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Undoubtedly there is going to be a lot of conversation surrounding the new viral variants. This is me being completely transparent when I say this: please don’t panic. The most important thing we can do is prevent the virus from spreading. Let me elaborate.

It will take a large amount of genetic diversity to completely render these vaccines useless. These mutations have not been able to alter the S protein’s shape to the extent that the vaccine-induced antibodies provided by these vaccines are not able to bind at all.

Remember these vaccines (especially these using the whole spike protein) make polyclonal antibody responses. This means that the antibodies created will be able to bind the Coronavirus’ spike in multiple places not just one. Hence a broader range of protection even with changes.

We have many tools to prevent the virus from spreading. Physical barriers (masks), social distancing, and proper hand hygiene. We also have effective vaccines that need to be used immediately. We want and need more protected people and fewer susceptible people. Simple as that.

If the virus doesn’t spread it doesn’t mutate. It needs us, as a host, and our cells to do this. If we don’t give it that, it can’t spread nor mutate. With the vaccines, if the neutralizing activity of vaccine sera goes down too much the vaccines can be replaced and modified.

Now, before you take my words and run, I am not saying they need to be (so you can let go of that breath you were holding now) I’m saying that they can be. Influenza vaccines are modified every year and if we need to do it with these we can, even at a much faster rate as these

mRNA vaccines don’t require any lengthy period of time to culture the virus as influenza vaccines do. But what is too much? Since the currently available vaccines have 95% efficacy against symptomatic infection and nearly 100% against severe disease, we have some buffer.

Basing COVID vaccine decisions on influenza vaccine decisions may not really apply. In a given year we have 60% influenza vaccine efficacy, not much of a margin mind you. Neutralizing data is being generated constantly and any new variants that pop up will be applied to

animal studies immediately, so you can rest easy that we are staying as ahead of the curve as we can. In the meantime, I ask that everyone evaluate their sources of information on the subject, as misinformation is rampant right now, and get your vaccine when you are able to.

Also to explain mutations: All viruses mutate. They adapt under pressure. Viruses reproduce by infecting cells and essentially hijacking they machinery to make copies of themselves and sometimes this copying process makes mistakes.

With Coronavirus, it tends to try to correct itself a lot internally which is why this virus mutates at a slower rate in comparison with something like influenza, which mutates much faster as it does not really utilize the mechanism to correct it's "mistakes."

Often times these mistakes are inconsequential. But, when millions of people all over the world are infected, and the virus is being replicated many, many times, eventually one of these "typos" or mistakes rather, in the genetic code can lead to a more significant change.

In some cases, it makes the virus more benign, but it can also make it more dangerous. So at the end of the day what does a virus need to mutate? Us. Our cells. That's pretty much it. Viruses cannot exist, mutate or reproduce without hijacking cells. Take these away and it stops.

I should specify, as always, if you have any questions I'll try to answer them to the best of my ability.