

May 31, 2021

Dear Colleagues,

By now I would normally have written to you to thank you for the work you did in the spring semester: to talk about the success of graduation and taking time to recharge. I have delayed writing to you because I didn't want to be trite. I wanted some distance from the last semester for us each to put our own unique experiences of grind, anxieties, and stressors in our own contexts, and to be "allowed" to feel exhausted. I want to thank each of you now for what you have lived through in the weeks since January, for their costs on you and your families. For your tears and anger, for your compassion and empathy, for the mistakes you made and the steps you took to remedy these, and for your achievements and the achievements of those who relied on you.

We together once again showed what it means to do more than curl up in metaphorical balls and hope to survive. We together were again exemplary; together we overcame the odds, we did so by hanging on, again. Help was too little and too late for many. You did not thrive and yet our cracks are resolvable. If this last semester hasn't proved to you that you can bet on you and us together, nothing will.

I also didn't write before the end of the semester about SARS-CoV-2 because the outcome of its evolution vs. vaccination plus natural immunity wasn't predictable with any confidence. I needed to wait until the highest risk months for virus evolution of April and May played out. We have had an unprecedented front row seat to observing real-time virus evolution: SARS-CoV-2 has evolved significant relevant functional diversity. It has, however, *followed existing paradigms of virus evolution*. SARS-CoV-2 is NOT a virus that is "breaking all the rules." Its evolution is not even nearly as rapid as other RNA viruses, like influenza, in large part because its RNA-dependent RNA polymerase has much better proofreading capability than other RNA viruses. Evolutionary theory posits that viruses are selected to have gene changes that make them more transmissible and less virulent because this provides a fitness advantage to passing along its genes. Conversely, highly virulent viruses, such as Ebola, are not so successful because they kill their hosts so fast their spread is limited. In short, viruses that don't make you very sick are more successful because you can wander around infecting others. SARS-CoV-2 has become another endemic human virus exemplifying this theory. However, SARS-CoV-2 isn't evolving only in the context of the molecular arms race with the human immune system, but

also with the enormous and potentially existential threat of vaccinal immunity and immune memory—and this remains a wildcard.

COVID-19 (the disease) will return in bursts during falls and winters for years to come. It will likely be concentrated in nursing homes and long-term care facilities.

Though almost everyone reading this is vaccinated and maybe are feeling relieved and living lives as if the pandemic was a thing of the past, it isn't. I believe we are now at the end of the beginning of the pandemic. I hope that when I next write to you it will be when we have reached the beginning of its end.

The direct effects of the pandemic will never be over for our friends, colleagues and students who have lost family members and for those who are living with COVID-19's long-term effects as it joins the list of "silent diseases" unsupported by our sickness industry. We have only just begun to count, and account for, the externalities of the consequences of the pandemic and our actions because of it. I believe the extent of human tragedy we know of today is simply the tip of an iceberg. Also, for many of our friends and colleagues, this pandemic is both a world away and in their immediate daily lives. Many of your friends, colleagues and students are living with daily terror, not for themselves but for their fathers, mothers, brothers, sisters, cousins, grandparents, aunts, and uncles who live in places where the SARS-CoV-2 pandemic is not being controlled through vaccination and, for some, with healthcare systems that literally don't exist.

Since March 11, 2020, we have learned that what we thought we knew of empathy, compassion, structural inequity, and inequality wasn't enough. This pandemic has shown us we can do better and be better.

This Memorial Day, let us honor the men and women who died while serving in the U.S. military by remembering their names and celebrating our freedoms they protected. But also let us honor them by committing to the new levels of empathy and compassion we have shown each other and the steps we have taken towards fixing the impacts of structural inequity and inequality.

Best wishes,

A handwritten signature in blue ink that reads "Shane".

Shane C. Burgess