A Universal SARS_CoV2_vaccine....

....is being developed, using **CRISPR** engineering to insert multiple SARS covid epitopes into bacteriophage....

I couldn't refrain from sharing more nerd, science news with you, but I think this is particularly relevant and interesting to all of us. This recent paper attached, talks about a new development/platform to create a universal vaccine against covid19. The current vaccines, like the mRNA Moderna or Pfizer-BioNTech, although very cool, use only a single vaccine target which is in the famous **S or spike protein,** located on the surface of the virus that attaches to our cells on the ACE2 receptors.

The problem is now we know that the efficacy of the vaccines can go down when variants or recombinants in this Spike protein emerge like alpha, beta, gamma, and delta and thus vaccine escape variants are emerging.

During the rotary talk, I didn't talk about CrispR but I know it interests you as well, so here we go...a combination of technologies that collide to make a super vaccine using multiple, conserved viral antigen targets that should not escape our immunity!!! They basically use as a vehicle, a T4 bacteriophage (of course harmless) and with CRISPR, they insert multiple viral targets, such as the spike protein, capsid protein, envelope proteins creating multiplex vaccine candidates that creates broader immune responses (T cell and B cell-antibodies), making it very difficult for the virus to recombine and escape the diverse immune pressures mounted by the host, or us..... Voila!

This has only been shown to work in mice and monkeys for the moment, but it is indeed a very promising Next Generation vaccine strategy, that is also not costly, with up to a million T4-SARS-CoV2 vaccine doses produced in a 100-liter fermentor.

They are also seeing whether it can be delivered intranasally, rather than intramuscularly....which would be an enormous simplification and no needles!

Also, they looked at delivery, and found that **no adjuvant (i.e. aluminum; saponins or natural soaps)** was needed, so this adjuvant-free vaccine also reduces cost and complexity and it avoids the reactogenicity (allergy) that occurs with many vaccines of the past. Moderna and Pfizer also contain no adjuvants, by the way, (just the lipid nanoparticle containing the mRNA). The adenoviral AstraZeneca vaccine also contains no adjuvant.

Ok, well love to you and now you are updated a little more on the future of vaccines, or at least an alternative.

Love,
Allyson