

Neanderthals in my DNA: Possible impact on Covid-19 outcomes



ATIQUE U AHMED

As we are passing the one-year mark of the Covid-19 pandemic, it is difficult to wrap my head around the long term consequences of this catastrophe.

To date, this pandemic has infected over 142 million people worldwide and withered the global economy by 4.4 percent in 2020. It is far too early to contemplate the ending of this pandemic as we are still in it, writing our story as it is unfolding before our eyes, navigating our way on a path that none of us has walked before. As for guidance, we are looking back into history, trying to make sense of this unprecedented time by reminiscing the parallel incidents of our past, trying to cope by predicting the possible impacts of this moment on our future. This is a story about my erudition, as a father, scientist and Bangladeshi, pondering on my past as I try and plan for the possible imminent future.

Part one: Decoding DNA to understand my past

Around 600,000 years ago, somewhere in Africa, a group of hominins (human species and all our immediate ancestors) evolved to become Neanderthals, close cousins to us, the Homo sapiens. They left Africa about 350,000 years or more ago for Eurasia. For more than 300,000 years, Neanderthals lived in Europe and Central Asia until they became extinct, around 40,000 years ago. Contrarily, our Homo sapien ancestors, who left Africa approximately 100,000 to 60,000

years ago, eventually conquered the world.

Deoxyribose Nucleic Acid or DNA works as the molecular blueprint of all living things. This unit of inheritance is passed on generation-to-generation, responsible for putting my great grandfather's nose on my son's face even though they've never met each other. Our DNA consists of over three billion of four different chemicals: adenine "A," thymine "T," guanine "G," and cytosine "C," which uniquely combines to create a DNA blueprint for each individual.

When the entire human DNA was decoded 15 years ago, it ushered in a new era of genetic medicine. In 2010, the first draft of the Neanderthal genome sequence was published. One of the surprising discoveries



PHOTO: COLLECTED

in decoding the Neanderthal DNA sequence was the evidence of interbreeding between Neanderthals and the ancestors of Homo sapiens. By combining next-generation sequencing technology with rigorous statistical modelling, scientists can trace back the archaic DNA in the genome of present-day Homo sapiens, including my own, and provide convincing scientific evidence of such propagation. About one to four percent of the DNA of all Homo sapiens outside of the African continent contains pieces of DNA from Neanderthal, also known as variants.

I was born in Dhaka to Bangladeshi parents and immigrated to the USA at the age of 19 to pursue my education. As a cancer biologist, I consider myself a fact seeker of human biology—spending most of my adult life chasing the mystery of genetic disease to mitigate the suffering of cancer patients. My inquisitive nature as a scientist was the only provocation behind the

decision to have my own DNA analysed as soon as such testing was made available to the public in the United States. I chose 23andMe, a widely used DNA testing service to decode my DNA.

As I had anticipated, the test suggested that 100 percent of my ancestry is Bengali. My paternal haplogroup (family of lineages that share a particular set of DNA signature or variant) is O-Page23, a long line of men who lived in eastern Africa 275,000 years ago. This is a rare haplogroup among 23andMe customers as only one in 82,000 shares this same haplogroup assignment. My maternal haplogroup is M30d1, which originated from a single woman whose lineage lived in eastern Africa from around 150,000 to 200,000 years ago. While the M haplogroup is widespread throughout South and East Asia, the degree of diversity of the M haplogroup is the highest in the Indian sub-continent.

My DNA test revealed that out of the 2,872 Neanderthal variants examined by 23andMe, 196 variants in my DNA belong to Neanderthals. This is about five percent more than the other 23andMe customers. For the past 10 years, extensive research has been conducted to understand the functional consequence of the Neanderthal DNA in our genome and how it may influence human evolution. Scientists have utilised genome-wide association or GWAS, a method used in genetic research to examine if a specific genetic variant is related to any trait or disease.

Studies have linked different Neanderthal variants with particular genes, which make up a small section of our DNA. These genes contain the instructions for specific protein—molecular produce by our body by following the instructions written in a gene within our DNA. Protein carries out all the functions for genes. In the presence of a Neanderthal variant, the function of a protein can be altered, which leads to individual functional traits, ranging from hair colour and skin to neuropsychiatric disorders and immune system functions. According to the initial 23andMe analysis, none of my Neanderthal variants are associated with any known Neanderthal traits.

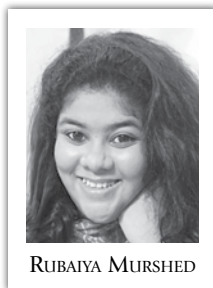
But discoveries in this field are evolving by the minute. In fact, in just one night, the perception concerning my DNA carrying harmless Neanderthal variants, as it was initially reported to me, was suddenly altered in a significant manner.

Part two of this article will be published tomorrow.

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Critique, criticism and a new development indicator



RUBAIYA MURSHED

I've always wanted to be a PhD student. I love reading and writing and a PhD is literally being facilitated—often with a full scholarship—to think, read

and write. It's an opportunity to learn about theories, concepts, philosophies and methodologies. Out of these, what stands out for me the most—especially in relation to the education I've received in Bangladesh—are the discussions on philosophies and on new ways of thinking. Some topics sometimes seem so simple at the beginning but in the end, result in blowing my mind. One such discussion was on the difference between criticism and critique, and I found this especially stimulating when I began to find the relevance of the topic in everyday life.

When a teacher scolds a student for making a mistake, is that criticism or critique? When an academic reviews a peer's paper and suggests a change, is it critique or is it criticism? When an aunty compares her daughter's skin colour to yours, is that critique or criticism? What about when a parent pushes you to study for the BCS, when a friend challenges your Facebook status, when someone expresses a different opinion than you, or when citizens take to the streets to protest? What is critique and what, then, is criticism?

There is a fine line between these two concepts. If invited to be either "for" or "against" something, we

may often find ourselves engaging in criticism rather than critique. According to the professor who taught this idea to us, "Criticism invites a complaint, or a state of opposition, or identifying negative aspects". On the other hand, "Critique challenges rather than confirms, disrupts rather than reproduces cultural traditions and conventions, and shows tensions in language use, encouraging dissentation rather than surface consensus". Brookfield (1987) suggests that being appropriately skeptical about any knowledge or solution that claims to be the only truth or alternative is the essence of critique and criticality. According to Alvesson and Deetz (2021), there may be distinctive differences between the language used to critique and the language used to criticise. Once you know this, it may be easier to notice the patterns in the language used—the often more negative connotations used to criticise and the more constructive approach to critique. One of the two is more positive, in essence, than the other.

Critique forces you to question your premise and to rethink the taken-for-granted assumptions and beliefs that power your way of thinking. Critique presumes that it can lead to improvement and social change, whereas that is, in most cases, not likely to be the intention of criticism. On the onset, understanding intention is the key to distinguishing between whether a remark is critique or criticism. This may be tricky, but as indicated in the definitions of critique, language is often indicative, and so may be gestures, tones and body language. It's not just what we say, but also how we say it.

Is it important to be critical? More



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importantly, is it important to have a critical mass? We may each have different takes on this, different answers. Averaging the answers, and weighing whether the "yes" or "no" group is larger, is an indication of the pulse of a country. I believe that a critical mass is the key to progress and that critical thinking and the practice of criticality should be prioritised in education. Learning to accept critique is part of this practice. Passion, the drive to improve and the inclination to receive critique go hand in hand.

There is a history of education systems evolving from the purpose of creating a critical mass. There was a time when a group of individuals sitting under a tree listening to someone wiser constituted a classroom. Over time, what we consider a class, a classroom and an education has transformed into what it is today. In

his book *School on Trial: How freedom and creativity can fix our educational malpractice*, Nikhil Goyal eloquently traces the history behind the development of the American public school system and the consequent purposes of modern-day schooling. One purpose, he suggests, is to teach children how to comply with orders, submit to authority and "fit in". He mentions the thoughts of the eminent Noam Chomsky who once said, "The whole educational and professional training system is a very elaborate filter, which just weeds out people who are too independent, and who think for themselves, and who don't know how to be submissive...". It makes one wonder whether the establishment of a critical mass serves, in actuality, the opposite purpose of modern-day education. It seems very likely that the absence of a critical mass, of the "disobedient", may be a rather desired state for many, if not all, modern states.

The inclination to critique or criticise is a reflection of one's mentality. And I believe that "mentality" should be included as an indicator of development. Recently, there has been much focus on strengthening the approach that we use to assess a country's development. In February, Prof Wahiduddin Mahmud wrote in an oped in *The Daily Star* that GDP, commonly used to measure economic development, ignores many non-income aspects of human well-being. As an unconventional approach to assessing development, he shed light on some new factors, largely emphasising the quality of life, the quality of public transport, tap water, public libraries, human resources etc. I strongly believe that mentality

should be added to the list because, at the end of the day, if there is no development of the mind, of human nature and behaviour, towards goodness and wellness—is development really development? If we have high quality roads and transport, but we don't think twice before wronging someone; if we have the most modern technologies and the best education system, but we are alright with cutting corners for personal gain; if Dhaka becomes like Singapore but we, the people, spend the larger part of our days criticising, backbiting and belittling each other—would our gains really be gains? Mentality matters—are our people more pro-social or pro-self, are our people more prone to criticise than critique, are we by nature mostly kind or mostly selfish? These factors should be a part of our indicators of development. Subsequently, how we reliably measure these traits becomes an important issue and may just be the next big challenge for social scientists to figure out.

What we believe should be considered development indicators will continue to be a topic of debate and discussion as we tread, as a nation, to a better future. The point is that these debates and discussions get to unfold. Be it critique or criticism, opinion or fact—an undeniable indicator of development is that our thoughts can be freely and comfortably shared. For the day that we are silenced, and gradually lose the will to voice our thoughts, is the day that hope no longer has any promise.

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QUOTABLE Quote

YEVGENY YEVTUSHENKO
Soviet-Russian poet (1932—2017)

When truth is replaced by silence, the silence is a lie.

CROSSWORD BY THOMAS JOSEPH

ACROSS

- 1 Busy folks in Apr.
- 5 Take wing
- 9 Urge to be quiet
- 10 Takes on
- 12 Ship of 1492
- 13 Uniform color
- 14 Shakespeare's merchant
- 16 Spot
- 17 Wish undone
- 18 1920 Olympics host
- 20 Warming season
- 22 Tiny workers
- 23 Mystical deck
- 25 Bother
- 28 "Nashville" director
- 32 Tummy relief

DOWN

- 1 Bar exercise
- 2 Football team member
- 3 Regarding
- 4 Mock-'50s band
- 5 Photo session
- 6 Dressing part
- 7 Out of bed
- 8 Change back
- 9 Ship poles
- 11 Percolates
- 15 Fix firmly
- 19 Steam engine pioneer
- 21 "—Wonderful Life"
- 24 From bygone days
- 25 County events
- 26 Fantastic
- 27 Horse house
- 29 Sullen
- 30 Sites for fights
- 31 High homes
- 33 Placates
- 37 Mad as—hen
- 39 Wide shoe marking

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BEETLE BAILEY BY MORT WALKER

BABY BLUES BY KIRKMAN & SCOTT

YESTERDAY'S ANSWERS

B	L	O	T	S	K	I	S
L	O	C	E	T	A	E	S
G	A	S	R	E	D	L	I
S	L	I	P	O	N	S	D
E	D	E	N	S	W	E	S
E	N	G	C	O	T		
F	A	C	T	M	O	O	R
A	S	H	R	A	N	D	A
S	K	A	T	I	N	G	D
T	O	N	E	S	A	C	I
S	U	C	R	E	S	I	N
T	E	N	S	A	G	E	S