

ARTICOLI IN EVIDENZA › SCICHECK

Teorie della cospirazione senza fondamento sostengono che il nuovo coronavirus è stato bioingegnerizzato

*Di Jessica McDonald**postato su 7 febbraio 2020*

Quick Take

Diverse storie online affermano erroneamente che il nuovo coronavirus contiene "inserzioni" di HIV e mostra segni di creazione in un laboratorio. Ma non ci sono prove che il nuovo virus sia stato bioingegnerizzato e ogni indicazione provenga da un animale.

La storia completa

Le ultime teorie del complotto sul nuovo coronavirus, che per primo hanno portato a un [focolaio](#) a Wuhan, in Cina, alla fine del 2019, affermano che il virus è stato creato dall'uomo, piuttosto che il risultato naturale delle persone che entrano in contatto con animali selvatici.

Abbiamo già visto [affermazioni simili prima](#), ma questa volta molte affermazioni sono alimentate da un articolo scientifico inedito - e altamente dubbio -. Analizzando le sequenze genetiche o proteiche del virus, molte di queste storie hanno un'aura di credibilità scientifica. Ma gli scienziati che studiano i virus affermano che non sono corretti.

One [set of stories](#), subsequently [shared on](#) Facebook, inaccurately asserts a link between the new coronavirus, also [known](#) as 2019 novel coronavirus, or 2019-nCoV, and HIV, largely based on an [unpublished manuscript](#) by scientists in India.

The paper, which was posted on the preprint website [bioRxiv](#) (pronounced “bio-archive”) on Jan. 31, claimed to have identified very short “insertions” in the virus’ protein sequence that had an “uncanny similarity” to HIV. [Numerous scientists](#), however, [almost immediately](#) pointed out flaws in the analysis, noting that the sequences are so short, they match a bevy of other organisms — and there’s no reason to conclude they derive from HIV. The paper was voluntarily [withdrawn](#) by its authors just two days later, with one [saying](#), “It was not our intention to feed into the conspiracy theories and no such claims are made here.”

But the speedy withdrawal wasn’t fast enough to prevent some websites from picking up the story and concluding that the new coronavirus had been crafted in a laboratory.

A ZeroHedge [article](#) with the headline, “Coronavirus Contains ‘HIV Insertions,’ Stoking Fears Over Artificially Created Bioweapon,” pounced on some of the language in the preprint to argue that the scientists were saying the virus might be “man-made.” The story also cited tweets from a [visiting scientist](#) at Harvard who had commented on the preprint and stated that the scientist’s tweets suggested that the virus “might have been genetically engineered for the purposes of a weapon.”

ZeroHedge is a website that we’ve written [about before](#), including for spreading the [false idea](#) that the new coronavirus was stolen from a lab in Canada and then weaponized by the Chinese government.

Originally published the same day of the preprint, the ZeroHedge article was updated the following day to include tweets from the Harvard visiting scientist, who by then had seen some of the criticisms of the preprint and was now advocating for additional studies to be done before jumping to any conclusions. The Harvard scientist, it should be said, is an [epidemiologist](#), health economist and nutritionist, and does not have expertise in virology or bioinformatics. The bulk of the article, however, remains unchanged.

Well after the preprint was withdrawn, a website [that traffics](#) in vaccine misinformation, Health Impact News, also [highlighted](#) the invalid HIV connection.

Separately, a blogger [posted](#) a different bogus analysis — also making the [rounds](#) on Facebook — that posits a portion of the new coronavirus genome is similar to part of a viral vector that was used in previous research on the severe acute respiratory syndrome, or SARS, virus. Based on this, the author argues that the new virus could have leaked from a Chinese lab working on a vaccine. The SARS virus caused a global [outbreak](#) in 2003 and is similar but distinct from 2019-nCoV.

Alex Jones, the conspiracy theorist behind InfoWars and the [false idea](#) that the [Sandy Hook school shooting](#) in 2012 was a hoax, also waded into the coronavirus misinformation pool. [Multiple episodes](#) of his talk show address both of these

groundless theories and claim there is evidence that “proves” the new coronavirus was “man-made.”

Scientists with expertise in viral genomics, however, say that no such evidence exists. [Kristian Andersen](#), the director of infectious disease genomics at the Scripps Research Translational Institute, told us in an email that in both cases, the analyses are “completely wrong.”

The HIV study, he said, was a “misunderstanding of how to perform these types of analyses” that also cherry-picked its findings. The short proteins the Indian scientists found to be similar to HIV are not from HIV at all, Andersen said, but are the result of the natural evolution of coronaviruses. “Had the authors compared nCoV to related bat viruses (and not just SARS as they did),” he wrote, “they would have realized that the peptides are also present in the bat viruses — and most certainly don’t come from HIV.”

Indeed, other experts have noted the same shortcomings, including [Trevor Bedford](#), a computational biologist at the Fred Hutchinson Cancer Research Center in Seattle, who performed the proper sequence alignments and shared the results in a Twitter [thread](#). He found that all of the so-called “insertions” appear in a bat virus identified from a cave in Yunnan, China — or were artifacts of improper alignment.

Only one “insertion” is not fully shared with the bat virus, Bedford explained, and “in no way suggests engineering” since it is consistent with the types of insertions and deletions that happen in coronaviruses. “There is absolutely no evidence for either (1) sequence insertions or (2) their relationship to HIV,” he concluded.

The blogger’s contention that the new coronavirus may have been engineered using a SARS viral vector, Andersen said, is “just as absurd” as the HIV theory. The vector, he said, was used to understand coronaviruses and develop vaccines — but is different from 2019nCoV.

“While they’re similar (like worms and people are similar) there is absolutely no way that nCoV is in any way related,” he said. “If one were to look at the two genomes side by side, it’s very easy to show that they’re obviously not the same — or that one somehow led to the other.”

HIV Drugs

As we’ve just established, there’s no connection between HIV and the new coronavirus, but the fact that [some countries](#) are using HIV drugs to treat the new coronavirus is included in many of the social media posts to lend credence to the bogus theory.

One Facebook [post](#) says, “Ask yourself why they have been treating with HIV drugs from the start,” and the ZeroHedge story proclaims, “The virus even responds to treatment by HIV medications.”

In fact, it's not yet clear if the virus does respond to HIV drugs — but the rationale to try it is pretty simple. [Timothy Sheahan](#), a virologist at the University of North Carolina at Chapel Hill, told us in a phone interview that there aren't that many FDA-approved antiviral drugs, so when a new virus emerges, doctors just give patients “whatever they think might help.”

Many existing antivirals, he said, are HIV medications, so it's natural to turn to those. And there is some precedent for HIV drugs possibly working against coronaviruses.

During the SARS outbreak, for example, scientists performed a drug screen and identified the HIV drug cocktail of [lopinavir and ritonavir](#) as having potential antiviral activity against SARS. That drug combo was also associated with [better outcomes](#) among a small group of SARS patients, although it was never tested in a clinical trial, so it's hard to say if it was truly effective. It is also currently [being tested](#) in a clinical trial in Saudi Arabia against another disease caused by a coronavirus, Middle East respiratory syndrome, or MERS.

Sheahan, however, is skeptical that HIV drugs will be very effective against the new virus. The levels of the drug that are likely required to diminish viral replication, he said, “are not achievable” in people. And in his experiments against the MERS virus in cell culture and in mice, he [found](#) lopinavir and ritonavir offered little improvement in severe lung disease or viral replication.

No Signs of Bioengineering

As for the general notion that the virus has been bioengineered, there's no evidence that's true. On the contrary, as we've [explained before](#), all lines of evidence point to the virus coming from an animal. That's consistent with what scientists have learned about the ecology of coronaviruses in the last 20 years, Sheahan said, including SARS and MERS — and it fits with the fact that the virus [shares 96%](#) of its genome with a bat virus.

“The genetic data is pointing to this virus coming from a bat reservoir,” he said, “not a lab.”

And not only are there no HIV “insertions” in the virus, but by looking at the virus' genome, scientists also see zero signs of human tampering.

[Bedford](#), the Fred Hutchinson computational biologist, [pointed out](#) on Twitter that the virus' genetic differences to its most recent common ancestor are “consistent with differences expected to arise during natural evolution.”

An engineered virus, he explained, would likely have a “distorted” amino acid to nucleotide ratio, and also have changes focused in on a “subset of genes.” In other words, when engineering occurs, it's usually to bring about a meaningful change to the virus — but there's no evidence of that in the 2019-nCoV genome.

Typically, scientists change nucleotides in a targeted way to create changes in the amino acids they code for. Since amino acids are the building blocks of proteins, that's the way to change the proteins the virus produces.

But as Bedford said, out of all the nucleotide changes, relatively few — around 14% — alter the corresponding amino acid, or about what you would expect in a naturally evolving virus. This ratio also matches that of the bat virus that's found to be the most similar to 2019-nCoV.

Further, when comparing the amino acid changes that do exist, the number of changes in the respective genes in both 2019-nCoV and the bat virus are highly similar. Again, if the virus had been engineered, one might expect many of the changes to cluster in one or two genes, but that's not the case here. All of this argues against the idea of the new virus having come out of a lab.

Editor's note: FactCheck.org is one of several organizations [working with Facebook](#) to debunk misinformation shared on social media. Our previous stories can be found [here](#).

Sources

McDonald, Jessica. [“Q&A on the Wuhan Coronavirus.”](#) FactCheck.org. 30 Jan 2020.

McDonald, Jessica. [“Social Media Posts Spread Bogus Coronavirus Conspiracy Theory.”](#) FactCheck.org. 24 Jan 2020.

[Novel coronavirus \(2019-nCoV\)](#). World Health Organization. Accessed 7 Feb 2020.

Pradhan, Prashant et. al. [Uncanny similarity of unique inserts in the 2019-nCoV spike protein to HIV-1 gp120 and Gag.](#) bioRxiv. 31 Jan 2020.

Konermann, Silvana (@SKonermann). [“Just checked their results. The similarity is spurious. Out of 4 inserts they identify between NCov and SARS, 2 are found in bat coronavirus. Of the remaining two, only one is most similar to HIV, and is so short \(6 AA\) that the similarity is not higher than chance given database.”](#) Twitter. 31 Jan 2020.

Bedford, Trevor (@trvrb). [“These short inserts do indeed exist in #nCoV2019 relative to its closest sequenced relative \(BetaCoV/bat/Yunnan/RaTG13/2013, seen here <https://nextstrain.org/groups/blab/sars-like-cov>\). However, a simple BLAST of such short sequences shows match to a huge variety of organisms. No reason to conclude HIV.”](#) Twitter. 31 Jan 2020.

[Severe Acute Respiratory Syndrome \(SARS\)](#). CDC. Accessed 7 Feb 2020.

Bedford, Trevor (@trvrb). [“Based on the content of my mentions, I feel like I need to further debunk crazy #nCoV2019 / HIV conspiracy preprint. This is a thread doing so. 1/9, and following thread.”](#) Twitter. 1 Feb 2020.

Andersen, Kristian. Associate Professor, Department of Integrative Structural and Computational Biology, The Scripps Research Institute. Email sent to FactCheck.org. 3 Feb 2020.

[“China testing HIV drug as treatment for new coronavirus, AbbVie says.”](#) Reuters. 26 Jan 2020.

Wongcha-um, Panu. [“Cocktail of flu, HIV drugs appears to help fight coronavirus: Thai doctors.”](#) Reuters. 2 Feb 2020.

Sheahan, Timothy. Assistant Professor, Department of Epidemiology, the Gillings School of Global Public Health, University of North Carolina at Chapel Hill. Interview with FactCheck.org. 5 Feb 2020.

Chu, C. et. al. [“Role of lopinavir/ritonavir in the treatment of SARS: initial virological and clinical findings.”](#) Thorax. 59(3), 2004.

Sheahan, Timothy P. et. al. [“Comparative therapeutic efficacy of remdesivir and combination lopinavir, ritonavir, and interferon beta against MERS-CoV.”](#) Nature Communications. 11, 2020.

Arabi, Yaseen M. et. al. [“Treatment of Middle East Respiratory Syndrome with a combination of lopinavir-ritonavir and interferon- \$\beta\$ 1b \(MIRACLE trial\): study protocol for a randomized controlled trial.”](#) Trials. 19(81), 2018.

Arabi, Yaseen M. et. al. [“Treatment of Middle East respiratory syndrome with a combination of lopinavir/ritonavir and interferon- \$\beta\$ 1b \(MIRACLE trial\): statistical analysis plan for a recursive two-stage group sequential randomized controlled trial.”](#) Trials. 21(8), 2020.

Zhou, Peng et. al. [“A pneumonia outbreak associated with a new coronavirus of probable bat origin.”](#) Nature, 2020.

Bedford, Trevor (@trvrb). [“I thought to examine signal of natural evolution in #nCoV2019 by looking at distribution of mutations in the lineage leading to nCoV and compare this distribution to mutations occurring in other SARS-like bat viruses 1/9, and following thread.”](#) Twitter. 3 Feb 2020.

Categories [Featured Posts](#) [SciCheck](#)

Issue [Coronavirus](#)

STORIA PRECEDENTE

Fatti della
STORIA SUCCESSIVA

Spiegazione della disinformazione del coronavirus

Verifica del dibattito democratico nel New Hampshire

[ARCHIVIO](#)

[VITA PRIVATA](#)

[POLITICA SUL COPYRIGHT](#)

[CONTATTACI](#)

[SEGNALA PROBLEMI DI ACCESSIBILITÀ E OTTIENI ASSISTENZA](#)

© Copyright 2020 FactCheck.org®

Un progetto dell'Annenberg Public Policy Center dell'Università della Pennsylvania