

Twitter Thread by WheatNOil

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The mRNA vaccines (Pfizer and Moderna) are kind of brilliant at a science level. I've had a few people in my real non-Twitter life ask me to explain how it works so I'm going to try my best here in this thread while I'm waiting for a patient to show.

The first thing to know is how your immune system works. Basically, your immune cells attack anything foreign to your body. If it sees a protein or a virus or a bacteria or anything that it doesn't recognize, it launches an attack.

If it's fighting off a virus, for example, it takes time to build up a full attack. It's got to figure out what part of the virus to attack & ramp up production of what it needs to attack those parts. That can take a few days. Meanwhile the virus is replicating and expanding.

Once it fights off the virus, though, it remembers it. You've got memory cells in your immune system and if you run into that virus again, your memory cells say "I've seen this asshole before". Your body uses it's past experience to demolish the virus before it can make you sick.

So, with that in mind, we return to the vaccine. Scientists looked at the COVID virus and saw a protein on the outside of the virus that looked like a good candidate to launch an immune attack against.

That protein, by the way, is an important one for the virus. It uses that protein to get into your cells. That protein makes the virus more infectious. In short, that protein makes the virus more of an asshole.

Now COVID has DNA in it that codes for all of its parts. So scientists looked at the entire DNA sequence of virus and found the sequence of DNA that is the blueprints for that protein. The asshole protein.

Side note: DNA is the blueprint to make things in a cell. Cells take the DNA and transcribe it into RNA. The RNA is the instructions that tell the cell what to make. mRNA (literally messenger-RNA) literally just gives instructions to the cell to make something.

So scientists took the blueprint for the asshole protein on COVID and made an mRNA version of it. Literally just the instructions on how to make that protein.

These instructions “are” the vaccine.

Let me explain.

The vaccine contains no actual part of the virus. It has only the instructions on how to make the asshole protein. So, you can't get infected with COVID from the vaccine. You just get these instructions.

Your cells see these instructions and say “sure, I'll make this”. So your cells make a bunch of the asshole protein.

Your immune system sees this new protein you're producing and immediately says “what... the fuck... is this?” And it starts attacking the protein.

Remember it hasn't seen this protein before. It takes awhile to ramp up production. Then it launches an all out war against the asshole protein. The fevers, chills, muscle soreness, etc you might get as vaccine side effects is your body bombing the hell out of the asshole protein

So you destroy the asshole protein (which in and of itself can't infect you, it's just a protein, not the virus).

Now here's the important part. Your memory cells ‘remember’ the asshole protein. They remember exactly how to destroy it.

By the way, your body breaks down the mRNA instructions that you got with the vaccine pretty quickly too. That's normal. You don't need a bunch of instructions hanging around forever. Your body breaks those down and gets rid of them.

So you've broken down the mRNA instructions. You've destroyed asshole proteins. Everything from the vaccine is gone.

Except for those memory cells who remember that protein very well.