

### III. Science Not Warfare

# Use Science to Save Lives; Ban Risky ‘Gain-of-Function’ Bio Research

by Karel Vereycken

Jan. 31—Karel Vereycken, editor of the French monthly *Nouvelle Solidarité*, published an [article](#) Dec. 3, 2024, under the headline, “Time to Ban ‘Gain-of-Function’ Research,” which he updated in January. It is provided here as background to actions anticipated in Washington, D.C. imminently to limit Gain-of-Function (GoF) research, which refers to enhancing traits of microbes to be more pathogenic. United States President Donald Trump is expected to issue an Executive Order to halt, or at least pause, Federal funding for GoF research. Sen. Rand Paul (R-Kentucky), a physician, has announced that he will soon file a bill that he had sponsored in prior legislative sessions, with bilateral support, titled, “Risky Research Review Act,” which calls for a Life Sciences Research Security Board to oversee biological research that potentially poses a threat to public health, safety, or national security.

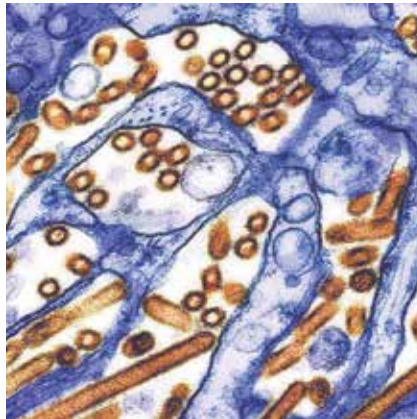
Like Icarus flying too close to the sun, some scientists are venturing into their laboratories to create pathogenic microbes (i.e., bacteria or viruses that make people ill) that are more dangerous than those that exist in nature. It is called “Gain-of-Function” (GoF) research. Tragically, so far, much of this type of research is not subject to strict national or international oversight.

Faced with this, part of the scientific community is calling for better monitoring of GoF and even for a ban on enhancing pathogens with a high potential to cause a pandemic, referred to as Potential Pandemic Pathogens (PPP), whether by intention or by mistake.

The controversy erupted in 2005 with the “reconstruction” of the influenza A/H1N1 virus (known as

the “Spanish Flu”), which caused between 20 and 50 million deaths in 1918. Staff at the U.S. Centers for Disease Control and Prevention (CDC) and their colleagues conducted the [research](#).

Especially since the September 11, 2001 terrorist attacks on the World Trade Center and the Pentagon, Research and Development in science and health has seen increased “weaponization.” The current breakdown of the international financial system, fueling a mad flight-forward response toward a confrontation among major nuclear powers, should lead us to be even more vigilant. The existence and development of deadly bio-weapons is part of the hidden reality of international threats.



CDC, NIAID  
Yellow/red particles of avian influenza A H5N1 virus.

#### Gain-of-Function Research

GoF research involves endowing microbes, such as bacteria and viruses, with enhanced capabilities (functions) that they do not normally possess in nature.

One might argue that transforming harmless bacteria into insulin-producing factories is a beneficial way of providing medication to treat diabetes, but there are other ways of achieving this. Let’s wake up. When it comes to increasing the virulence of a deadly virus, and, for example, enhancing its passage from an animal species to one close to man, or ensuring that it can be transmitted by droplets in the air, we need to think twice.

You don’t need to be a virologist to understand that when a pathogen acquires the ability to spread easily from mammal to mammal, the risk of it spreading to humans increases. Unfortunately, potential laboratory leaks are also a daily reality.

The problem is no longer theoretical. GoF experi-

ments carried out in 2011 by Ron Fouchier and Yoshihiro Kawaoka on a bird flu virus (H5N1), which appeared in Hong Kong in 1997 from infected birds, showed that it is possible to make the H5N1 bird flu virus extremely contagious in mammals, whereas the wild strain was only transmitted between birds, or from birds to humans, but with difficulty between humans. With a case-fatality rate of around 56%, the H5N1 avian flu virus is far more deadly than the COVID-19 virus, SARS-CoV-2, whose case-fatality rate is estimated at less than 2%.

Fouchier wanted to see what mutations the virus would need to acquire to trigger a pandemic. He chose the ferret as the experimental animal, because it is sensitive to influenza viruses and develops an influenza-like respiratory disease, similar to humans. The experiments were carried out in a Biosafety Level 3 (BSL-3) laboratory, a notch below the highest-level containment laboratories (BSL 4 or P4), which have containment rooms and space suits.

To achieve GoF, any researcher can now intervene directly on genetic material, thanks to high-performance tools that are increasingly easy to manipulate. In particular, there is CRISPR—Clustered Regularly Interspaced Short Palindromic Repeats, which works like a “molecular scissors” that can modify DNA with unrivalled precision. Its discoverers, Emmanuelle Charpentier and Jennifer Doudna, were awarded the Nobel Prize in Chemistry in 2020. However, their invention makes the equivalent of a biological weapon much more easily accessible to rogue states or mafias.

Fouchier also employed more conventional procedures. After introducing mutations into the virus, Fouchier carried out “serial passages,” which is the process of growing a virus or bacterium in successive iterations. Fouchier used this selective breeding of the virus in ferrets to obtain new mutant viruses that could be efficiently transmitted by aerosol from one mammal to another.

These experiments came as a shock. In 2014, calls of alarm came from the Cambridge Working Group, a group of top scientists, for a [moratorium on GoF research](#). Their July 2014 statement began, “Recent incidents involving smallpox, anthrax and bird flu in some



CC/Erasmus MC

*Prof. Ron Fouchier*

of the top U.S. laboratories remind us of the fallibility of even the most secure laboratories, reinforcing the urgent need for a thorough reassessment of biosafety.” This led the U.S. government, not to forbid, but to suspend government funding for GoF research on influenza, MERS, and SARS viruses. This was done as of October, 2014, during the administration of Barack Obama, who, some say, feared acts of bioterrorism.

### **Militarizing Risky Bio-Research**

Despite these warnings, in the United States the embargo on Federal funding for high-risk bio-research was lifted in December 2017, under Donald Trump’s Administration. This was done under Dr. Anthony Fauci and his colleagues at the National Institute of Allergy and Infectious Diseases (NIAID), which is under the National Institutes of Health (NIH). What followed over the ensuing years is a complicated story of suspensions and approvals of Federal funding for dangerous bio-research.

The one aspect that remains clear about U.S. policy, is that although Federal funding was suspended, GoF research was allowed. Private research of this kind has never been banned with private capital, and the suspension of funding by the U.S. Federal government has led major civilian and military laboratories to relocate these controversial activities to other countries, notably, to Ukraine and China.

The role of the Pentagon is prominent. It is worth noting here, that from 2002, just after the 9/11 attacks, the Pentagon, instead of developing its own activities in this field, “militarized” the Department of Health and Human Services, which includes many NIH entities. As a result, the NIAID, of which Fauci was the director (from 1984-2022), received enormous funding from the Pentagon to deal with biosafety, including biological weapons. Instead of legitimate cooperation between the health sector and the military, American health research regarding select, high-risk infectious diseases was being placed under the tutelage of the U.S. military.

In April 2002, Dr. Fauci described his [mission for](#)

[biodefense](#). He said that, “to defend against bioterrorism, the Institute is focusing on major threats, classed as category ‘A’ agents, i.e., smallpox, anthrax, tularemia, plague, botulism toxin, and hemorrhagic fever viruses; it is also looking at category ‘B’ and ‘C’ agents, such as foodborne E. coli and staphylococcus. The planned effort will be generic to virtually all microbes that might be used in bioterrorism. The NIAID will continue its cooperation with the Army Medical Research Institute of Infectious Diseases, but with new attention to cooperation with the biodefense command.”

Dr. Fauci added that “the goal within the next 20 years is to have ‘bug to drug’ within 24 hours. This would meet the challenge of genetically engineered bioagents. Someone might genetically engineer a microbe and make it resistant to the standard treatment, but if that trait is identified, another drug does not have to be created to counter it.” Dr. Fauci discusses the issue of smallpox and some of the issues that must be addressed in the area of large-scale vaccination. Issues in the area of local and State public health systems are also discussed, along with research and information dissemination.

Epistemologically, Fauci has always been a staunch supporter of GoF research, which he believes to be the medical science of the future. In 2012, he [prognosticated](#) that: “Scientists working in this field might say—as indeed I have said—that the benefits of such experiments and the resulting knowledge outweigh the risks. It is more likely that a pandemic would occur in nature, and the need to stay ahead of such a threat is a primary reason for performing an experiment that might appear to be risky.”

When COVID-19 appeared, Dr. Fauci opposed any investigation into the possibility of a laboratory leak. The official line was that the virus came from nature. And until his departure as head of the Federal Coronavirus Team in 2022, Dr. Fauci, relying on a very narrow interpretation of the notion of GoF, swore under oath that the U.S. government had never funded any GoF research in the Wuhan Institute of Virology in China,

which was just one laboratory among 400 practicing GoF research worldwide.

But since then, Dr. Lawrence Tabak, Deputy Director of the National Institutes of Health, has revealed that such research had indeed been funded by the NIH. And as NIAID Director, it was ultimately Fauci’s signature that appeared on the grants. This came out at the May 2024 hearing of the House of Representatives Select Subcommittee on the Coronavirus Pandemic.

### **Don’t Be the Sorcerer’s Apprentice**

As in the case of Dr. Fauci, the reason most often given for conducting GoF research is “to be able to predict future pandemics” and “to anticipate” the production of vaccines and anti-viral drugs to deal with new strains of microbes and illness. In other words, by creating new pathogens with pandemic potential in the laboratory, scientists like Fouchier would (in theory) be able to recognize them in the wild before they passed from animal to human.

In reality, risky GoF research will *never* predict future pandemics. The reasoning is delusional, says leading French researcher Antoine Danchin. “Human excesses mean that some researchers take the liberty of asserting that they can know how viruses will evolve, by

making them evolve in the laboratory, and thus claim to be able to prepare us for future epidemics! They forget the reality of nature, which is that, in general, the paths of evolution are unpredictable. What’s more, they overestimate their ability to react and prevent accidents, whereas in virology, accidents are the rule and by no means the exception.”

A recent study confirms this. According to a February 2024 article in the journal *The Lancet Microbe*, an [international team](#) of researchers recorded all known cases of laboratory-acquired infection, or cases where a pathogen accidentally “escaped” from a laboratory, during the time period 2000-2021. They found 309 infections acquired from, or associated with, 51 laboratory-acquired pathogens; eight of these cases were fatal, including one case of “mad cow” disease.



White House/Shealah Craighead

Dr. Anthony Fauci



## Seven Practices To Avoid

Concerns about GoF research prompted the U.S. National Academy of Sciences (NAS) to publish a report in 2004, two decades ago, entitled, *Biotechnology Research in an Age of Terrorism*, listing seven “practices of concern,” recognized as the “seven deadly sins,” which should not be pursued if researchers are likely to create pathogens not already present in nature.

These practices to avoid are:

1. Demonstrating how to render a vaccine ineffective.
2. Developing pathogen resistance to antibiotics or antiviral agents.
3. Improving a pathogen’s virulence (i.e., lethality) or rendering a non-lethal microbe lethal.
4. Increasing the transmissibility of a pathogen, e.g., making a pathogen that is not transmissible by aerosol, into one contagious that way.
5. Modifying the host range of a pathogen by increasing the number of species it can infect.
6. Allowing a pathogen to evade diagnostic tests.
7. Enabling the weaponization of a biological agent or toxin.

Ron Fouchier’s avian flu (H5N1) studies on ferrets in the Netherlands were in clear violation of practices 4 and 5 of the list. According to the NAS, these experiments should never have taken place!

## Origins of COVID-19

In the case of SARS-CoV-2, the agent responsible for the COVID-19 pandemic, the world still wonders where it came from and how it spread. The remarks from nearly two years ago are still relevant. Patrick Berche, a microbiologist and leading expert on bio-weapons in France, wrote on April 18, 2023, on the *Académie de Médecine* website:

Three years after the emergence of COVID-19, the origin of the highly contagious SARS-CoV-2 remains a mystery. There are two scenarios to explain its emergence. Proponents of a natural origin argue that the bat virus could have infected humans directly, spreading silently at a

low level in humans for years, without eliminating the existence of undetected intermediate hosts. This does not explain the origin in Wuhan, far away from natural virus reservoirs.

In a similar vein, Dr. Laura H. Kahn, a Princeton researcher and specialist in a holistic approach to integrated human-animal health, [noted](#) in 2022, in the *Bulletin of Atomic Scientists*, that:

Unlike SARS and MERS, neither the SARS-CoV-2 virus nor antibodies to the virus have been reported in animals or animal workers. No



U.S. Army, Camp Pendleton, CA

*U.S. Army specialists in defense against chemical, biological, radiological, nuclear, and high-yield explosives (CBRNE).*

studies involving clinical samples have been published in the medical literature, nor do they meet the criteria for natural spread.

French virologist Etienne Decroly, researcher at the National Centre for Scientific Research (CNRS) in France has noted that:

Although the majority of the scientific community currently favors a zoonotic origin for SARS-CoV-2, the possible role of this type of experiment in the emergence of SARS-CoV-2 is not yet clear-cut, and this hypothesis, initially ruled out by the World Health Organization (WHO), is now considered conceivable.



U.S. Senate Committee on Health, Education, Labor, Pensions  
*HHS nominee Robert F. Kennedy, Jr.*



U.S. Senate Committee on Homeland Security  
*Sen. Rand Paul*



CC/Gage Skidmore  
*DNI nominee Tulsi Gabbard*

Yet, it is imperative for mankind to understand the origins of the virus in order to develop effective policies and procedures to reduce the likelihood of such a catastrophe happening again. A wide-ranging debate such as this demands a thorough investigation into the origins of the virus, especially as there is no convincing evidence of a natural outbreak.

To prevent future catastrophic pandemics following laboratory leaks, researchers are proposing improved national and international safeguards in the fields of biosafety and biohazard management.

### Voices Raised

Outside the scientific community, only a few people have had the courage to raise this issue, no doubt for fear of appearing as horrible “conspiracy theorists.”

**Dr. Robert R. Redfield.** Former head of the U.S. Center for Disease Control and Prevention (2018-2021), Dr. Redfield addressed the House of Representatives Subcommittee on the Coronavirus Crisis on March 8, 2023. He concluded his written statement:

Understanding the origins of COVID-19 is critical to the future of scientific research, particularly as it affects the ongoing ethical debate over the conduct of scientific research, particularly as it affects the conduct of Gain-of-Function research. Gain-of-Function has long been controversial within the scientific community and, in my view, the COVID-19 pandemic is a case study in the potential dangers of this type of re-

search. While many believe that Gain-of-Function research is essential to stay ahead of viruses by developing vaccines, in this case I think it has had exactly the opposite result, unleashing a new virus on the world with no way of stopping it and resulting in the deaths of millions. For this reason, I believe we should call for a moratorium on all Gain-of-Function research until we can have a broader debate and reach a consensus as a community on the value of Gain-of-Function research. This debate must not be limited to the scientific community. If the decision is to pursue Gain-of-Function research, then we need to determine how and where to conduct this research safely, responsibly and effectively.

**Prof. Etienne Decroly.** In France, virology expert Decroly rightly believes that:

The conduct of this type of experiment should be limited as much as possible, and only experiments whose expected benefit for our societies far outweigh the risk should be allowed. It is often possible to use alternative methods to gain function, and the use of such alternative, less dangerous methods should systematically be favored. Both the scientific community and civil society should take up the issue of the risks associated with the use of these new biotechnological tools, in order to reflect and define more strictly what science can and cannot do.

I suggest that a moratorium be placed on Gain-of-Function experiments on viruses with pandemic potential, so that an international conference, under the aegis of the United Nations, including scientists, politicians and members of civil society, can negotiate the establishment of appropriate international regulations.

**U.S. Sen. Rand Paul.** In July 2024, Sen. Paul (R-KY), Ranking Member of the Senate Homeland Security and Governmental Affairs Committee, introduced the Risky Research Review Act, a proposal to establish a Life Sciences Research Security Board within the Executive Branch. This independent board would oversee the funding of GoF research and other high-risk life-sciences research that potentially poses a threat to public health, safety, or national security.

Dr. Redfield has endorsed Paul's proposal, saying in 2024, "This is a very important bill which when implemented will ensure national security is prioritized when making U.S. life science funding decisions," and even asserted that, "If we had this bill in place ten years ago we could have prevented the COVID pandemic."

It is notable that while Paul's bill is clearly a step in the right direction, its effect remains weak, because it would merely empower the oversight board to "decide whether tax dollars should support specific research proposals." In short, no ban on privately funded GoF research.

**Tulsi Gabbard.** President Donald Trump's nominee for Director of National Intelligence (DNI) Tulsi Gabbard, former Congresswoman and a veteran, now a Lieutenant Colonel in the U.S. Army Reserve, has demonstrated a keen sense of the nature of the issues at stake. When conflict broke out in Ukraine in 2022, she called for immediate cooperation between Ukraine, the U.S., Russia, and the United Nations to shut down the 46 biological research laboratories in the war zone as quickly as possible, without even mentioning the U.S. military laboratories. A single missile hitting such a laboratory would be enough to cause a deadly pandemic taking millions of lives, she stressed in a video clip. As a response, Gabbard was accused of repeating a Russian narrative.

**Robert F. Kennedy, Jr.** During his independent campaign for the Presidency, Kennedy, now President Trump's nominee to be Secretary of the Department of Health and Human Services (HHS), spoke

out repeatedly against the danger of risky, bioweapons research. Though noted for unsupported assertions on certain topics, his fervor on this has merit. "It is now clear that COVID began with a laboratory leak. This fact was deliberately covered up by Anthony Fauci and his cronies, with the complicity of the bioweapons research community. We need to stop this kind of research now."

These are just a few of the voices speaking out at present, and it is notable that after years of denying that the U.S. had financed Gain-of-Function research worldwide, including in China, Dr. Anthony Fauci last year finally admitted it was so.

However, it bears reiteration that, given the number of civilian and military laboratories where Gain-of-Function research is carried out worldwide, the fact that this type of research is being carried out in China in no way proves that the COVID-19 virus originated in one of their laboratories, especially as there are huge uncertainties about both the place and the date of the first cases. Given that the research has been "militarized" in the case of the U.S., that places it in the realm of geopolitical confrontation. To say the least, it is a sensitive question.

### **The Nuremberg Code**

Disregarding all ethical considerations, certain scientists assert without batting an eyelash, that, intellectual curiosity being the supreme value, any hypothesis is worth being verified by experiment.

They should be reminded that in 1947, at the Nuremberg trials, Nazi doctors and researchers were convicted of carrying out fatal experiments on thousands of concentration camp inmates considered subhuman. Experimental serums were injected into the veins of Jewish, homosexual, and Communist prisoners, regarded as ideal guinea pigs for testing the prevention and treatment of contagious diseases such as malaria, typhus, tuberculosis, typhoid fever, yellow fever, and hepatitis. At Auschwitz, Dr. Josef Mengele even tried to determine how different "races" resisted various contagious diseases. At the Reich University in Strasbourg, August Hirt attempted to establish the "racial inferiority" of the Jew, in his "health research."

"Science without conscience is but the ruin of the soul," said François Rabelais 500 years ago, and he was bloody right!