As COVID-19 vaccine distribution continues, the Center for Disease Control (CDC) currently recognizes three dominant variants of the virus found in the United Kingdom, Brazil and South Africa.

All viruses genetically mutate themselves as they find new hosts in order to stay alive. These mutations can be so small they are undetectable, or large enough for scientists to realize they are different. Those “different” viruses may be able to spread faster, which is one of the reasons they are labelled as dominant variants. Either way, mutations exist because any virus needs to continually mutate to survive, some mutated forms are just stronger or more easily transferable than others.

The current three dominant strains are known as B.1.1.7 (UK), 1.351 (South Africa) and P.1 (Brazil). According to the CDC, B.1.1.7 spreads easier and faster then the original virus and P.1 may be less recognizable to antibodies.

Dr. Zucai Suo, an Eminent Professor and Dorian and John Blackmon chair in Biomedical Science at Florida State University is researching the accuracy of the COVID-19 replications or mutations. This is known as fidelity or error frequency studies.

“So far the good news is that the UK strain seems to still be responsive to the Pfizer and Moderna vaccine because the mutation on the spike protein is not enough to take off the binding [of the spike protein],” said Suo.

However, for other variants that may arise, the spike protein may not be targeted, which means it could resist the vaccine in the future. There are also minor strains of the virus in any patient that has it, which is known as cross-species, but the dominant ones are the variants that can be detected with the tests that are currently available.
“The human body is basically a screening tool to see which virus strain is going to win. It depends on the situation but if everyone gets vaccinated hopefully no new strain will pop up. But otherwise we will need a new vaccine against a new strain,” said Suo.

Suo explains that the mutations, in a lot of ways, mirror the flu. The flu is constantly mutating each year, so scientists decide which strain they think will be most dominant that year and create the vaccine around that strain according to Dr. Suo. However, sometimes they can be wrong and the flu will be worse than normal that winter because a slightly different mutation becomes the dominant strain.

In Suo’s opinion, the future of COVID-19 will be a lot like the flu, in that it will pop up occasionally in localized areas depending on if the dominant strain is identified correctly.

“The virus will continue to mutate because it has a genetic replication system. It is not a one time thing, it will constantly be happening so we will need to just continue researching in the future."