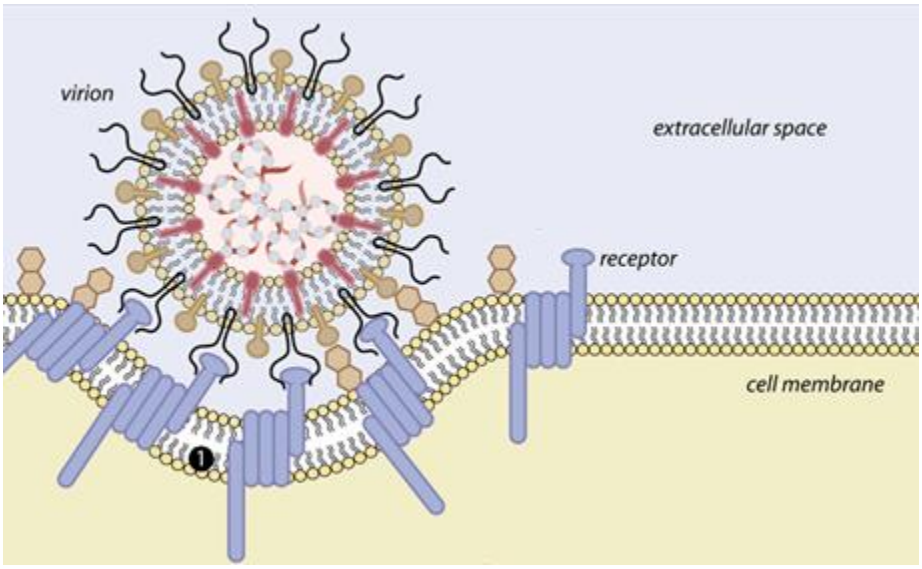
A few words about the Pfizer vaccine

Recently Pfizer announced their vaccine appeared to be more than 90% effective. According to the NYT 94 of the nearly 44,000 trial participants have contracted COVID. Clearly, most were in the placebo group.

How does the vaccine work? To understand that, we need to understand how the virus works. If you remember the models of the virus it is covered in projections called spikes. These are made of proteins.



For the virus to replicate it needs to gain entry into a person's cells. To do that it uses the spikes. The spikes act as keys that fit into locks (receptors) on the surface of the victim's cells. Once the key is in the lock the cell envelops the virus and brings it into the cells.

The vaccine works by introducing mRNA (similar to DNA) into your cells. This mRNA uses the mechanisms of your cells to produce the spike proteins. Just the spike proteins, not the rest of the virus. You then produce anti-bodies to those spike proteins.

The beauty of using the spikes is because like keys, they must be shaped in a special way to work. Thus, this part of the virus can't mutate, or the virus can't replicate.

This is the first time this technology has been used. One of the draw backs of this vaccine is it needs to be stored at -80 deg F, otherwise it degrades in five days. Not too much of a problem in the US but it will be in third world countries. This will leave those countries as a reservoir for the virus unless we can overcome that hurdle. That means we could wipe it out here and it could still come back in a matter of months.

A big factor then will be how long does immunity last from the vaccine. There have been reports of a few people getting re-infected three months or so after an original infection.

This is not a time to drop your guard. We don't have the vaccine yet. We still need to use masks, hand washing and social distancing. We will still need to for a while after the vaccine is out. But there is good reason for hope.