

Difäm
German Institute for Medical Mission
Podcast on Corona Virus (Part 1)
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Welcome everyone to our first Podcast on corona-virus. In this series of podcasts we will cover different topics about and around corona-virus and other health topics.

My name is xxxxx, I am a member of the health team of German Institute for Medical Mission also called Difäm. Today we will talk a bit about a topic that has become quite important in the past few weeks. Everyone talks about them: the corona-virus mutations.

This is the first part of two on virus mutations: this podcast wants to provide you with a basic understanding of the topic mutations.

Today with me is my colleague xxx. She / He will answer my questions on mutations today.

First of all: what are mutations?

It is normal that the virus changes over time. Every time it multiplies, copies of the virus are made and in this copy-process, tiny mistakes might occur. These wrong copies is what we call a mutation. The coronavirus multiplies quite often at the moment all over the world and it is normal, that many mutations occur.

What happens, when a mutation occurs?

Most of the mutations do not have any impact on the virus itself. It is just a coronavirus, that is slightly changed and some mutations are even harmful to the virus itself! That means it either dies immediately with the multiplication or will be suppressed by other viruses after a very short time.

Since the onset of the coronavirus pandemic in January 2020, changes in the genomic sequence of coronavirus has created a number of new lineages, which are called variants.

Just let me express this in my own words: the variants are like siblings in a family. They all have the same genetic ancestors but they differ in some genetic information.

Yes, these genetic differences just happen by accident. As I said before, mutations happen constantly, but most of them disappear again because they do not help the virus. If the mutations in these variants lead to an advantage for the virus and a disadvantage for human health then they are called variants of concern.

Why do we have to be concerned about them?

A variant is regarded as a concern if its changes have an impact on one or all of the following characteristics of the virus:

1. The first characteristic is the transmissibility.

What does that mean?

That means how easily the new variant of the virus can be transmitted.

What is the second characteristic?

2. The second characteristic is the virulence: How severe will the disease be that the variant

causes? Will it lead to severe illness or just a slight flu?

And the third characteristic?

3. The third characteristic is the antigenicity: To which extent can the virus variant be identified by the antibodies of the infected person?

This brings us to the immune system. It means how good the body can protect us, and in how far the variant of concern is resistant to our antibodies.

We have another podcast on the immune system, which goes deeper into the mechanisms of antibodies and so on.

But let us return to the variants of concern. If the virus variant shows one or all of these characteristics, it is seen as an increased risk to human health.

Yes. The variants of concern of the corona virus have one thing in common. They all carry mutations in the spike protein of the virus. When you recall a picture of the virus, you see this ball with the small appendices sticking out all around the virus. Those appendices are the so called spike proteins. The virus uses the spike proteins to interact with certain receptors on human tissue. The spike protein in the receptor is like a key in a lock that opens the cell for the virus to enter. The mutation in the variants of concern changes the appearance of the key, so that it fits even better into the lock and makes it easier for the virus to enter the cell. Therefore, certain mutations to the spike protein make it easier for the virus to infect cells. An easier and quicker infection leads to a faster spreading of the virus.

Now we have a growing number of variants of concern around the globe. There is B.1.1.7, a British variant; there is B.1.351 or 501Y.V2 a South African variant, or P 1., a Brazilian variant. In addition, variants from Nigeria and the United States have been registered. Nevertheless, take a breath now!

If you want, you can listen to the second part of this podcast about the individual variants of concern.

There is one thing that all the viruses and mutations have in common: they all react well to the same prevention measures. So washing your hands, keeping a physical distance from each other and wearing masks is still highly effective to slow the spreading of all viruses and mutations.

Be blessed and stay safe

Sources:

<https://www.nature.com/articles/d41586-021-00564-4>

<https://www.cdc.gov/coronavirus/2019-ncov/science/science-briefs/scientific-brief-emerging-variants.html>

https://en.wikipedia.org/wiki/Variants_of_SARS-CoV-2#Lineage_P.1

<https://www.bmj.com/content/372/bmj.n579>