



Mandy Cohen previously served as North Carolina's health secretary.

in its response to the emergency.

One of the priorities for the new director, Varma says, is to restore support for public health among politicians, community groups and citizens. "That means spending a lot of time with elected officials to help them understand how this work, on a day-to-day basis, is benefiting their constituents," says Varma, who worked at the CDC for 20 years. Public-health agencies, he says, "have not communicated strongly enough how they are very similar to fire departments and police departments, in that they keep people safe".

Another priority should be modernizing the CDC's data systems, which still rely on fax machines as the primary mover of information in some communities, says Georges Benjamin, the executive director of the American Public Health Association in Washington DC. "The CDC is always getting data way too late," he says. "And that means we're chasing very dangerous infectious diseases, and we're behind the curve all the time."

Brain drain

Staff shortages could also be a problem for Cohen. Varma notes that several mid-level and senior officials have left the CDC in the past few years because they felt that it didn't provide a supportive work environment. "The new director will face a very big challenge in trying to recruit high-quality people to the CDC and, even more importantly, to retain them in the agency," Varma says.

Public-health experts say that the CDC needs to be more action-oriented and ready to make quick decisions based on the available science.

Over the past several decades, Varma says, the agency has become increasingly technocratic, focusing heavily on scientific and policy issues. "All of those are very important.

But the challenge is that, when you focus on those issues, you lose some of the boots-on-the-ground expertise," he says.

Benjamin notes that Walensky has already started to move the agency in that direction. "That's a cultural change and those are tough to do. But Dr Cohen demonstrated that kind of attitude as a health commissioner in North Carolina, so we would anticipate she'll bring that style to the CDC."

Implementing some of the necessary changes might be difficult with the agency's current budget, however. According to a report published last month by Trust for

America's Health (TFAH), an advocacy group in Washington DC, the CDC's budget rose by just 6%, after adjusting for inflation, over the past decade (see go.nature.com/3k1s0vc). That wasn't enough to keep pace with emerging threats and the country's growing public-health needs, the report said. "Underfunding will continue to limit how modern and effective the CDC can be," says Dara Lieberman, director of government relations at TFAH and one of the authors of the report.

The CDC also needs to have more flexibility in how it manages its resources, Lieberman says. "Congress has placed very strict limits on how things like emergency funding can be spent," she says. When mpox emerged, for example, congressional rules barred health departments from using their COVID-19 response funding for mpox vaccination.

One area that has been especially underfunded, Lieberman adds, is chronic-disease prevention. "We're spending over US\$4 trillion a year on health-care costs, but only about 4–5% of that is spent on preventing disease," she says. "Instead of paying so much to treat conditions once people have them, we could get a major return on investment if we tried to address the root causes of disease."

Joshua Sharfstein, a vice-dean at the Johns Hopkins Bloomberg School of Public Health in Baltimore, Maryland, thinks that the CDC has already entered a rebuilding phase. In August 2022, Walensky launched the Moving Forward initiative, aiming to reorganize the agency. The CDC "is on the right track", Sharfstein says, "and I think Dr Cohen will be a terrific leader to go even further".

SCIENTISTS USED CHATGPT TO GENERATE A WHOLE PAPER FROM DATA

An autonomous system prompted ChatGPT to write a paper that was fluent and insightful, but flawed.

By Gemma Conroy

A pair of scientists has produced a research paper in less than an hour with the help of ChatGPT – a tool driven by artificial intelligence (AI) that can understand and generate human-like text. The article was fluent and insightful, but researchers say that there are many hurdles to overcome before the tool can be truly helpful.

The goal was to explore ChatGPT's capabilities as a research 'co-pilot' and discuss its

advantages and pitfalls, says Roy Kishony, a biologist and data scientist at the Technion – Israel Institute of Technology in Haifa.

The researchers designed a software package that automatically fed prompts to ChatGPT and built on its responses to refine the paper over time. This autonomous data-to-paper system led the chatbot through a step-by-step process that mirrors the scientific process, from initial data exploration, through writing data-analysis code and interpreting the results, to writing a polished manuscript.

To put their system to the test, Kishony

News in focus

and his student Tal Ifargan, a data scientist also based at Technion, downloaded a publicly available data set from the US Centers for Disease Control and Prevention's Behavioral Risk Factor Surveillance System. The database includes information from more than 250,000 people, who were interviewed by telephone about their diabetes status, fruit and vegetable consumption, and physical activity.

The authors then started their system and went for lunch.

A common problem with generative AI tools is their tendency to fill in the gaps by making things up, a phenomenon known as hallucination. To help address the possibility that it would make up references, the team allowed ChatGPT to access literature search engines so that it could generate correct citations.

By the end of lunch, ChatGPT had generated a clearly written manuscript with solid data analysis. But the paper was not perfect. For instance, it states that the study "addresses a gap in the literature" – a phrase that is common in papers but inaccurate in this case, says Tom Hope, a computer scientist at the Hebrew University of Jerusalem. The finding is "not something that's going to surprise any medical experts", he says. "It's not close to being novel."

Kishony also worries that such tools could make it easier for researchers to engage in dishonest practices such as *P*-hacking, for which scientists test several hypotheses on a data set, but only report those that produce a significant result.

Another concern is that the ease of producing papers with generative AI tools could result in journals being flooded with low-quality papers, he adds. The team's data-to-paper approach is specifically designed to create papers that explain the steps ChatGPT took, meaning that researchers can understand, check and replicate the methods and findings, says Kishony.

Vitimir Kovanović, who develops AI technologies for education at the University of South Australia in Adelaide, says that there needs to be greater visibility of AI tools in research papers. Otherwise, it will be difficult to assess whether a study's findings are correct, he says. "We will likely need to do more in the future if producing fake papers will be so easy."

Generative AI tools have the potential to accelerate the research process by carrying out straightforward but time-consuming tasks – such as writing summaries and producing code – says Shantanu Singh, a computational biologist at the Broad Institute of MIT and Harvard in Cambridge, Massachusetts. They might be used for generating papers from data sets or for developing hypotheses, he says. But because hallucinations and biases are difficult for researchers to detect, Singh says, "I don't think writing entire papers – at least in the foreseeable future – is going to be a particularly good use."



Brad Wenstrup is chair of the Select Subcommittee on the Coronavirus Pandemic.

ANNA MONEYMAKER/GETTY

US HEARING PRODUCES HEAT BUT NO LIGHT ON COVID-ORIGINS DEBATE

Congressional showdown does little to prepare the country for the next pandemic, observers say.

By Max Kozlov

Republicans in the US House of Representatives have accused the authors of a 2020 commentary in a scientific journal of colluding with government officials to stifle conversation about COVID-19 origins. Two of the authors – Kristian Andersen, an evolutionary biologist at Scripps Research in La Jolla, California, and Robert Garry, a virologist at Tulane University in New Orleans, Louisiana – appeared before the Select Subcommittee on the Coronavirus Pandemic on 11 July to categorically deny these allegations.

Rumours spread in early 2020 that the coronavirus SARS-CoV-2 was a bioweapon created at the Wuhan Institute of Virology in China. So, Andersen, Garry and their co-authors looked at the available genomic data to determine whether the sections that encode the spike protein – which the virus uses to gain entry to cells – showed signs of genetic engineering. The scientists published their findings as a commentary in *Nature Medicine*, in which they concluded that they "do not believe that any type of laboratory-based scenario is plausible" (K. G. Andersen *et al. Nature Med.* 26, 450–452; 2020). (*Nature* is editorially independent of *Nature Medicine*, and *Nature's* news team is

independent of its journal team.)

The US intelligence community is split on the origin of the pandemic. The scientists nevertheless stood by their original assessment at the hearing. They noted that, although there are many possible scenarios for the origin of the pandemic, the available scientific data support a natural origin, in which the virus spread from animals to humans.

Whereas some scientists have said that the authors' emphatic conclusion might have been premature in March 2020 as the pandemic was just beginning, they say that the tone of the hearing served only to further politicize the origins conversation. "This is a very antagonistic set-up which doesn't do anyone any favours," says Filippa Lentzos, a biosecurity researcher at King's College London. With the way that the hearing was framed, she says, "We all lose."

A change of mind

The polarization of US politics was on full display at the hearing. Republican members of the committee hammered Andersen and Garry with allegations of collusion with government scientists, whereas Democratic members praised the scientists' work and accused Republicans of making it more difficult to uncover the true origin of the pandemic.