

The need for genome sequencing

WHAT is genome sequencing and how does it help us track diseases? Why do countries need to continue genome sequencing in this phase of the pandemic?

The World Health Organisation's (WHO) chief scientist Dr Soumya Swaminathan explains.

Explain what genome sequencing is and how we use it to track diseases?

Dr Swaminathan: Genome sequencing is a tool that scientists use to visualise or decipher the genetic code of a microorganism, whether it is a deoxyribonucleic acid (DNA) or a ribonucleic acid (RNA).

The sequencing machines basically lay out the entire nucleotide sequence and you get a full genetic code of that particular organism.

This is a relatively new tool, and it is being increasingly used in public health, for example, to track foodborne disease outbreaks.

When there is a cluster of foodborne diseases, you want to know what is the contaminant?

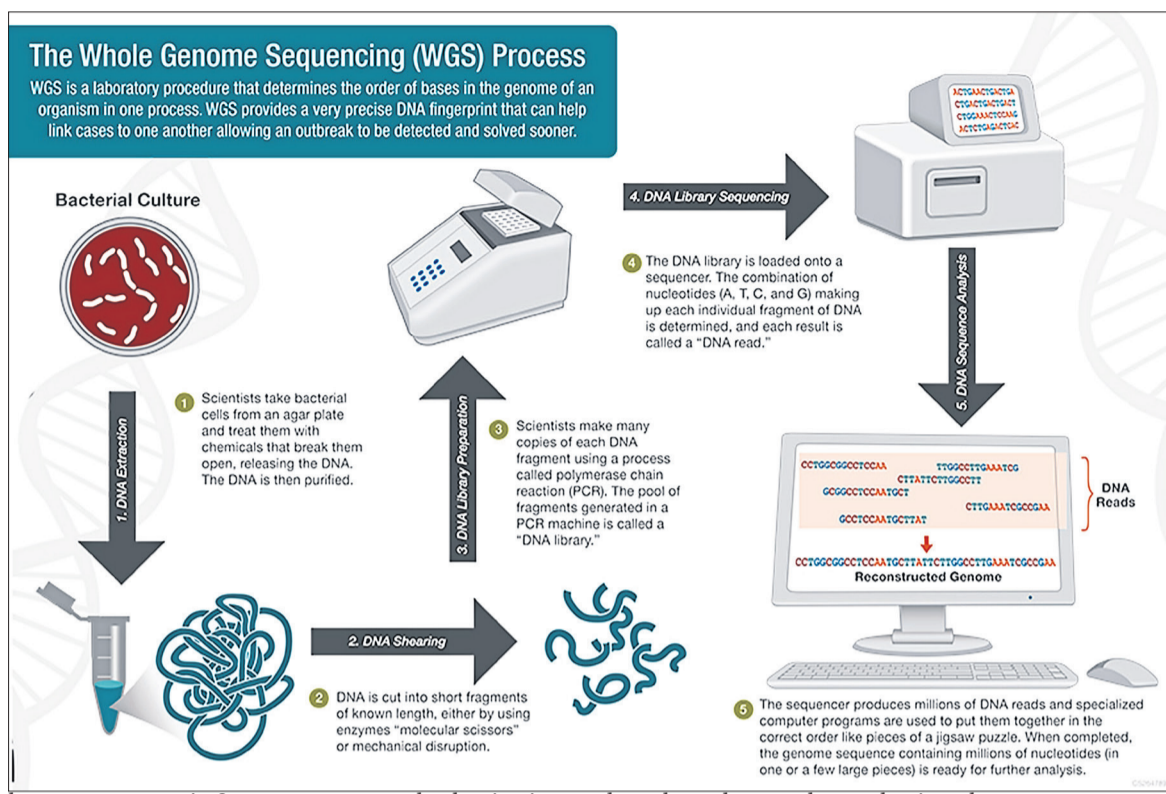
Where did it come from? So that you can take corrective action.

Similarly, when you have an outbreak of an unknown disease, for example, encephalitis or meningitis in children.

Genome sequencing tells you very quickly what that organism was, and then we can try and also link it or track it to where that could have come from.

Ebola, for example, is a good example of a disease which is a zoonotic disease, and by doing sequencing, we are able to actually know where this particular case of Ebola emerged from.

How far back does it go? Did it come straight from an animal or was it already circulating in the



human community?

In fact, we are using it for monkeypox as well to understand more about the local transmission.

Genome sequencing is a wonderful tool now that has been added to the toolkit for public health experts in order to quickly take action when it comes to infectious disease outbreaks.

In this phase of the pandemic, what is the trend we are seeing in countries as far as genome sequencing is concerned?

Dr Swaminathan: This is a pandemic where from the beginning we have used genome sequencing to track this virus.

And it has been extremely useful because, as you know, the virus has been changing and mutating from

the beginning and we have been able to really understand which of those changes are of concern to us.

And we then call it a variant of concern. And we get concerned either when these changes result in the virus being more transmissible, so more easily infectious from person to person, or it results in more severe disease or it results in the strain actually being able to overcome the immune response, the immunity that an individual has.

And so over time, we have seen from Alpha, Beta, Gamma, Delta, now Omicron that the properties of the virus have been changing and we have been able to connect those clinical properties to the genetic sequence of the virus.

And because scientists have

been sharing these sequences on a common platform, the whole world can see now where the variants are, which variants are emerging, and public health experts can take action based on that.

So it is very important to continue. We have seen a decline, a reduction in the amount of testing and surveillance and sequencing over the last few weeks.

And therefore we are getting less and less visibility into what the virus is doing.

Why is it important for countries to continue doing sequencing at this time?

Dr Swaminathan: We have seen during the pandemic how important or critical the information from sequencing was.

In fact, the early identification of variants, the ability to correlate each of the variants with its very unique characteristics, to be able to track its spread around the world.

It helped countries to increase or decrease their public health actions based on the data that they were seeing, and also to prepare hospitals, to prepare the facilities if there was a surge that was expected. So over time, we have become good at it.

Unfortunately, now what is happening is that many countries have reduced their testing and the sequencing, and therefore we are at risk of flying blind if we do not keep up the testing and the surveillance, because we know this virus is going to be around with us for some time.

It is going to change and evolve. And we really need to be able to keep track of what is happening, whether our vaccines are still effective. Luckily, they are still quite effective, but we need to be able to track that.

I would also add that at the beginning of the pandemic, we had only about a third of countries that were capable of doing genome sequencing and that to many of them, very limited numbers.

We have seen a huge expansion.

Today, two thirds of countries have their own capacity, but there are still blind spots in the world map and therefore we need to work on strengthening those capacities, both in terms of the infrastructure, but very importantly training people, training people in data analysis and bioinformatics.

Because as I mentioned, it is not just for Covid, but for all infectious diseases, that genome sequencing can give us a lot of information on how to track, how to tackle these and improve our public health response. - WHO

Eight-man team on French boat to provide medical help

A HUMANITARIAN sailboat will be leaving France for Papua New Guinea for its first mission to provide medical support to islanders in New Ireland.

This was part of the AidOcean project which was launched by the OceanVacciTour (OVT) on World Oceans Day recently in Noumea, New Caledonia.

Supported by the French Development Agency and the Planete Bleue Foundation, AidOcean was a humanitarian vaccination programme in the isolated regions of the Pacific.

The main goal was to prevent the resurgence of epidemics such as measles and rubella.

The OVT chairwoman and nurse Marine Bayer said in 2019, measles killed 207,500 people worldwide.

"With the concentration on the Coronavirus (Covid-19) in recent years, the World Health Organisation estimates that this figure could reach or even exceed one million this year," she said.

"Reported cases of measles have exploded by nearly 80 per cent worldwide in the first two months of 2022.

"It was announced by WHO and UNICEF (United Nations

Children's Fund) last Wednesday."

The first humanitarian mission in PNG would be on the island of New Ireland in September and October of this year. The eight person team would offer basic medical care and vaccines to isolated tribes to help prevent a possible outbreak of diseases.

"At the end of the day, it is about saving lives," Marine said.

Marine was a former helicopter pilot in the French Navy.

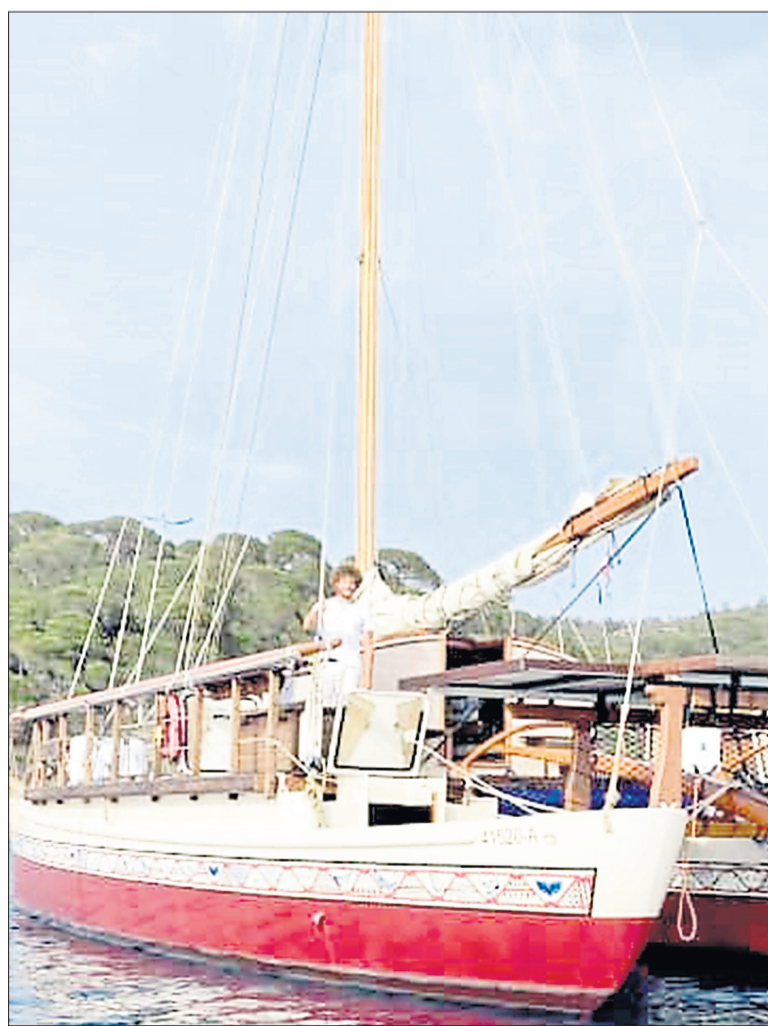
She would soon be leaving Noumea for Port Moresby to meet the various individuals starting with the Ambassador of France.

She would then go to Kavieng in New Ireland to ensure that this first mission was well prepared with the local health authorities.

The inclusion of locals on the team was one of AidOcean's main objectives.

It allowed the project to play a part supporting the local medical industry and contributing to the training of young health professionals, hence leaving a lasting positive impact.

The Vaka Motu (offshore canoe) AidOcean would be skippered by Sébastien Destremau for her maiden voyage to PNG.



The Vaka Motu (offshore canoe) AidOcean that will be skippered by Sébastien Destremau for her maiden voyage to PNG. - Picture Supplied

More cases of monkeypox virus found in the UK

LONDON: More cases of the rare monkeypox virus, normally found in Africa, have been confirmed in the UK, bringing the total to 302.

Twenty-six other countries have also had cases, including many in Europe.

Health officials say anyone can get monkeypox, particularly if they've had close contact with someone with symptoms.

The UK Health Security Agency says there are currently 287 confirmed cases of monkeypox in England, 10 in Scotland, three in Wales and two in Northern Ireland.

In total, 780 cases of monkeypox have been found in recent weeks in countries where the virus is not usually present, outside of west and central Africa.

Spain, Portugal, France, Canada, Australia and Mexico are just some of the countries to have been affected. The risk to the general population is low and the symptoms usually clear up within a few weeks, but the virus can be more severe in those who are particularly vulnerable. - BBC