



A COVID-19 vaccine developed at record speed, but not in haste

One of the most common concerns about the COVID-19 vaccine goes like this:

"It cannot be a quality vaccine, because it was developed too fast."



The assumption that COVID-19 vaccines were developed "too fast" and are therefore unsafe and do not work is false and based on a misunderstanding several issues. This false narrative has been hijacked and spread by anti-vaccination lobby groups to discredit COVID-19 vaccines and vaccines in general.

The scientific facts are that the speeded-up process did not compromise safety or the scientific integrity of COVID-19 vaccines. In part, it reflected the extraordinary scientific advances in the types of vaccines which allowed scientist to do things in months, that took years before.

There are several reasons why a COVID-19 vaccine was developed at such impressive speed, compared to other vaccines.

Specifically, there is a variety of reasons why it has been possible to create a vaccine for COVID-19, but not yet for HIV. Some of it has to do with the different characteristics of the human immunodeficiency virus (HIV) and SARS-CoV-2.

Other reasons have to do with the research environment and urgency: because COVID-19 was a global emergency and the virus spread rapidly without any treatment available, there were substantial investments and a huge level of global cooperation to work towards a developing a vaccine.



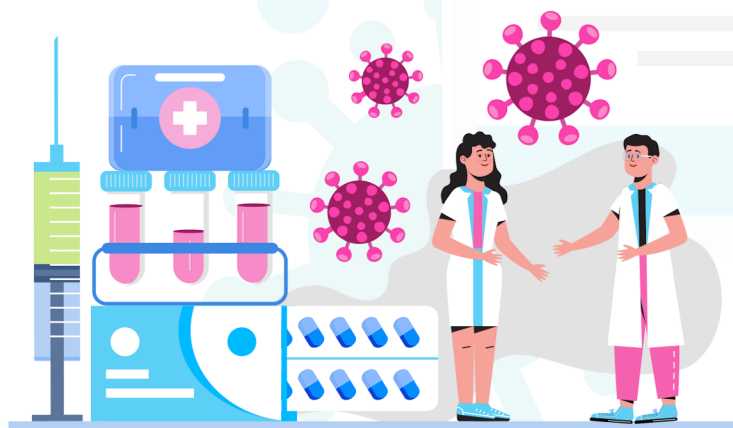
Also see:

[HIV/AIDS vaccine: Why don't we have one after 37 years, when we had several for COVID-19 after a few months?](#)



Vaccine Covid-19

1. Reasons based in science and the nature of the virus itself:



HIV and SARS-CoV-2 belong to completely different families of virus. HIV belongs to the retrovirus family of viruses and SARS-CoV-2 is a coronavirus.

They have very different characteristics, which all have a bearing on vaccine development. **The next page outlines some of the main differences:**





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HIV is genetically extremely diverse. The virus replicates itself once every 24 hours, and this means that variants can emerge at a very high rate, compared to other viruses. As a result, there are 60+ dominant strains of HIV and a multitude more variants. An effective vaccine would have to be able to work against multiple “versions” of the virus. Most vaccines work by teaching the immune system to produce antibodies that clear an infection, but antibodies are not able to clear HIV infection – the virus mutates too fast for antibodies and other immune responses to respond in time.

HIV: The virus attacks and destroys CD-4 cells which are white blood cells that fight infection. As the virus continues to kill CD-4 cells, the ability to resist infection diminishes and the individual's risk of developing AIDS also increases. The virus's ability to destroy CD4 cells presents obstacles to vaccine development.

HIV is a retrovirus, meaning it inserts a copy of its genome into the patient's DNA making it nearly impossible to eliminate.

HIV is unique in how it manages to “hide” from the immune system, e.g. in the lymph tissue. This means even if circulating virus is eradicated, the hidden HIV can spread the infection.

Also see: [Why Is It So Hard to Make an HIV Vaccine?](#)

SARS-COV-2

The **SARS-CoV-2** virus cannot permanently integrate within the patient's genome.

SARS-CoV-2 has a key protein that corrects many of the errors which can occur during replication, meaning changes to the virus (mutations) happen slowly and the virus is likely to retain key characteristics. This makes vaccine development simpler than for a fast-mutating virus.

SARS-CoV-2 vaccination studies and strategies for countering other coronaviruses (SARS and MERS) have given scientists a head-start for the development of vaccines for this type of virus.

Also see:

[Coronavirus vaccine development: from SARS and MERS to COVID-19](#)

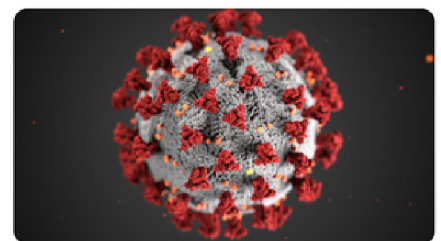
[Learn more about how vaccines work in our free online course: **Let's Talk Vaccines**](#)



Get to grips with the vaccines



Improve your storytelling



Sources and resources



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2. Reasons based in research and development processes

An article in *Nature* (see below) describes how global collaboration and cooperation enabled a much speedier vaccine development process than ever before.

In about 100 days (about 3 and a half months) the scientific community identified SARS-CoV-2, sequenced the genome, understood transmission, understood the proteins at play, and understood the receptor that enters the cell. This came about because scientists decided to release their data quickly. Twitter became a vehicle for discussion and the publishing of pre-prints became standard practice. In the face of a public health emergency, academic secrecy gave way to scientific collaboration.

In a *Nature* (UK) comment, researchers involved in a global collaboration for COVID treatments write:

"This experiment pulled together a spontaneous, open, global, Twitter-fueled collaboration called the COVID Moonshot. Urgency and a commitment to working openly recruited more than 150 active participants, spanning a huge range of expertise and technology across academia, biotechnology, pharmaceuticals and more, all working without claiming intellectual property. Open drug-discovery efforts are invariably super slow—ours has been an express train on tracks we have laid down as we go. It is a way of working that none of us realized was possible."

In guidance on **COVID-19 vaccine research and development**, the WHO describes how greater efficiency was achieved than with any previous vaccine development:

"In the past, vaccines have been developed through a series of consecutive steps that can take many years. Now, given the urgent need for COVID-19 vaccines, unprecedented financial investments and scientific collaborations are changing how vaccines are developed. This means that some of the steps in the research and development process have been happening in parallel, while still maintaining strict clinical and safety standards."

Also see:

<https://sciencebusiness.net/covid-19/news/covid-19-triggered-unprecedented-collaboration-research>

3. Reasons based on the novelty of the virus and the urgent need for intervention.

In the absence of a biomedical form of prevention or any proven treatment for COVID-19, the global scientific community realized it was a high priority to develop a vaccine for COVID-19.

Emergency funding for COVID-19 Research and Development, early on in the pandemic, enabled the world's best research institutions to focus their attention on the development of a vaccine for COVID-19.





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4. Science is standing on the shoulders of giants: mRNA technology has a long history

“If I have seen further than others, it is by standing upon the shoulders of giants.”

Sir Isaac Newton

While it was a new concept for the general public, the mechanism by which these vaccines work had been studied for decades.

Messenger RNA is a type of RNA that is necessary for protein production. mRNA vaccines use synthetically produced mRNA to teach our cells how to make a protein that triggers an immune response. This in turn produces antibodies, which is the protection for when the real virus enters our cells.

The cumulative knowledge from general and SARS-related vaccine studies gave scientists a massive head start to work on the development of a COVID-19 vaccine.

A CDC advisory, Understanding mRNA COVID-19 Vaccines, notes that “As soon as the necessary information about the virus that causes COVID-19 was available, scientists began designing the mRNA instructions for cells to build the unique spike protein into an mRNA vaccine.”

Some COVID-19 vaccines also use more traditional methods of vaccine production, e.g. the Johnson & Johnson vector vaccine.

What Newton meant, of course, was that he could not have achieved what he did without the work and knowledge generated by those who came before him.

This sentiment is true for all vaccine development, and has been well documented with regard to the speed with which a COVID-19 vaccine was developed.

The rapid development of the COVID-19 vaccine put mRNA (messenger RNA) technology in the headlines. Many heard for the first time about the mRNA platform, used for the Pfizer-BioNTech and Moderna COVID-19 vaccines.

COVID-19 vaccine development impacts HIV vaccine development

While messenger RNA (mRNA) technology had been studied previously for its potential in vaccine development, the first mRNA vaccines developed and approved were for COVID-19. The technology has led to safe and effective vaccines that have prevented severe disease and death during the pandemic. With these new insights, other infectious diseases could be prevented with an effective mRNA vaccine.

The US biotech company Moderna that used the mRNA approach for its highly efficacious COVID-19 vaccine has launched the first clinical trial of an mRNA HIV vaccine in the United States. See [ClinicalTrials.gov](https://www.clinicaltrials.gov)



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How can journalists use this information to dispel misinformation?

Trusted, credible scientists and health CSOs will be familiar with the comparison scenario outlined above. Consider interviewing them, to highlight:

- That viruses differ substantially, and that therefore, the vaccine development process will differ substantially from virus to virus
- That it is a phenomenal achievement that a COVID-19 vaccine was developed so fast. This is something to be celebrated and not a reason to cast doubt over the COVID-19 vaccines – instead, one could argue that some vaccines were developed too slowly, because of a lack of political will and funding
- That it is understandable that people have questions/concerns about the speed of the COVID-19 development, but that no safety protocols were compromised.
- The benefit of a number of concurrent large trials for the COVID-19 vaccine. Such trials always produce good data.

Ensure that media stories communicate clearly that HIV vaccine research must continue UNTIL there is a viable vaccine.

Communicate that science is a quest. Even when successive vaccine candidates fail to make the grade, scientists analyze the data and learn useful lessons to help them go back to the drawing board.



Straight and simple is best

The information in Reasons 1 – 4 above is complex and there's no need to handle all 4 in one story! Consider a series through which you explore – over time – some of the reasons why a COVID-19 vaccine has been developed so fast, while we still don't have an HIV vaccine decades later, for example:

- Consider a story about the differences between the two viruses (See **1. Reasons based in science and the nature of the virus itself**)
- Do an interview which outlines the collaboration between research institutes (See **2. Reasons based in research and development processes**)
- Consider another separate story based on **3. Reasons based in urgency**, and so on.
- Tell human stories about the scientists, lab assistants, and volunteers in vaccine trials
- **Most importantly, what are the questions that viewers, listeners, our friends and family have? If your story helps to answer that question, you and our audience are in it together.**

Sources and Resources:

[Let's Talk Vaccines](#) online self-study course. Particularly, see Module 1: Vaccine Science
Johns Hopkins Bloomberg School of Public Health: [The long history of mRNA vaccines](#)
[WHO: Coronavirus disease \(COVID-19\): Vaccine research and development](#)

Some reading for inspiration: [HIV and Ebola's Influence on Science Journalism in the Age of COVID-19](#)