

Made in China: the coronavirus that killed millions of people

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It is highly likely that SARS-CoV-2, the coronavirus that caused the COVID-19 pandemic, escaped from the Wuhan Institute of Virology because of sloppy safety procedures. It is also likely that the virus was fabricated on purpose to make it dangerous to humans as part of the so-called gain-of-function research at the institute.

Science writer Nicholas Wade who has worked for *Nature*, *Science*, and the *New York Times*, published an instructive article about the origin of SARS-CoV-2 on 3 May 2021.¹ I summarize it here and provide additional information and my own comments.

Organised denial

In February 2020, a group of virologists and others wrote in a *Lancet* letter:² “We stand together to strongly condemn conspiracy theories suggesting that COVID-19 does not have a natural origin.”

It is not a conspiracy theory that a virus can escape from a lab, it is a fact. The smallpox virus escaped three times from labs in England in the 1960’s and 1970’s, causing 80 cases and 3 deaths.¹ Dangerous viruses have leaked out of labs almost every year since, and the SARS virus, responsible for the Severe Acute Respiratory Syndrome which emerged from Chinese bats in 2003 and killed 774 people,³ leaked from laboratories in Singapore and Taiwan, and twice from China.⁴ The most notable lab leak is the 1977 H1N1 lab escape from China that caused a worldwide influenza pandemic,⁴ mostly in young people, with [about 700,000 deaths](#).

It later turned out that the letter had been [organized and drafted](#) by Dr. Peter Daszak, president of the EcoHealth Alliance of New York, which funded coronavirus research at the Wuhan Institute. If the SARS-CoV-2 virus had escaped from research he funded, he would be potentially culpable. The letter stated: “We declare no competing interests” even though already its strongly emotional title revealed this wasn’t true: “Statement in support of the scientists, public health professionals, and medical professionals of China combatting COVID-19.” The letter was only 350 words but had 27 authors. We call this persuasion by big numbers and authority.

Virologists like Daszak had much at stake. For 20 years, mostly beneath the public’s attention, they had been playing with fire by routinely creating far more dangerous viruses than those that exist in nature.¹

In March 2020, a group of virologists led by Kristian G. Andersen of the Scripps Research Institute published a letter in *Nature Medicine* declaring that, “Our analyses clearly show that SARS-CoV-2 is not a laboratory construct or a purposefully manipulated virus.”⁵

The authors of both letters assured their readers of something they could not know.^{1,4} Newer methods of cutting and pasting viral genomes leave no defining marks. Nor do other methods for manipulating viruses such as serial passage, the repeated transfer of viruses from one culture of cells to another.

The letters were political statements aimed at damage control, but they had an enormous influence in shaping public opinion. The media repeatedly stated that a consensus of experts had ruled lab escape out of the question or extremely unlikely.

Dangerous research

Researchers at the Wuhan Institute were led by China’s leading expert on bat viruses, Dr. Shi Zheng-li. Shi teamed up with Ralph S. Baric from the University of North Carolina who pioneered techniques for genetically manipulating these viruses, which became a major aspect of research at the Wuhan Institute.⁶ Their work focused on enhancing the ability of bat viruses to attack humans so as to “examine the emergence potential.”¹

In 2015, they created a novel virus by taking the backbone of the SARS virus replacing its spike protein with one from another bat virus known as SHC014-CoV. This manufactured virus was able to infect a lab culture of cells from the human airways. They wrote that scientific review panels might deem their research too risky to pursue but argued that it had the potential to prepare for and mitigate future outbreaks. However, the value of gain-of-function studies in preventing the COVID-19 pandemic was negative, as this research highly likely created the pandemic.

On 9 December 2019, just before the outbreak of the pandemic, Daszak gave an [interview](#) in which he talked in glowing terms of how his researchers at the Wuhan Institute had created over 100 new SARS-related coronaviruses, some of which could get into human cells and could cause untreatable SARS disease in humanized mice.

Daszak acknowledged the clear danger of these experiments, but when he heard of the outbreak in Wuhan shortly afterwards, he did not provide public health authorities with the plentiful information at his disposal but immediately launched a public relations campaign to persuade the world that the epidemic couldn't possibly have been caused by one of his manufactured viruses. "The idea that this virus escaped from a lab is just pure baloney. It's simply not true," [he declared](#) in April 2020. He has protested for over a year that lab escape was a ludicrous [conspiracy theory](#) invented by China-bashers.

Sloppy safety and infections at the Wuhan Institute

The Wuhan Institute had a high safety lab (BSL4), but the US State Department inspectors [were alarmed](#) when they visited it in early 2018 because it had a serious shortage of appropriately trained staff needed to safely operate it.¹

An additional problem is that virologists don't like working in BSL4 conditions. They have to wear a space suit, do operations in closed cabinets and everything takes twice as long. As stated in her publications and [elsewhere](#), much of Shi's work was performed at the BSL2 level, which is the biosafety level of a US dentist's office.

In January 2021, the US State Department [reported](#) that several researchers became sick in autumn 2019, before the pandemic outbreak. [Knowledge](#) of the cases came from a mix of public information and US intelligence. Three people working at a BSL3 lab fell sick within a week of each other with severe symptoms requiring hospitalization. This was "the first known cluster that we're aware of, of victims of what we believe to be COVID-19."

Comparing the rival scenarios of SARS-CoV-2 origin

Shi's group collected more than 1,300 bat samples during some 8 visits to the Mojiang cave in Yunnan between 2012 and 2015.¹ The two closest known relatives of the SARS-CoV-2 virus were collected from bats in Yunnan. These viruses [did not infect people](#) living around the caves. The pandemic broke out 1500 kilometres away, in Wuhan, and the bats' range is 50 kilometres.

If the bat viruses infected an intermediate host first, the bats would need to be in frequent proximity with the intermediate host, which would need to often cross paths with people. This did not happen.

For SARS, researchers have documented the changes in its spike protein as the virus evolved into a dangerous pathogen. After it went from bats to civets, there were six further changes before it became a mild pathogen in people. After a further 14 changes, the virus was much better adapted to humans, and with a further 4 changes, the [epidemic took off](#).

In contrast, the SARS-CoV-2 virus has hardly changed at all, at least not before millions of people had become infected. From its very first appearance, it was well adapted to human cells. According to Baric, this "suggests that the virus may have been introduced from a single source," which is compatible with a lab escape, and not with the massive variation and selection which is how evolution works.

Studies of the furin cleavage site in the virus provides further support for a man-made virus. The site's four amino acid units are all together. Mutation is a random process involving copying errors, so it typically affects single amino acids at different spots in a protein chain. A far more likely cause is recombination, an inadvertent swapping of genomic material that occurs when two viruses happen to invade the same cell.

However, of all known SARS-related beta-coronaviruses, only SARS-CoV-2 possesses a furin cleavage site. Proponents of natural emergence say it could have picked up the site from some as yet unknown beta-coronavirus. But bat SARS-related beta-coronaviruses don't need a furin cleavage site to infect bat cells, so it is unlikely any of them possesses one, and none has been found.

Virologists have known since 1992 that a sure way to make a virus deadlier is to give it a furin cleavage site, and researchers, including Shi, have added a furin site in at least 11 gain-of-function experiments.¹

Studies of the genetic coding for the furin cleavage site virtually eliminates the possibility that COVID-19 has a natural origin.^{1,4} SARS-CoV-2 has a pair of arginine codons favoured by human cells but not by coronaviruses. They are routinely used in labs. If the emergence were natural, it would require a recombination event at a site on the virus's genome where recombinations are rare, and the insertion of a 12-nucleotide sequence with a double arginine codon unknown in the beta-coronavirus repertoire, at the only site in the genome that would significantly expand the virus's infectivity. This sequence of events is extremely unlikely.

It seems that naturally occurring bat coronaviruses of the Yunnan caves can infect people directly. In April 2012, six miners clearing bat guano from the Mojiang mine contracted severe pneumonia with COVID-19-like symptoms and three died.^{1,4} A virus isolated from the mine, called RaTG13, is the closest known relative of SARS-CoV-2.

Other observations also make the natural emergence theory highly implausible. We don't even know if SARS-CoV-2 ever infected a bat, but we do know that it has only feeble affinity for bat cells. And why should a natural epidemic break out in Wuhan, and nowhere else? [None of the bats](#) in that region carry any coronaviruses that are closely related to SARS-CoV-2.

This is overwhelming circumstantial evidence that the virus was man-made.

The US role in funding the Wuhan Institute is disgraceful

From 2014 to 2019, Daszak's EcoHealth Alliance had a [grant](#) from the National Institute of Allergy and Infectious Diseases (NIAID), part of the National Institutes of Health (NIH), to do gain-of-function research with coronaviruses at the Wuhan Institute.¹

For the first three years, there was a moratorium on gain-of-function research, but with a loophole in a footnote. The US funding agency could make an exception if its head determined "that the research is urgently necessary to protect the public health or national security." It seems that the director of the NIAID, Dr. Anthony Fauci, or the director of the NIH, Dr. Francis Collins, or both, invoked the footnote to keep the money flowing to Shi's research.

They should never have allowed the research, as it was not urgently needed to protect the public health or national security. Virtually all naturally occurring coronaviruses are harmless, as they only cause common cold symptoms.

When the moratorium was ended in 2017, it was replaced by a reporting system, which required agencies to report for review any dangerous gain-of-function work they wished to fund. However, according to Dr. Richard H. Ebright, a molecular biologist at Rutgers University and a leading expert on biosafety, both Fauci and Collins declined to forward proposals for review. In dealing with the moratorium and the reporting system, they "systematically thwarted efforts by the White House, the Congress, scientists, and science policy specialists" to regulate dangerous gain-of-function research.

It is disgraceful to circumvent the regulations and farm out high-risk research to unsafe foreign labs. And if the SARS-CoV-2 virus were manufactured and escaped from the institute, the NIH would be in the terrible position of having funded disastrous experiments that so far have caused the death of over 3 million people, including more than half a million of its own citizens.

Why the ubiquitous *omertá*?

A sound principle, particularly in research, is that if you have nothing to hide, then hide nothing. It can only be beneficial to be open and transparent, as it will increase your trustworthiness.

China did the opposite.¹ China did it utmost to conceal the nature of the tragedy and China's responsibility for it. Chinese authorities suppressed all records at the Wuhan Institute and closed down its database of viral genomes.⁴ China barred all international scientists from going near the caves in Yunnan; blocked the roads; confiscated samples taken by a team of scientists on a recent trip to the caves; and all research papers based on evidence from the caves must be submitted to a task force overseen by the government in Beijing "[under direct orders](#) from President Xi Jinping."

When Australia lobbied world leaders in April 2020 for an inquiry into the origins of the COVID-19 pandemic, China responded with [harsh trade sanctions](#).

The virologists also carry a heavy responsibility for the disaster. They knew better than anyone the dangers of gain-of-function research, but the power to create new viruses, and the research funding obtainable by doing so, was too tempting. They lobbied against the moratorium imposed on US federal funding for gain-of-function research in 2014 and got it raised in 2017.¹

Their behaviour has long alarmed other biologists. In 2014, a group of scientists warned against manufacturing dangerous viruses, which could cause outbreaks that might be impossible to control. But even after COVID-19 had killed millions, the virologists barricaded themselves behind a Chinese wall of silence or derided lab escape as a conspiracy theory, often in a most absurd fashion, which an article in *Nature Medicine* from January 2021 illustrates:⁷

"... all indications suggest that, like SARS-CoV and MERS-CoV, this virus probably evolved in a bat host until an unknown spillover event into humans occurred. Unfortunately, this did little to quell often contradictory and sometimes outright ridiculous conspiracy theories that spread faster than the virus itself: SARS-CoV-2 was the result of a laboratory accident or was intentionally engineered, and this was concealed to hide either spectacular incompetence or a complex international conspiracy involving Bill Gates, the Chinese Communist Party and 5G wireless network infrastructure with an end goal of ushering in a new world order. The proof presented to corroborate these theories relied heavily on cherry-picked evidence ranging from withdrawn preprints to secret diplomatic cables about vague lab safety information to grossly overinterpreted satellite and mobile phone data, all of which prove exactly nothing about SARS-CoV-2 origins."

Other scientists also kept quiet. Government research funds are distributed on the advice of peers and anyone who rocks the boat by raising awkward political issues runs the risk that their research career will be over.

The US government shares a strange common interest with the Chinese government.¹ One can imagine a behind-the-scenes conversation in which the Chinese say: "If this research was so dangerous, why did you fund it, and on our territory too?" To which the US side might reply: "Looks like it was you who let it escape. But do we really need to have this discussion in public?"

No major newspaper or television network has provided an in-depth story of the lab escape scenario even though any plausible origin of a virus that has killed millions of people would merit a serious investigation. The virologists' *omertà* is one reason for the silence. Unlike political reporters, most science reporters are uncritical towards what their sources tell them.

US President Donald Trump said the virus had escaped from a Wuhan lab, but as he made more than 20,000 false or misleading claims during his presidency,³ it is not surprising that editors joined the virologists by calling it a conspiracy theory. They had no trouble in rejecting the position of the intelligence services that lab escape could not be ruled out. When Avril Haines, President Biden's director of National Intelligence, said the same thing, she too was largely ignored.¹

WHO's farcical tour to Wuhan

In January 2021, WHO's director general, Tedros Adhanom Ghebreyesus, said he was "very disappointed" that China, after many months of delay, had still not finalized the permissions for WHO's expert team to enter the country to investigate the origins of COVID-19 in Wuhan.³ Surely, as time passes, the evidence disappears.

The commission's composition and access to data were heavily controlled by the Chinese authorities. Its members, which included the ubiquitous Daszak, kept asserting before, during and after their visit that lab escape was extremely unlikely.¹

But what became clear was that the Chinese had no evidence to offer the commission in support of the natural emergence theory.

This was surprising because both the SARS and MERS (Middle East Respiratory Syndrome) viruses had left copious traces in the environment. The intermediary host species of SARS was identified within four months of the epidemic's outbreak, and the host of MERS within nine months. Yet some 15 months after the COVID-19 pandemic began, Chinese researchers had failed to find a bat population as the source of SARS-CoV-2, or an intermediate host to which SARS-CoV-2 might have jumped despite an intensive search that included the [testing of 80,000 animals](#), or serological evidence that any Chinese population, including that of Wuhan, had ever been exposed to the virus prior to December 2019.

When the WHO team finally arrived, the inspection was a farce. It was heavily criticised on 14 May 2021 in a letter in *Science* by some of the world's top virus researchers including the world's foremost coronavirus researcher Ralph Baric.⁸

They wrote that the information, data, and samples for the study were collected and summarized by the Chinese half of the team, and the rest of the team built on this analysis. Although no findings were presented in clear support of either theory, the team assessed a zoonotic spillover from an intermediate host as "likely to very likely," and a laboratory incident as "extremely unlikely." However, the two theories were not given equal consideration. Only 4 of the 313 pages of the report and its annexes addressed the possibility of a laboratory accident. Notably, WHO's director general commented that the report's consideration of evidence supporting a laboratory accident was insufficient and offered to provide additional resources to fully evaluate the possibility.

These scientists agreed with the WHO's director general, the United States and 13 other countries, and the European Union, that greater clarity about the origins of the pandemic is necessary and feasible to achieve: "Knowing how COVID-19 emerged is critical for informing global strategies to mitigate the risk of future outbreaks ... A proper investigation should be transparent, objective, data-driven, inclusive of broad expertise, subject to independent oversight, and responsibly managed to minimize the impact of conflicts of interest. Public health agencies and research laboratories alike need to open their records to the public. Investigators should document the veracity and provenance of data from which analyses are conducted and conclusions drawn, so that analyses are reproducible by independent experts."

The reaction to the letter from Shi from the Wuhan Institute was revealing.⁶ She said that the letter's suspicions were misplaced and would damage the world's ability to respond to pandemics. "It's definitely not acceptable," Shi said of the group's call to see her lab's records. "Who can provide an evidence that does not exist?"

Shi furthermore wrote: "It's really sad to read this 'Letter' written by these 18 prominent scientists ... This kind of claim will definitely damage the reputation and enthusiasm of scientists who are dedicated to work on the novel animal viruses which have potential spillover risk to human populations and eventually weaken the ability of humans to prevent the next pandemic."

This is utterly false. First, the scientists *did not* make any claims; they merely asked for a possibility to investigate the origin of the virus, which is what science and pandemic control is about. Second, such research *will not* weaken the ability of humans to prevent the next pandemic; it will strengthen it.

Rear Admiral Kenneth Bernard, an epidemiologist and disease detective who served as the biodefense expert under two US presidents said that the letter "is balanced, well written, and exactly reflects the opinion of every smart epidemiologist and scientist I know."⁶

Letting the cat out of the bag

Natural emergence was the media's preferred story until the failed WHO commission to China. At long last, the public discourse is now changing. Robert Redfield, former director of the Centers for Disease Control and Prevention, [told CNN](#) on March 26, 2021 that the "most likely" cause of the epidemic was "from a

laboratory,” because he doubted that a bat virus could become an extreme human pathogen overnight, without taking time to evolve.¹

Dr. Marc Lipsitch, a Harvard University epidemiologist who co-authored the letter in *Science*,⁸ said he had not expressed a view on the origin of the virus until recently, partly because the debate over the lab theory had become so controversial, but “when the WHO comes out with a report that makes a specious claim about an important topic ... it’s worth speaking out.”⁶

Lipsitch has warned that the proliferation around the globe of labs manufacturing dangerous viruses is a major concern and has called for more public scrutiny of such research: “It’s not all about whether a lab accident caused this particular pandemic. I’d like to see the attention focus on the regulation of dangerous experiments, because we’ve seen what a pandemic can do to us all, and we should be extremely sure before we do anything that increases that probability even a little.”

Conclusions

China is responsible for over 3 million deaths so far and the United States is complicit. Whatever one thinks of the origin of SARS-CoV-2, it is clear that if the Wuhan Institute of Virology had not conducted gain-of-function research, and therefore had not collected more than a thousand samples of coronaviruses from bat caves, there would have been no pandemic.

As suggested by others, it is clear that this type of research should never have been funded and should never have been performed.¹

The WHO and the United Nations should issue a call to stop all gain-of-function research permanently.

All governments should make gain-of-function research illegal, with stiff penalties for breaking the law. This research is a great threat to mankind. It must stop.

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