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Anthropology 102

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Both videos presented two different genetic mutations and how they contributed to evolution and natural selection for each respective species. The first video discussed the evolution of mice populations which lived on cooled lava rock and how they evolved to hide from predators. The second video discussed sickle cell anemia and how it’s a biological defense in response to malaria.

The first video presented an interesting example of evolution and how rock pocket mice adapted to living in an environment where their natural camouflage turned into their greatest weakness. Up until that point, all these mice had to do was lay still on the ground and blend in to avoid predators. Evolution is usually presented in a way that makes it appear as if it was more of an unconscious effort to adapt to an environment instead of the process being a little more random. According to Sean Carroll in the first video, evolution isn’t *completely* random – it’s the genetic mutations that are random. Other than their fur color, the mice are genetically identical. The rest of this process has to do with natural selection. The population of mice with the most genetic advantages survives and thrives while those without the advantages become dinner. If the lava rock disappeared or was removed for some reason, the lighter rock pocket mice would have an advantage over the darker colored mice and would be able to pass on the genes for light colored fur.

The second video discussed Tony Allison’s examinations into sickle cells and what was the cause of the disease. Up until that point, no one really knew what caused the sickle cells. He found a correlation between the presence of this sickle cell disease in areas closer to bodies of water – which also had a high number of mosquitoes carrying the malaria parasites. He further investigated, taking over 5,000 blood samples from children across East Africa. He discovered that children carrying the sickle cell disease had a lower parasite count. After the completion of this study, he was able to conclude that there was a direct correlation between malaria and the number of people with the sickle cell disease. But the question still remained: what is the purpose of this genetic disease? Upon further contemplation, Allison came to the conclusion that the disease was a defense against the malaria parasites. The only people with the genetic advantage are heterozygous – meaning that they’re carriers of the disease and don’t have the symptoms. When two people have one allele each for the disease, there’s a 1 in 4 chance that their offspring would have the sickle cell disease, 2 in 4 chance that they’re carriers (heterozygous), and a 1 in 4 chance that they don’t carry the gene period. The sad part is that all of these come with side effects: the carriers potentially pass down the sickle cell allele, the people affected by sickle cell anemia have to live with the health issues that come along with it, and those who don’t have the genes for sickle cells have a higher chance than the rest of being affected by malaria (if they’re living in an area with many cases of malaria).

The two videos presented examples of evolution and how they helped protect each species. In the case of the mice, there were no adverse biological side effects of having either light or dark fur. With the humans affected by sickle cell disease in first world countries, there really isn’t much advantage to carrying this disease and in today’s world it’s a disadvantage. It’s definitely an advantage if you’re a carrier and currently live in Africa, but then there’s also the fact that there’s a chance that their offspring could be affected or carriers of the disease. Just like Rome wasn’t built in a day, changing the genetics of human beings will take hundreds, if not thousands, of years.