What do natural reservoirs of Lyme disease and SARS-CoV coronaviruses have in common?

- The white-footed deermouse and certain types of bats are persistently infected with pathogens, allowing for them to be infection sources for people.

- But these animals strike a balance between keeping the pathogen in check and host response that can damage through inflammation.

- They don't get sick, and they remain fit for proliferation of the populations.

What can we learn from these animals?

- Better understanding of how deermice and bats moderate inflammation and other damaging host responses, might provide insights into why some patients with either Lyme disease or COVID-19 have more prolonged disease courses.

- These individuals may be lacking in a capacity that these other animals possess to avoid sickness. There may be therapies to compensate for this.

- The phenomena of "long COVID" and PTLDS have share features and can be grouped together under the term "post-infection syndromes"

SARS-CoV-2 vaccines in Phase 3 trials

- In some trials the endpoint for success is prevention of infection. This might lead to achievement of "herd immunity" in a population, because the virus is spread person-to-person.

- But the greatest public health effect of the virus is causing serious illnesses with hospitalizations and deaths. It is not clear how many trials are using this as a primary endpoint.

Past and current Lyme disease vaccines in clinical trials

- These are based on the OspA protein, which is produced when the bacteria is in the tick but not in humans or mammalian reservoirs.

- The vaccines would protect against infection to begin with. But if the infection gets underway in spite of that there would be no further benefit.

- *Borreliella burgdorferi* is not usually spread person-to-person, so any Lyme disease vaccine would not lead to herd immunity or provide protection for unvaccinated persons.