). 2024 Nov 3;12(11):1252. doi: 10.3390/vaccines12111252. PMID: 39591155; PMCID: PMC11599004.*

[28] *Gunatilake, S.et al. (2019). Glyphosate's Synergistic Toxicity in Combination with Other Factors as a Cause of Chronic Kidney Disease of Unknown Origin. International Journal of Environmental Research and Public Health, 16(15), 2734. https://doi.org/10.3390/ijerph16152734*

the long-term health consequences of 18,468 individuals between 2000 and 2016, produced very critical results:

- Vaccinated children were four times more likely to have asthma than unvaccinated children.
- Acute and chronic ear diseases were six times more common in vaccinated children.
- Vaccinated children were 4.47 times more likely to have speech disorders.
- Among the unvaccinated children, there were no cases of brain dysfunction, diabetes, learning disabilities, intellectual disabilities, tics, or other mental disorders.
- 57% of vaccinated children had a chronic health problem after 10 years, compared to 17% of unvaccinated children.

The data was only disclosed at the initiative of attorney *Aaron Siri* of ICAN (Informed Consent Action Network) at a Senate hearing. Zervos withheld the study because publication would have destroyed his career.

A failure to consider basic medical, ethical, and humanitarian principles may not only endanger vaccinees but lead to an unnatural balance between a one-size-fits-all experimentation vs. the flourishing of viral escape mutants.[29]

A long-term reduction in natural infection experiences through comprehensive vaccination programs could reduce the epigenetic imprinting and thus the immunological resilience of a population, potentially increasing susceptibility to new pathogens or immune dysregulation over generations.

This is not to say that vaccinations do not occasionally have their importance. However, in the assessment, it is often overlooked that today the use of vaccines is primarily driven by profit-oriented marketing strategies of the pharmaceutical industry and not for humanitarian reasons.

The fact that it is possible to develop a vaccine against an infection must not become the sole justification for its use. It is also unacceptable that vaccine manufacturers are absolved of liability for potential vaccine-related injuries while still being granted easier approval procedures. Currently, most vaccines are approved without prior comparison of side effects with a placebo injection that is completely free of active ingredients and adjuvant, and these days even with shorter study periods.

In my opinion, under the above-mentioned conditions, only vaccinations that reflect a natural route of infection in a weakened form would be justifiable, and this only in healthy children (from 3 years of age) or adults and not in polyvalent combinations. I reject mandatory vaccination.

The use of a variety of medications should also be re-evaluated, considering the mechanisms of action of our microbiomes. The influences of medications on the microbiomes are extremely diverse and have so far been barely considered in drug approval studies. The consequences can be dramatic.
I think it is high time to re-evaluate the entire vaccination ideology and a large part of pharmaceutical therapy in this regard.[30] We urgently need studies that explore the inherently logical connections, transcending the boundaries of individual disciplines. This research must be independent, uninfluenced by pharmaceutical industry lobbying and funded with taxpayer money.

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[29] *Siguna Mueller, (2023) Challenges and Opportunities of mRNA Vaccines Against SARS-CoV-2, A Multidisciplinary Perspective; ISBN 978-3-031-18902-9, ISBN 978-3-031-18903-6 (eBook); https://doi.org/10.1007/978-3-031-18903-6*

[30] *Yamamoto, K. Need for validation of vaccination programs. Discov Med* ***2****, 71 (2025). https://doi.org/10.1007/s44337-025-00274-0*

This is the only way to break up the entrenched pharmaceutical system, especially the vaccination system. Without such research, we risk harming ourselves in the long run through carelessness. Humanity has already made too many mistakes out of greed and carelessness. It's time to reflect.

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