

## Recombinant DNA Technology

- Briefly describe (5 sentences or less) one human therapy that uses recombinant DNA technology. Explain how this therapy is an improvement over existing therapies that did not use recombinant DNA technology (if they exist!). Please cite your source(s) and do not repeat therapies that have already been listed in the thread.
- Respond to at least two of your classmates.

Since the first reported vaccine in 18<sup>th</sup> century; when Edward Jenner inoculated people with cowpox to protect them against smallpox, understanding and technologies have progressed. Older vaccination method used a dead or attenuated pathogen to activate the body's immune system with the risk of causing the disease in an individual with a weak immune system; or not resulting in a strong or long-lasting immune response. Today a recombinant specific protein from the pathogen, the antigen, is genetically engineered and arranged in a nanoparticle with no risk of transmitting the targeted disease. COVID virus spike's protein vaccine is one of such most recent type of recombinant vaccines.

References:

Nature Milestones in Vaccines: <https://www.nature.com/immersive/d42859-020-00005-8/index.html>

- [1] A. Flemming, "The origins of vaccination," *Nature Research*, Sep. 2020, doi: 10.1038/d42859-020-00006-7.
- [2] I. P. Trougakos *et al.*, "Adverse effects of COVID-19 mRNA vaccines: the spike hypothesis," *Trends in Molecular Medicine*, vol. 28, no. 7, pp. 542–554, Jul. 2022, doi: 10.1016/j.molmed.2022.04.007.