

The Rise of the Next Pandemic, in Modern Times

With the consequences of the COVID-19 pandemic, health officials and scientists are scrambling to prepare for the next one. Here's why it's become harder than ever:

by Maggie Hua | May 12, 2025



People wearing protective face masks during the COVID-19 pandemic. ABC News, May 6, 2020

Black Death. The 1918 Spanish influenza. The HIV/AIDS crisis. All of these events have been considered historical and critical mass pandemics, with all having death tolls in the millions. Public health officials have warned the public for decades about the emergence of a new pandemic, dating back to the pre-COVID times. In a [2006 simulated model](#) replicating transmission in Great Britain and the United States, scientists found that a combination of preventative measures, such as isolation and quarantine protocols and updated vaccinations, can significantly reduce the spread of a pandemic in the short term. For the long term, having effective and proper policy effectiveness is key for prevention.

On January 30th, 2020, the [World Health Organization](#) declared SARS-CoV-2 as a Public Health Emergency of International Concern, with the virus declared as a global pandemic just less than two months later, on March 11th, 2020. Five years later, people still continue to face its consequences today, both physically and mentally. To this day, COVID-19 still lingers in communities, and while the quantitative numbers do not accurately reflect cases as they used to, many are still hospitalized and treated daily.

COVID-19 research has been more rampant than ever before. Within the span of a few years, nearly [150,000 research articles have been released](#), with more than 17 million genome sequences studied in relation to COVID-19 so far. The power to study an ongoing and rising pandemic at the time was rare, but crucial in determining treatments for the deadly virus along with the goal to study its evolution in real time. While the World Health Organization (WHO) ended its global health emergency on May 3rd, 2023, scientists worldwide continue to work together to tackle and understand why this virus was so powerful in transmission in conjunction with societal effects. However, some scientists are worried about their research being cut—with recent political appointments in the United States along with the spread of misinformation and fear mongering, history is doomed to repeat itself in the future.

THE BASICS OF PANDEMICS

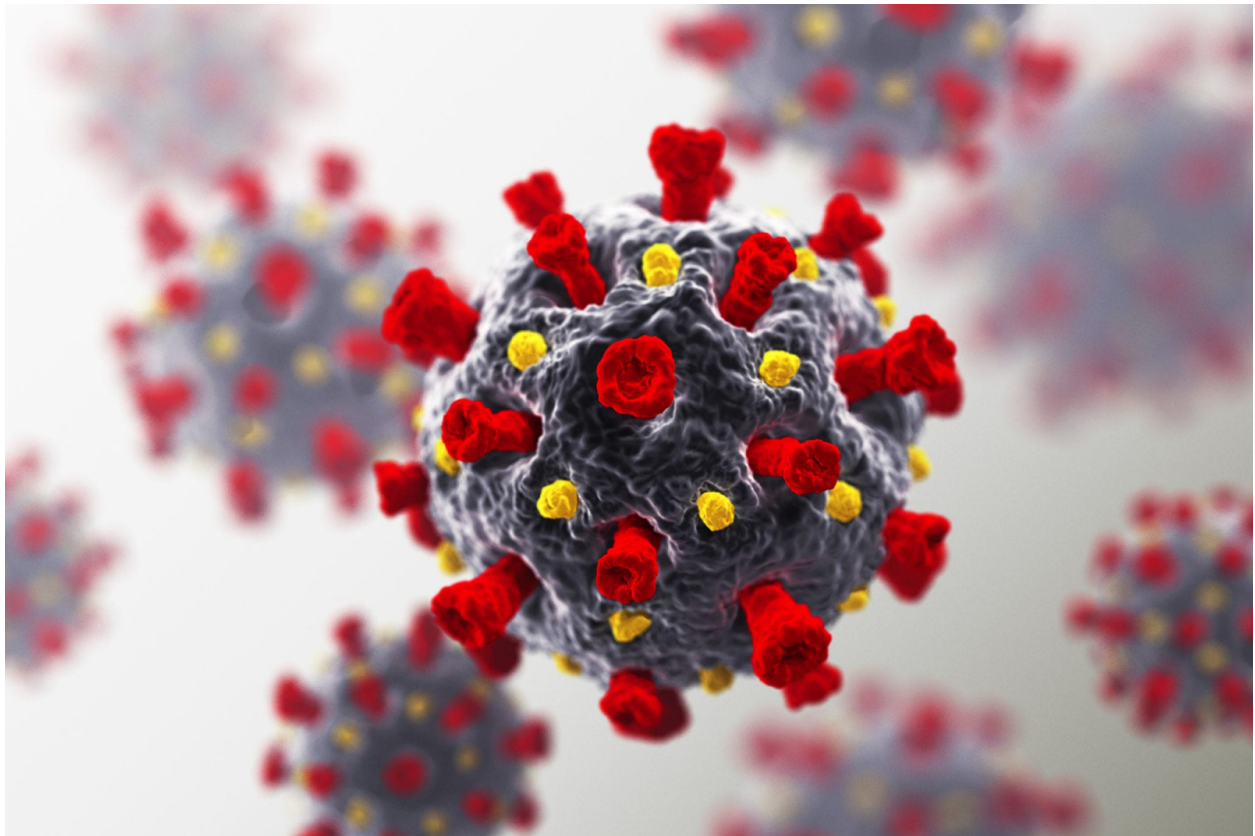
Historically, pandemics have started with the interface between humans and animals: in particular, the pathogen must be specialized, allowing itself to transmit between humans at certain stages. This human and animal interface, ranging from zoonotic diseases being exclusive to animals to exclusive to

humans, is important for understanding the spread of a certain virus. In similar spreads such as the SARS outbreak in 2002-2004, animal (specifically horseshoe bats) to human transmission was found as the [source](#) of SARS-CoV through hosts in China. Sounds similar?

While the origin of the SARS-CoV-2 virus still remains unknown and up to debate, previous studies has shown its linkage to a wet market in China, likely coming from a primary (bats) or secondary (pangolins, civet cats) source in spreading the zoonotic disease. Outbreaks involving zoonotic transmissions are not new, as these types of diseases will undergo “[host-switching](#)”, going from an animal source to a human one, due to the fact that we share a number of determinants to provide opportunities to, such as shared host cell receptors and the genetic distance between hosts. Primary contact through saliva or bites allows zoonotic diseases to enter humans, which then replicates inside living cells to build viral protein. However, this does not disregard other theories that have floated around in the epidemiology world, including the potential of the virus being laboratory grown or having different places of origin. SARS-CoV-2 is the third fatal bat-virus associated human disease and fourth bat-virus associated disease in nearly two decades. Regardless, all are coronaviruses, classified as RNA viruses that have spikes (where they get their name), allowing them to attach onto the surface of cells. This virus then “hijacks” the cell’s replication process, forcing this system to replicate the viral RNA that go forward in infecting neighboring cells as well.

One of the primary reasons as to why pandemics with zoonotic origins spread are due to social and environmental factors, such as the supposed linkage to the wet market in Wuhan, China. In particular, areas of Africa, the Middle East, and

Southeast Asia are known to be global animal hotspots for animal coronaviruses to emerge due to their population of zoonotic animals, like bats. In addition, capitalistic human-animal interactions such as wet markets, bat tourism, wildlife supply chains and more increase the chances of spread and lack of detection.



A modeled picture of a coronavirus molecule, the basis of the SARS-CoV-2 virus that swept the nation 5 years ago. Georgia State University, 2021

COVID RESEARCH UNDER FIRE

Politics has always been intertwined with the field of science, especially in recent years following medical advancements and the COVID-19 pandemic. This is particularly seen with the new Trump administration, which entered into office on January 20th, 2025. Throughout his presidential campaign, Donald J. Trump has been insistent on sharp federal cuts throughout the board, targeting

departments that he insists have been overfunded or deemed unnecessary. In February 2025, the National Institutes of Health (NIH) announced that “indirect funding” would be capped at 15%, equating to a \$4 billion grant funding cut, attacking not only research institutions, but also higher education, such as colleges and universities, that produce groundbreaking research and rely on governmental funding to continue. This breaking news is in conjunction with the appointment of Trump’s Department of Health and Human Services (HHS)’s secretary, Robert F. Kennedy Jr, who has proposed the slashing of federal health spending along with the consolidation of a number of different departments. In a preliminary plan reported by [CNN](#), the NIH’s budget would be reduced by over 40%, along with reducing 27 research institutes and centers to just 8, over a 70% decrease.

As noted in [Nature](#), the NIH is the largest public funder of biomedical research, providing irreplaceable funding for research in a multitude of different fields and disciplines. On April 7th, 2025, the Trump administration slashed 17.1% of COVID-19 related grants, noting that the research did not align with “agency interests” and that the pandemic was well over. With science previously being a stable and dominant field, especially in the height of the COVID-19 pandemic, the sudden slashing of grants and government funding left and right have left scientists worried about the continuity and longevity of the research that many have spent years on, due to its relation to COVID-19. For example, in March 2025, it was reported that the NIH had [slashed funding for RECOVER](#), fully named Researching COVID to Enhance Recovery, that focused on research in relation to long COVID, a consequential condition that the [WHO](#) estimates that approximately 6 out of 100 COVID-19 patients develop. While the administration

did eventually retract its statement [a few days later](#), it creates an environment of confusion and worry, with vague guidelines on determining what grants are cut, even if its proposal mentions something as minute as COVID-19. “Some of us are concerned that our entire labs are going to get wiped out at some point,” [says P.J. Utz](#), an immunologist at the Stanford University School of Medicine. In relation, the HHS shuttered the Office of Long Covid Research and Practice that same month, bringing in more worry. On [Politico](#), an anonymous HHS employee noted that “Long COVID impacts every facet of somebody’s life - their ability to go to school, their ability to take care of their children, their ability to go to work and get health care”, making the closing of said offices worse in the long run.

“This means that the lives of my children and grandchildren - and maybe yours - will be shorter and sicker, because discoveries will not be made. It means that NIH research that has been the backbone of the high-tech health economy will be gutted, reducing their economic opportunities,” [noted Dr. Theodore Iwashyna](#), a professor of pulmonary and critical care medicine and of health policy and management at John Hopkins University. [U.S. Senator Patty Murray](#), a Democrat from Washington, highlighted that these funds “help produce breakthroughs that change patients’ lives, prepare us for pandemics and other health threats, and ensure the U.S. continues to be the global leader in biomedical research”, reverting backwards into groundbreaking science.

Research in relation to epidemiology is crucial to understanding how pandemics work along with limiting the consequences of the next one. From its genomic source to understanding the statistics of the transmission, halting or choosing to retract funding on topics in relation to a historical event that is now discarded as

“old news” will not help future researchers and scientists in fighting science. Modern society will now undergo one of the largest events in recent history, followed by the devastation of knowledge and information due to the fact that researchers will be unable to understand how this particular pandemic devastated the lives of hundreds of millions. Many questions in relation to COVID-19 are still yet to be answered: the exact source of the virus, how it is able to bypass certain systems in the body, how it became so devastating despite worldwide efforts to isolate and lockdown and more, all weakening the infrastructure that the United States took years to secure its place in modern scientific research.

RESPONDING TO A PANDEMIC

As the pandemic slowly dwindles down to the point where COVID-19 holds a similar ranking to the common cold and flu, society must learn from the mistakes it made five years ago. This wake-up call post-pandemic means that countries and their governments must start (re)building a pandemic awareness plan, knowing that a pandemic as large as the SARS-CoV-2 virus is bound to create a major impact again. We must prepare for a future pandemic as we do for war internationally: unlike worldwide organizations like NATO that have mobile units that deploy quickly, [the world does not fund an organization](#) similar to that if a pandemic were to occur again. The WHO must be more funded by countries around the world, as we do not have a global warning and response system for outbreaks, such as health surveillance systems, personnel equipped for responding to pandemics quickly, and backup medical supplies needed to fight an emerging and unknown virus. In the long term, we must shift our focus in funding not only antibiotic and antiviral research and medicines for the sake of

our future's health, but also supporting healthcare systems in other countries that may not be as advantageous with their resources like the United States. Many were reminded of the [stark disparities and differences](#) between countries, especially when it came to the deployment of necessary vaccines, masks, and rapid antigen tests. In society, researchers and scientists must continue to develop a relationship with the public, bringing both public trust and transparency in the work that they do and how it will help the future generations. With an environment driven by social media and technology that has the potential to fuel misinformation, we must focus on translating scientific jargon into a plate that is digestible and understandable for those who need it the most. Politically, in the United States, we must continue to fight against those who choose to not prioritize and acknowledge the importance of immunology and epidemiology research, as "[the more time passes, the harder it will be to prioritize pandemic preparations](#)". It is a rare opportunity to devote research, time and resources to understand a "once-in-a-lifetime" event that has recently devastated the world socially, economically and politically. But as society *slowly* starts getting back into the norm, we cannot forget about the COVID-19 pandemic. And in the words of [Nature](#): "Do not let history be forgotten - or worse, rewritten".