

## Lania Norman 10D

### **“All mutations in the DNA are bad, as all of them affect the protein sequence”**

While mutations do all affect the protein sequence, many do not actually change the specific amino acid since groups of, on average, three nucleotides share the same amino acid. For example, UCU, UCC, UCA and UCG all correspond with Serine. However, some mutations can have a change, for example GAC and GAG both go with two different amino acids – Aspartate and Glutamate respectfully. To continue this point, there are some DNA mutations that can have an incredibly severe consequence. An example of this would be cystic fibrosis – which is a genetic condition that is caused by a mutated gene that negatively affects the movement of salt into and out of our cells. It is an awful condition to have, and really impacts your life, this would be a scenario in which a DNA mutation is bad. There are also less drastic effects of unbeneficial mutations, such as colour blindness!

On the contrary there are some mutations that can actually be beneficial. Resistance to malaria can be caused by a mutation that makes red blood cells take on a different shape. In 2001 Italian researchers found that if a person has one copy of this mutated gene, they would be 29% less likely to get malaria and if they had two copies of it, they would be up to 93% less likely to get malaria.

A more recent example of a bad mutation would be the new COVID-19 strain, which because of the mutation has become more easier to transmit and spread to others.

To conclude I do not believe that all mutations in the DNA are bad, as some have no effects and some actually have positive effects.

