

SHOW NOTES: *TIME STAMPS ARE PRE-EDITING*

1:21- I would not necessarily call myself a dinosaur expert :). But I do have an interest with a related set of skills.

3:15- My graduate research was in Neural tube research at the Lee Niswander Lab

04:50- Neural Tube defects affect 1 in 1000 live births and takes place in week 3-4 of human development

9:02- Please check Sean Carroll's mindscape podcast. For paleontology, I cannot recommend the "Common Descent" podcast enough.

10:07- According to the WHO:

-An estimated 3.7 billion people under age 50 (67%) globally have herpes simplex virus type 1 (HSV-1) infection, the main cause of oral herpes.

-An estimated 491 million people aged 15–49 (13%) worldwide have herpes simplex virus type 2 (HSV-2) infection, the main cause of genital herpes.

15:15- [Scientists](#) still did not have a consensus on the origins of covid nearly a year after brett Weinstein's interview:

<https://www.nature.com/articles/s41586-021-04188-6>

16:20- A recent letter to nature from molecular biologists did take the lab leak hypothesis seriously, but by no means reached surety or consensus.

21:10: Lyndsey et al, sent to multiple publishing houses, but did not make hoax papers in different fields.

24:10- <https://www.nature.com/articles/s41591-020-0820-9> [This](#) is the paper that was released at the time of the interview (Nature). It sheds a lot of doubt on a laboratory derived virus.

26:10- The number of liberal scientists is closer to 55% according to a 2009 pew survey; Anecdotally that number rose significantly during my Graduate school career starting in 2014.

29:10- A brief [sketch](#) of the mRNA vaccine showing it does not reach the nucleus

31:30- The vesicle is not quite a soap bubble. But it is the exact same composition of your cell membrane and is just a droplet of oil/fat.

32:20- Other vaccines using attenuated viruses often DO enter your nucleus.

34:00- In [1955](#) 200,000 received a defective polio vaccine (the virus was more active then it should be) 40,000 Got polio and 200 were left paralyzed (1:1000)
<https://www.npr.org/sections/health-shots/2021/05/03/988756973/cant-help-falling-in-love-with-a-vaccine-how-polio-campaign-beat-vaccine-hesitan>

36:22- This is a great overview on the misconceptions of the vaccine
<https://www.nebraskamed.com/COVID/where-mrna-vaccines-and-spike-proteins-go>

38:23- The different vaccines may not produce the EXACT same protein, but they are largely the same and provoke the same immune reaction. The only difference would be that the antibodies may recognize slightly different portions of the spike protein.

39:50 You may need Einstein's theory of relativity for moon landings instead of Newtonian mechanics.

41:00- Uracil replaces Thymine as a base pair in mRNA

45:06- By this I Mean genetic engineering in terms of splicing in different genes, inducing mutations or other manipulations. The paper is already linked (Nature)

44:56- More germanely than wet markets as a potential origin for CoVID-19, there are LOTS of unknown populations of bats that mingle with.

48:50- Patient Zero link

48:50- She might have been referring to the delta variant, which was both more easily spread and was more virulent, but this has more to do with our naïve immune system to that novel variant. Delta eventually DID mutate into less virulent and more transmissible.

49:50- Here is an article detailing the problems with characterizing the origins and onset of the virus <https://www.livescience.com/how-early-was-coronavirus-covid-circulating.html/>

51:03- Viruses attack cells based on the protein on the cell membrane. Many cell types share some of these membrane proteins, which gives viruses multiple targets. Flu attacks Sialic Acid of

53:05- There may also be environmental factors due to differences in seasons that also contribute to the seasonality of colds.

General note- the interview is once not in summer but the following winter. I should have realized this since we are talking about the vaccines.