THE WALL STREET JOURNAL.

Neanderthal DNA in Modern Humans Linked to Risk for Certain Diseases, Study Says

Research finds humans and Neanderthal genomes share genetic variants related to excessive blood coagulation, risk for tobacco addiction and depression

By KAT LONG
Feb. 11, 2016 2:00 p.m. ET
http://www.wsj.com/articles/neanderthal-dna-in-modern-humans-linked-to-risk-for-certain-diseases-study-says-1455217201

Neanderthal DNA present in modern-day humans plays a role in our risk for depression, skin lesions and nicotine addiction, according to a new study.

Since the first Neanderthal genome was sequenced in 2010, and traces of Neanderthal DNA were found in modern humans, researchers have wondered what function the ancient material serves now. A team led by researchers from Vanderbilt University said it has found that Neanderthal DNA plays an active

role in modern Homo sapiens by turning on and off certain genes linked to a variety of diseases, according to a paper published online Thursday by the journal Science.

Co-author Tony Capra, an assistant professor of biological sciences at Vanderbilt, and his colleagues compared two sets of data: a large database of electronic health records from 28,000 people of European ancestry, and genomes from fossilized Neanderthal bones.

In both sets of genomes, the scientists found genetic variants related to excessive blood coagulation, risk for tobacco addiction and depression, according to the paper.

Dr. Capra said in an interview it isn't clear that Neanderthals actually had these conditions, or why they developed these genetic variants. He speculated the DNA may have helped them cope with a changing environment. For example, the genetic variants linked to increased blood coagulation may have helped that Neanderthals' wounds heal quickly, but may cause blood clots in people today, he said.

Another variant may stem from Neanderthals' changing levels of sun exposure as they migrated, but is linked today to actinic keratosis, a skin disease resulting from exposure to the sun's ultraviolet radiation, Dr. Capra said.

"What was beneficial back then may not be beneficial now," Dr. Capra said.
Previous analyses suggested that modern humans of European origin inherited between 1% and 4% of their DNA from Neanderthals, while people of African and Asian ancestry derived less. Some evolutionary biologists theorize that Homo sapiens picked up the genes by interbreeding with Neanderthals around 50,000 years ago, after both populations left Africa.

"A little Pleistocene hanky-panky wouldn't have been unexpected," said Ian Tattersall, curator emeritus of the American Museum of Natural History's division of anthropology, who wasn't involved with the new study.

The findings may not lead to new diagnostic tools for these diseases, said Sriram Sankararaman, assistant professor in computer science and human genetics at the University of California, Los Angeles, who wasn't involved with the research. But, he said, the study gives geneticists a way of decoding how the traits evolved over time.

The development of large databases will make more comparisons between archaic and modern genomes possible, said Christina Warinner, assistant professor in the University of Oklahoma's department of anthropology. She also wasn't involved with the study.

"We carry a lot of genetic baggage from the past," Dr. Warinner said. "Understanding why it's there and where it came from could be helpful for future medical treatments."