Part of the curriculum:

Relationships between present and fossil organisms – Phylogeny – Evolution

Great grandma was a Neanderthal

By David Brown
Washington Post Staff Writer
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With the help of a pinch of fossil bone dust, scientists have discovered that modern human beings interbred with Neanderthals tens of thousands of years ago, and that 1 to 4 percent of the genes carried by non-African people are Neanderthals'. The new data answer a few of the many questions about modern human beings' relationship with their last big competitors, who died out about 30,000 years ago. The data also hint at what *Homo sapiens* had -- but *Homo neanderthalensis* did not have -- that may have made the difference between survival and extinction. The Neanderthal genes were recovered from three bones excavated in a cave in Croatia about 20 years ago. One is 38,000 years old, another 44,000 years old and one is undated. They appear to be shin bones, and all are from females. They also seem to have been intentionally broken, possibly to get at the marrow to eat. Proto-humans and chimpanzees diverged from each other about 6.5 million years ago. Modern humans and Neanderthals diverged about 300,000 years ago. On a genetic level, Neanderthals and modern humans are almost as closely related as today's ethnic groups are to each other.
"What this means is that Neanderthals are not totally extinct. In some of us, they live on," said Svante Paabo (Director of the Department of Genetics, Max Planck Institute for Evolutionary Anthropology, Leipzig, Germany) who led the genome reconstruction.

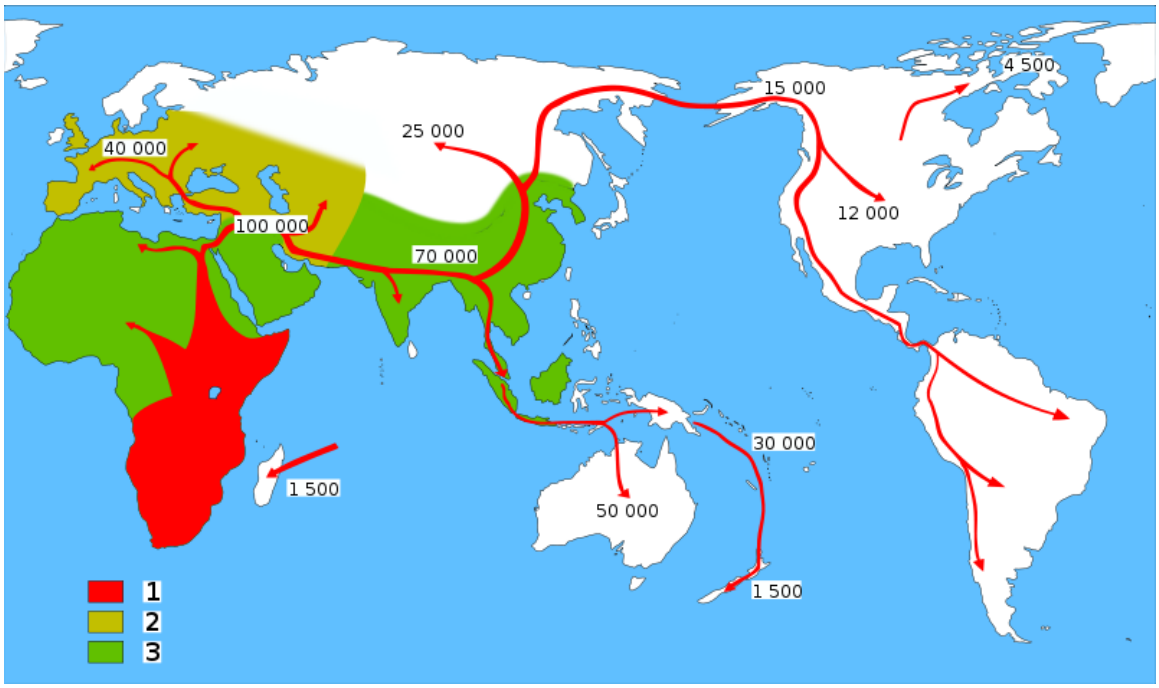
The findings show that modern humans and Neanderthals interbred, probably in the Middle East, between about 100,000 and 80,000 years ago, soon after modern humans migrated out of Africa and before they diversified into the ethnic groups that exist today. That's why northern Europeans, the Chinese and Papua New Guineans carry traces of Neanderthal ancestry, but Africans do not.

Actually just a low level of Neanderthal ancestry in Eurasians is compatible with a very low rate of interbreeding (<2%). This was potentially attributable to a very strong avoidance of matings, less healthy hybrids, or both. These results suggest the presence of very effective barriers to gene flow between the two species.

Using the documents, present the discovery and explain why it gives us new insights in the appearance of modern humans

You may use the following key words:

Genes – to cohabit – interbreeding



Map showing early migrations of modern humans (Homo sapiens).
(1)=Homo sapiens (2)=Neanderthals (3)=Early hominids.