

# How studying Neanderthals helps understand Covid-19 risks

**In 2018, Torquay Museum staged an exhibition called More Deadly Than War: Spanish Flu and the Threat of Pandemic.**

This rather timely exhibition contained a display on Neanderthals.

It appeared that they contributed to our risk of surviving the flu so it's perhaps not surprising that they also contribute to the inherited risk of developing severe Covid-19.

Torquay Museum's outstanding Ice Age collections have been contributing to ancient DNA research for many years now often in partnership with the Francis Crick Institute.

Unfortunately, we have never managed to get DNA from our most important specimen KC4, the oldest fragment of anatomically modern human in North West Europe.

Dated at over 40,000 years old, this human shared our local landscape with some of the last Neanderthals and evidence of both species have been found in the local caves.

We know from the study of DNA that Neanderthals have

**Barry Chandler** from Torquay Museum

contributed approximately one to four per cent of the genomes of non-African modern humans although around 40,000 years ago this may have been as high as six to nine per cent.

This happened through interbreeding with our closest of cousins and it may have been going on for over 100,000 years.

Research has shown that some of these genes help us to fight off viruses such as flu.

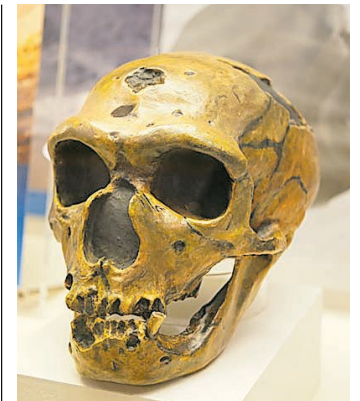
Neanderthals had lived in the colder European climates for hundreds of thousands of years before Homo sapiens arrived and so had built up genetic defences against viruses common in the region.

When Homo sapiens arrived from Africa they would have had no immunity to fight the viruses they would not have encountered before leaving Africa.

When they interbred with



Ancient DNA sampling at the Francis Crick Institute  
Pictures: TORQUAY MUSEUM



A cast of a Neanderthal skull on display in Torquay Museum's Ancestors Gallery

Neanderthals the part of their DNA that offered protection from viruses would have been useful and so it has survived in some human DNA to this day.

However, this is more complex when it comes to Covid-19.

A study published in the journal Nature in 2020 by researchers from the Max Planck Institute, who have previously worked with Torquay Museum, indicates that the inheritance of particular gene cluster put some people at increased risk of respiratory failure after infection with Covid.

This cluster is the major genetic risk factor for severe symptoms and it is inherited from Neanderthals.

This inheritance goes some way to explaining the difference in survival rates during the

pandemic. Around 50 per cent of people in South Asia carry the risk genes compared to only 16 per cent of people in Europe.

But the highest carrier frequency occurs in Bangladesh where more than 63 per cent have the genes.

Our Neanderthal inheritance is a substantial contributor along with old age to your risk of dying of Covid.

In agreement with this, people of Bangladeshi origin in the UK are at about two times higher risk of dying from Covid-19 than the general population.

It is possible that the Neanderthal genes had been positively selected in the past in some areas of the world like Bangladesh, because they protected against other illnesses.

It is also possible that their frequency has decreased in areas such as east Asia because of coronaviruses and they will be under negative selection now because of the Covid-19 pandemic.

This complex story expanded again in 2021 when the same researchers discovered that another region of our genome, also inherited from Neanderthals, protects us against severe forms of Covid.

These genes help destroy Coronavirus RNA. Having just one of these can reduce a person's risk of needing intensive care by 22 per cent.

You can find out more about our fascinating cousins the Neanderthals and see the tools they left behind in the museum's Ancestors Gallery.

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