

The origins of COVID-19 and the politics of the “lab-leak” myth: A discussion with science writer Philipp Markolin

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The lab-leak narrative, the concocted right-wing theory that China deliberately created the virus that causes COVID-19, has now been elevated to the level of conventional wisdom in many political and media circles, despite being scientifically untenable. This shift reflects a broader effort to weaponize the COVID-19 pandemic for geopolitical purposes—namely, to redirect public anger toward China and prepare the political climate for imperialist war. In doing so, it has deflected attention from the real drivers of zoonotic spillover and pandemic vulnerability, while placing principled scientists and researchers in the crosshairs of politically motivated attacks. What began as a scientific question has been transformed into a battleground of disinformation, nationalism, and conspiratorial thinking.

*Scientist and science writer Philipp Markolin has stood out as an articulate and reasoned voice in this increasingly toxic environment that has given complex scientific issues plain language and clarity. Over the course of the pandemic, he has undertaken a detailed examination of the virus's origins, culminating in his book *Lab Leak Fever*, which methodically dismantles the conspiracy narrative and reorients the discussion toward the actual science of viral emergence. In a recent interview with the World Socialist Web Site, Markolin laid out the overwhelming evidence supporting a zoonotic origin and warned of the dangers of letting politics override science.*

*Markolin's work resonates with the approach of filmmaker Christian Frei, whose documentary *Blame* confronts the conspiratorial landscape with both emotional and intellectual integrity. The film follows scientists like Peter Daszak, Shi Zhengli, and Linfa Wang, each of whom has faced personal and professional vilification for their work in tracing the roots of coronaviruses. Daszak, a longtime advocate for global pandemic preparedness, and Shi, a leading research scientist at the Wuhan Institute of Virology in China, have been falsely accused of engineering the virus, while Wang, a prominent figure in bat virology, has continued to advocate for scientific collaboration amid rising hostility. Together, they represent a community of experts whose real goal has little to do with conspiracy and lies and everything with informing the public and guiding prevention and preparedness.*

BM: Philipp, thank you for doing this interview. I think a discussion on COVID origins is critical in the current political climate. But before we begin, could you speak about your background and education? How did you become involved in the COVID origins debate, which ultimately led to your recent book, *Lab Leak Fever*?

PM: I was born and raised in Austria and studied Chemistry for my Bachelor's and Biochemistry for my Master's. In 2013, I joined ETH Zurich in Switzerland—one of the world's top universities—to pursue a PhD in translational biomedicine. My work focused on pancreatic cancer, particularly on how hypoxia influences cancer progression. At the same

time, CRISPR was becoming popular, so I worked with molecular cloning, creating a “traffic light splicing sensor” using lentiviral constructs. I also gained experience working with mice, using AAV and adenoviruses to deliver genetic material.

For my postdoc, I moved into computer science. Biology has become increasingly data-driven, and I wanted to learn coding, bioinformatics, and machine learning. This combination of wet-lab training (molecular cloning, viral vector design, BSL-2 biosafety work) and computational expertise gave me a broad perspective—scientifically literate enough to follow the COVID origins controversy in detail, even if not a virology specialist.

My entry into the COVID origins debate was almost accidental. Around May 2021, when the “lab leak” narrative started gaining traction—especially after Nicholas Wade's widely cited article “Did Scientists Open Pandora's Box?”—I was approached by Sam Gregson. We had been discussing doing some science communication together. Sam wanted to interview Yuri Deigin on his podcast, and he asked me to join, since Yuri had been featured in a Bret Weinstein podcast and was pushing lab leak claims.

Before that interview, I dug into the scientific literature and quickly saw how shallow and misleading Wade's arguments were. I wrote my first blog post—“Explained: The hard evidence why the SARS-CoV-2 genome was not engineered and unlikely leaked” (Medium, 2021)—which immediately drew sharp criticism on Twitter. People attacked me as a “useful idiot” or claimed I was conflicted, but this only strengthened my resolve to push back.

During our call with Yuri, he initially seemed like a good-faith interlocutor. He was openly pro-vaccine and opposed to Ivermectin, which made it harder to see where his reasoning veered into conspiracism. But as he raised claims about “dangerous gain-of-function work” by Ralph Baric, “secret viruses” collected by Shi Zhengli, or alleged conflicts of interest by Peter Daszak, it became clear he was recycling unscientific talking points. My skepticism was triggered, especially when he made glaringly false claims about genetics and lab work.

That experience—and the backlash to my article—pulled Sam and me deeper into the origins debate. We started interviewing virologists like Stuart Neil to hear from genuine experts. In turn, conspiracy theorists began branding us as part of the “zoonati”—a mocking term for scientists who support zoonotic spillover as the most likely origin.

The book idea came later. After writing a long blog post that gained traction, I was contacted by documentary filmmaker Christian Frei. He invited me on a research trip to Thailand in 2022, where I met Peter Daszak, Jane Qiu, and others. That trip profoundly shaped my perspective: I witnessed fieldwork in bat caves, spoke with virus hunters like Linfa Wang and Supaporn Wacharapluasdee, and saw firsthand the ecological

settings where spillover occurs. Before our plane landed, I had drafted my first chapter.

What drove me to finish the book—ultimately around 500 pages—was a sense of historical injustice. The disinformation swirling around COVID’s origins was not just bad science; it was politically weaponized. To counter it, I had to move beyond science communication into investigative work: tracking sources, learning OSINT methods, speaking with Chinese scientists and journalists, and contextualizing the role of disinformation researchers.

I never traveled to China—both for safety reasons and because I don’t speak Chinese—but I spoke with multiple journalists who had been there. My account doesn’t rely on unverifiable Chinese sources. That independence is important politically, since both China and the United States have advanced self-serving narratives. From my vantage point in Switzerland, I aimed to cut through this geopolitical tug-of-war and focus on the evidence.

My guiding principle has been clear: “To all defenders of an evidence-based worldview”—the dedication in my book. Evidence, not speculation, not deference to elites, not blind trust in science, but reasoned, evidence-based inquiry. Through persistence and some luck, I gained remarkable access to scientists and researchers at the heart of this story, allowing me to tell it from the inside.

I truly believe no one else could have written *Lab Leak Fever*. Out of this sense of obligation I poured every spare moment for two years into the project, even as I worked a day job and raised a family. After facing rejection from literary agents, I found a publisher, only to have it collapse after Trump’s reelection heightened legal risks. I shouldered legal costs myself, self-published a German edition, and am now preparing to release the English edition after further legal review.

The “lab leak” claim: An anti-science narrative

BM: Nearly six years into the pandemic, the official U.S. political line has shifted decisively toward the “lab leak.” Congress now states it is the “most likely” scenario. The official website covid.gov even features Trump as a “lab leak buster,” language largely shaped by the Heritage Foundation and Project 2025. In a sense, the “official conspiracy” has become state doctrine. Could you comment on that framing as we begin?

PM: What’s striking is that the “lab leak” is not a scientific theory—it is a narrative. A scientific theory must be testable and falsifiable. The lab leak, in its many forms, is neither. Instead, it is a shifting story, adapted for political convenience.

Under Trump, the narrative was aggressively sinophobic: “the China virus,” framed as a deliberate bioweapon. When Trump lost power, that version faded, replaced with the idea of an “accidental lab leak”—gain-of-function research gone awry. Now, with Trump back, the narrative has fused both: the “Chinese military” conducting “dual-use research,” ultimately producing a bioweapon.

Politically, this is powerful. Emotionally, it resonates. But scientifically, it is very weak. The idea that SARS-CoV-2 was deliberately engineered or released is easily refuted by the evidence. Harder to disentangle are scenarios like field researchers in Yunnan becoming infected during sampling and unknowingly bringing the virus back to Wuhan. That possibility blurs into a zoonotic spillover.

But the claim that SARS-CoV-2 was designed in a lab—that it was made dangerous by human manipulation, or that the furin cleavage site was “inserted”—is not supported by evidence. It is a weak scientific claim, but a strong political narrative. And that is why powerful actors weaponize it.

BM: Let’s get into what the science tells us. You wrote a detailed

article, “A Treacherous Ancestry” [Markolin 2023], which laid out the genomic evidence for a natural origin. In it, you described SARS-CoV-2 as an “uncanny chimera.” Could you explain what you meant, especially regarding the furin cleavage site and receptor binding domain—features that initially raised suspicion but are now better understood through natural recombination?

PM: When a new virus emerges, scientists compare its genome with known relatives. Early on, comparisons were made to SARS-CoV-1 and to RaTG13, a coronavirus sampled in Yunnan by Shi Zhengli’s team at the Wuhan Institute of Virology.

What stood out in SARS-CoV-2 were a few unusual features:

- Furin cleavage site (FCS): At first, no other known SARS-related coronaviruses had this, leading to suspicion it was artificial.

- Receptor binding domain (RBD): SARS-CoV-2 bound efficiently to human ACE2 receptors, whereas RaTG13 did not. How could this affinity have evolved?

- Rapid spread: SARS-CoV-2 spread explosively in Wuhan, which made it appear unusually well-adapted.

These features initially raised eyebrows. But subsequent research showed they are not evidence of engineering. Instead, they reflect the evolutionary “patchwork” seen in coronaviruses. By 2021, the discovery of related viruses (e.g., RmYN02, RpYN06) revealed that recombination—two viruses infecting the same host and exchanging genetic material—is ubiquitous in bat coronaviruses.

This recombination produces “mosaic genomes” that look like chimeras. But they are naturally occurring. SARS-CoV-2’s genome contains precisely the kind of recombination signatures we expect from viruses circulating in bats. No lab could have designed this genetic history; it encodes too many ancestral lineages to be artificially stitched together.

And while single mutations can be engineered, the large-scale recombination patterns in SARS-CoV-2’s genome show it is a natural virus.

BM: If I understand correctly, bat coronaviruses are typically gastrointestinal, while SARS-CoV-2 is a respiratory virus in humans. Wouldn’t that explain why bat viruses usually lack a furin cleavage site, while SARS-CoV-2 has one?

PM: It’s more complicated than that. Simply adding a furin cleavage site does not transform a bat gastrointestinal virus into a human respiratory pathogen. Viral transmission depends on multiple factors: the 3D structure of the spike protein, tissue specificity, stability in aerosols, and the broader genomic context.

Nature optimizes this through trial and error. Mutations accumulate, some stabilize others, and occasionally the right combination emerges. For instance, SARS-CoV-2’s D614G mutation increased transmissibility once paired with other features. This co-evolution is not something we can easily reproduce in a lab.

Even within human coronaviruses, the pattern varies. Some have a furin cleavage site but do not bind ACE2. Others bind ACE2 without an FCS. SARS-CoV-1, for example, spread effectively in humans without one. The presence of an FCS is not a smoking gun. The early focus on it was misplaced—it looked unique at first, but subsequent discoveries showed it is not unusual in the broader coronavirus family.

The evidence of natural origin of COVID-19

BM: I see. But I think the most compelling evidence for a natural origin of COVID-19 comes from the data collected at the Huanan Seafood Market in Wuhan. You’ve consistently argued that this is the strongest

evidence we have. Could you walk us through the most persuasive findings—especially the spatial clustering of early cases, the environmental samples showing viral RNA, and the presence of susceptible animal DNA?

PM: Yes. The strongest evidence comes from the work of Michael Worobey, Kristian Andersen, Jonathan Pekar, and other leading scientists [Worobey *et al.*, *Science* 2021; Worobey *et al.*, *Science* 2022, Pekar *et al.*, *Science* 2022].

In fact, their initial motivation was to test whether the market really was the epicenter. Some had argued it was only an “amplification event” or that Chinese authorities fixated on it because their early-warning system picked up unusual pneumonia cases there. But the data show otherwise.

When you examine the earliest December cases—well before any ascertainment bias could have set in—many were independently confirmed as linked to the Huanan market. Epidemiologically, these cases cluster tightly around the market. By January, once the virus had spread citywide, clustering reflected population density and demographics instead. This contrast demonstrates that something unique happened at the market in December.

Equally important: patients without a direct market link—no work there, no known contact—still clustered geographically near the market. Worobey’s analysis showed that living close to the market strongly predicted infection risk, far more than living near, for example, the Wuhan Institute of Virology across the river. The virus was radiating outward from Huanan market.

That’s one line of evidence. A second comes from phylogenetics. When scientists examined the genetic diversity of the earliest SARS-CoV-2 genomes, they found two distinct lineages—Lineage A and Lineage B—both rooted at the market. This is remarkable. If the outbreak were seeded by a single superspreading event, you’d expect one lineage. Two lineages appearing at the same small venue strongly suggests multiple zoonotic spillovers from infected animals.

Third, the environmental sampling inside the market reinforces this. Viral RNA was not evenly distributed; it clustered on the western side of the market, where live wild animals were sold. Environmental swabs—taken from cages, surfaces, and sewers—not only tested positive for SARS-CoV-2 RNA, but some also contained genetic traces of susceptible animals: mitochondrial DNA from raccoon dogs, bamboo rats, and other wildlife. In other words, the virus and potential host animals were found together, in the same physical locations. [Crisis-Cristoph *et al.*, *Cell* 2024]

This convergence of epidemiology, phylogenetics, and environmental DNA makes the market-origin hypothesis extraordinarily strong. Science works by testing attempts to refute hypotheses. Every attempt to dismiss the market as mere “amplification” has been refuted. No line of evidence contradicts it. By contrast, for the lab-leak idea, no supportive evidence has ever been found. Claims about manipulated sequences, hidden viruses, or altered data have consistently been disproven.

The picture that emerges is clear: Huanan market is the only plausible epicenter.

BM: I recall there was even a graph you’ve referred to in past discussions that compared potential amplification sites across Wuhan. If, hypothetically, an infected scientist had carried the virus out of the Wuhan lab, you’d expect it to spark outbreaks at large gatherings—say, a scientific symposium, a packed shopping mall, or a movie theater. Wuhan is a city of 12 million people, with venues hosting thousands. Yet the outbreak began at Huanan—a relatively small, local market—and not in those other places.

PM: Exactly. Wuhan itself has over 12 million residents, and including its metropolitan region, closer to 20–30 million. When the city locked down, that was the scale. If an accidental lab infection had sparked the outbreak, why would the first explosion of cases appear in this one small corner of the city—and not in large, high-density venues?

And here’s the critical point: genomic analysis shows two introductions, Lineage A and Lineage B, at the market. If this is taken seriously, it’s game over for the lab-leak hypothesis. To believe otherwise, you’d have to imagine a lab worker infected with one strain visiting a market they likely never frequented, triggering an outbreak there—but infecting no one in their home, workplace, or daily life. Then, somehow, a second worker with a slightly different strain does the exact same thing, again seeding the same small market.

That is not just unlikely—it’s absurd. One such coincidence would already strain credibility. Two is beyond belief.

Science demands that theories explain the evidence we already have. The zoonotic hypothesis explains it elegantly: multiple spillovers from animals sold at the market, spreading outward through the community. The lab-leak hypothesis explains none of it. Even if you assume the lab had a virus like SARS-CoV-2—which no evidence supports—it still cannot account for the clear outbreak pattern centered at Huanan market.

This is why, on scientific grounds, the market origin remains the only plausible explanation.

BM: That was the point I wanted to emphasize. In Worobey’s paper, even the unlinked cases were statistically more strongly associated with the Huanan market than the linked ones. But I raise this not just as a scientific matter, but as a political one.

The “lab leak” isn’t just an alternative hypothesis—it functions as a political ploy. Think of the “magic bullet” theory in the Kennedy assassination. The Warren Commission concluded that a lone gunman, Lee Harvey Oswald, fired all the shots from the Texas Book Depository. But the ballistics evidence never matched the narrative. It required believing in an implausible trajectory—a “magic bullet”—to hold together the official story.

In a similar way, the lab-leak narrative demands belief in improbabilities that do not fit the evidence. But politically, it serves a function. COVID-19 has killed millions globally, with excess deaths approaching 30 million. Governments failed to stop it—“let it rip, let the bodies pile high.” If you admit the virus emerged naturally, you’re forced to confront uncomfortable truths: pandemics are part of human history; human encroachment into nature drives spillovers; prevention requires systemic change. Politically, that admission is unacceptable. It’s easier to invent an enemy.

So, the lab leak is not a neutral hypothesis. It is a political necessity. It provides someone to blame—China, scientists, even public health institutions—while deflecting responsibility from the policies and economic interests that magnified the pandemic’s toll.

PM: I understand what you mean. Conspiracy theories always serve as an adversarial function. They thrive in times of confusion, fear, and grievance. They act as a kind of emotional bandage—junk food for our most pressing anxieties.

And yes, they are easily weaponized. History shows this. During the 1918 influenza, people blamed the Germans. With HIV, it was “the Americans did it.” During Ebola outbreaks, suspicions turned to military labs. With Zika, it was mosquito engineering. Every pandemic spawns conspiracy theories.

But with COVID-19, several factors made the lab-leak narrative uniquely powerful. First, it was the first pandemic of the 21st century, unfolding in a completely new information environment shaped by social media. Second, U.S.–China geopolitical rivalry was already intense, making China an easy scapegoat. Third, polarizing ‘us versus them’ politics returned.

And importantly, the target of the conspiracy shifted. At first, the “enemy” was China. Later, it became our own scientists: NIH researchers, virologists, anyone associated with pandemic preparedness. The goal was to destroy credibility, dismantle institutions, and rewrite history so Trump’s disastrous pandemic response appeared less culpable.

That's why I call it a narrative of power. Conspiracy theories don't just comfort people—they mobilize them. COVID was a trauma that touched everyone. Like 9/11, but on a vastly greater scale, it left people desperate for answers. Why did my relative die? Why did I lose my business? Into that void step manipulators, who channel this energy through influencers, media, and politicians. The lab-leak narrative became a weapon—not to understand the virus, but to harness anger and direct it toward political enemies.

The importance of preventing future pandemics

BM: In an interview you did with Andersen and Worobey in 2022, Andersen said something important: the purpose of origins research is not to assign blame but to prevent future pandemics. He stressed that we need to understand all the different points where a virus can enter humans, because viruses are constantly trying. If we aren't allowed to do that work, we can't protect the public.

That resonated with me, especially considering Peter Daszak's portrayal in the documentary *Blame*, and the attacks on Shi Zhengli, Andersen himself, and others. The fundamental issue is that these events will happen again. If political pressure prevents us from addressing them, the consequences will be catastrophic. This brings us to the concept of "upstream factors." Many readers may not be familiar with that. Could you explain what upstream factors are, and why they matter so much?

PM: That's a crucial question. People talk about lab safety, but biosafety doesn't end at the lab door. The far greater risks lie in nature—in the ecological, economic, and cultural practices that drive spillovers. These risks are orders of magnitude higher than anything happening in labs today.

Future pandemics will almost certainly emerge from the natural world: from our interactions with wildlife, our livestock, and our environments. And the risk is growing. Human expansion into previously untouched habitats—especially bat-rich ecosystems in Southeast Asia—brings us into ever-closer contact with reservoirs of novel viruses.

At the same time, global megacities create ideal conditions for outbreaks. Once a pathogen reaches a dense, globally connected city, it can spread internationally before the first cases are even recognized. Modeling studies, such as those by Jonathan Pekar and colleagues, show that in a small village most spillovers die out. But in a megacity, repeated spillovers are almost guaranteed to establish human-to-human transmission chains.

This is why the wildlife trade, wet markets, and human encroachment into natural habitats matter so much. They are the upstream factors—the front lines where spillover occurs. If we ignore them and focus only on hypothetical lab accidents, we are missing the real and far greater danger.

BM: The point about upstream factors is critical. Every pandemic in history has been shaped by socioeconomic conditions. The "Russian flu" pandemic of the 1890s likely began in Georgia before spreading through Europe. The 1918 influenza may have originated in Kansas, but it spread explosively because of World War I—soldiers crowded in camps and trenches created the perfect conditions.

In other words, pandemics always require fuel: human interaction, density, mobility. Today, megacities provide that fuel on an unprecedented scale. They are almost inevitable launchpads for new pandemics.

PM: Exactly. Take HIV. Its emergence was directly tied to the rapid growth of Léopoldville (now Kinshasa) in the early 20th century. What we now recognize as multiple independent HIV introductions occurred as the first African megacity took shape, providing conditions for sustained

transmission.

Or look at Mpox. Long endemic in rural areas, it exploded once it entered urban populations in Nigeria and Congo. Cities accelerate outbreaks.

That's why "upstream factors" matter. As Alice Hughes explained in her research, wildlife trade is porous. Animals move across borders, carried on buses, traded in informal markets. A colleague once sent her a photo of a wild animal in a cage on public transport—no biosafety, no barriers. And as she noted, this isn't going to stop. These practices are embedded in local cultures and economies. Our job is to understand and mitigate the risk, not imagine we can eliminate it.

BM: Could you explain the karst region and why it is so central to the origins of SARS-CoV-2?

PM: The karst region is a vast limestone and dolomite formation stretching across Southeast Asia and southern China—through Yunnan, Myanmar, Laos, and northern Thailand. It's one of the most biodiverse regions on Earth, rivaled only by the Amazon. And it is bat territory: millions of bats roost in countless caves.

Alice Hughes spent decades working in this region, documenting biodiversity, climate, and wildlife. I traveled there as well, visiting caves in northern Thailand. When you stand at the mouth of a cave and millions of bats stream out for nearly an hour, you realize how vast the reservoir is—and how many coronaviruses are circulating, constantly recombining.

Serology studies show that up to 20 percent of forest workers in Myanmar already carry antibodies to unknown SARS-related coronaviruses. This tells us human exposure is ongoing. There is, as I often say, an *ocean* of bat-borne viruses. And every time scientists take a sample—like dipping a bucket into that ocean—they pull up something new.

This is why upstream risks dwarf lab risks. In nature, there are countless uncontrolled interactions between wildlife, livestock, and humans: guano collection, hunting, wildlife farming, tourism, logging, mining, roadbuilding. Viruses jump from bats to intermediate animals, sometimes directly to humans. By contrast, in laboratories, researchers handle limited viral sequences under protective conditions. The benefits of studying these pathogens—in vaccine development, risk assessment, bio-surveillance—far outweigh the risks.

And yet, politically, the opposite conversation dominates. Biosafety in labs is already high, but resources are being cut from field research and surveillance. Students trained to identify, mitigate, and respond to spillovers are losing funding. Programs that placed "boots on the ground" to educate farmers, monitor wildlife farms, and detect outbreaks early are being dismantled.

If communities come to believe that "scientists caused the pandemic," how will they ever trust scientists to intervene? How will wildlife farmers accept guidance, or local communities change practices, if they are taught to see science as the enemy?

This is what worries me most: instead of learning from COVID-19, we are unlearning. Rather than strengthening our defenses, we are weakening them. Instead of preparing for the next spillover, we are ensuring that when it comes, we will be less ready. That is the tragic political consequence of the lab-leak narrative.

BM: To underscore the point: pandemics are not confined to China or Southeast Asia. The spread of H5N1 bird flu in the United States shows this clearly. The 2009 H1N1 flu emerged in Mexico. SARS-1 spread globally, and while it was contained, that was more a matter of luck—the virus was contagious only after symptoms appeared, making it easier to control.

The lesson is that pandemics are always global, not national. Yet instead of addressing the systemic risk, we've been distracted by the so-called "gain of function" debate—one of the hallmarks of the lab-leak conspiracy narrative. The term has a very specific scientific meaning, but it has been deliberately misused in public discourse.

Stoking panic over “gain of function” research

PM: Right. In science, “gain of function” simply means giving an organism a new trait. That could mean inserting a genetic sequence into a virus or, conversely, deleting one and seeing if the virus gains a new property. It’s a functional description, not a synonym for danger.

With viruses, the regulatory term has evolved into “gain-of-function research of concern” or “enhanced potential pandemic pathogens (ePPP).” The point is oversight: ensuring that work on human pathogens doesn’t make them more transmissible or virulent in ways that pose unacceptable risks.

But in public debate, “gain of function” has become a poisoned term. People hear it and imagine scientists recklessly creating deadly viruses. In fact, sometimes “loss of function” mutations can be more dangerous. For example, deleting the furin cleavage site from certain coronaviruses has made them more lethal in cats. So, the reality is far more complex.

I titled one of my chapters “Nature’s Neglected Gain-of-Function Laboratory” to make this point. Viruses are constantly gaining new functions in the wild. When you put raccoon dogs, pangolins, civets, and birds together in wildlife markets or along smuggling routes, viruses cross-infect, recombine, and evolve. This uncontrolled “natural gain of function” is vastly riskier than the tightly regulated lab experiments people obsess over.

Yet instead of talking about the \$70 billion Chinese wildlife farming industry—or the additional billions in cross-border smuggling from Southeast Asia—we’re fixated on lab work. That’s the real distraction.

BM: And in the U.S. that distraction has been weaponized. Figures like Senator Rand Paul and scientists such as Richard Ebright and Jay Bhattacharya have aligned with political actors to delegitimize entire fields of research. Ebright even testified before Congress calling for papers like “*Proximal Origin*” [Andersen et al., *Nature Medicine* 2020] to be retracted—essentially demanding that the scientific record be rewritten.

When prestigious academics collude with political apparatuses in this way, it says something profound about the crisis of science under capitalism. It’s not just a misunderstanding; it’s a deliberate attempt to erase evidence.

PM: Yes. What we are seeing is a kind of moral panic. The term “Gain of function” has been turned into a red-flag term, stripped of nuance, and used to stoke fear. Richard Ebright has long been hostile to virology. Others, like Michael Lin or Wayne Hobbs, have similar long-standing critiques. Some advocate shifting funding away from virology altogether and into antimicrobial research.

Those positions were fringe before COVID-19. Now, because of political expediency, they’ve gained traction. I see this as dangerous. When you let a handful of ideologues dictate what science can be done—ignoring evidence, ignoring peer review—you begin to approach something like Lysenkoism in the Soviet Union, where genetics was suppressed for decades because it conflicted with ideology.

Ebright and his allies are, in my view, modern-day Lysenkoists. Their arguments deny the enormous benefits virology has brought from basic knowledge of pathogens to tools for vaccines and therapies. Gene therapy, for example, is technically “gain of function,” since it uses modified viruses to deliver corrective genes to patients. Are we to call that dangerous too?

Labeling an entire field “illegitimate” because of politics is anti-scientific. It punishes thousands of researchers who submit proposals, undergo risk-benefit evaluations, and work under stringent oversight. To pretend that all this expertise and review can be dismissed because “I

believe this is dangerous” is profoundly reckless.

If this trajectory continues, the U.S. risks dismantling its own pandemic preparedness capacity. And history shows where that leads: more vulnerability, not less.

BM: It raises a fundamental question, and perhaps we can conclude here. Early in the pandemic, I sensed that many scientists wanted only to do their work. They didn’t want to be caught in politics or controversy. But watching how events have unfolded—the 2023 hearings with Worobey and Andersen, the 2024 witch-hunt against Peter Daszak—it’s clear that politics has engulfed science. NIH scientists are losing grants, even their jobs.

Scientists, I think, are developing a stronger political consciousness than before. And that’s an important and positive development. What are your thoughts?

PM: I agree. Traditionally, scientists have sought independence from politics. The idea was that good science required neutrality—no ideological favoritism. But reality has shifted. It’s not that scientists are pushing ideology into politics; it’s that politics is increasingly intruding into science.

We’ve seen this before. Tobacco companies manufactured doubt to block regulation. Fossil fuel interests did the same on climate change. During COVID, right-wing business networks pivoted quickly—first against lockdowns, then against virology itself. They found political gain in undermining science.

Figures like Bhattacharya at the Brownstone Institute openly argued against public health measures, prioritizing economic interests over life. Scientists became scapegoats for these agendas. To defend themselves, they had no choice but to recognize the political battlefield they were placed on.

And you are right—scientists are now more outspoken. They’ve realized that silence isn’t neutrality; it’s surrender. If they don’t defend evidence-based inquiry, no one else will. Scientists are a minority in every country. Journalists are weakened by collapsing media ecosystems. If both remain silent, truth itself is left undefended.

Of course, scientists must also reflect on their role. For too long, many lived in ivory towers, buffered by public trust and generous funding. The pandemic fractured that trust. Politicians, charlatans, and business interests exploited the gap between science and society, deepening public mistrust. Bridging that gap now requires effort on both sides: scientists must engage more directly with the public, and citizens must reclaim science as a defense against manipulation.

We are living in a dangerous moment. If evidence-based discourse collapses, if truth is dictated only by those with the loudest megaphones or the greatest wealth, society will lose something essential. And history shows it is not easily recovered once gone.

BM: Any final thoughts? You’ve been immersed in this for five years. Few have studied the question of COVID’s origins as deeply as you.

PM: Perhaps one last point. In my book and in the documentary *Blame*, I tried to show that scientists are human beings. They are not just national symbols or institutional functions. They are people motivated by curiosity, by idealism, and by a desire to understand the truth.

That spirit—the spirit of the Enlightenment—is worth defending. Democracies thrive only when there is a shared set of facts we can agree on. If we allow scientists to be vilified, silenced, or marginalized, we undermine that foundation.

So, my warning is this: once we lose a culture of truth, it is not clear how we ever recover it. My hope is that we remember scientists are not enemies, but fellow human beings working for the common good. That recognition is essential—not just for science, but for society itself.



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