

## Duke in Denmark 2022

### Exercise #2: Natural History Museum (Statens Naturhistoriske Museum) – Face your Past: Neanderthal

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We are very fortunate to have a temporary exhibit on Neanderthals in Copenhagen at the moment. Today's exercise will therefore bring you face to face (quite literally as you will see) with the other human species that we shared the planet with until Neanderthals went extinct. Although differentiated as *Homo sapiens* and *Homo neanderthalensis*, suggesting two completely different species, we know Neanderthals and humans successfully interbred. On average, you share between 1-4% of their DNA. My recent DNA test notified me that I have a statistically significant higher percentage of Neanderthal DNA than the average human being (without explaining that statement further). Ok, that will be on the next exam.

Now to the exhibit....

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- 1) When did the Neanderthals go extinct?
  
- 2) What is the biological definition of a species? (you might have to look this up...)
  
- 3) What was the last interglacial called (the one before the current one we are in) and when was it?
  
- 4) How does the maximum global temperature of that interglacial compare to temperatures we see today?
  
- 5) At the beginning of the exhibit, they depict the sights and sounds of a hunt – what is being hunted?
  
- 6) How long were Neanderthals on Earth?
  
- 7) What natural landscape features did Neanderthals use to their advantage in their hunts?
  
- 8) What was the primary weapon used to hunt by Neanderthals?
  
- 9) What was notably absent from the throwing weapons we have found associated with Neanderthal sites?
  
- 10) What actual concrete evidence do we have that suggests the animal in question #5 was hunted by Neanderthals?
  
- 11) Hunting without projectile weapons is difficult and extremely dangerous. Take in the scene depicted and described here. What tactics did Neanderthals use to assure a successful hunt?

- 12) Are there known "Neanderthal" sites from Denmark?
- 13) What was the last Ice Age, that is "glacial", in Europe called?
- 14) What was the Ice Age that occurred prior to that called?
- 15) Which of these Ice Ages experienced the greatest ice sheet extent (you might have to look at the nifty map on the wall).
- 16) What did Neanderthals use pitch for (although probably not for their spears)?
- 17) Make a list of a typical Neanderthal menu
- 18) Like their human neighbors, what nutrient-rich "delicacy" was on the Neanderthal menu that rarely shows up on modern menus today?
- 19) How can archeologists be sure that the animal bones they find alongside Neanderthal remains were not just randomly washed together, or represent times of cohabitation? Indeed, how do they know that these animals were butchered and eaten?
- 20) How is cooking food (both meat and plants) advantageous?
- 21) Like their human neighbors, Neanderthals used wood and \_\_\_\_\_ on their fires.
- 22) We suspect that Neanderthals could make their own fire (rather than just collect it from lightening or natural fires). What natural ingredients might they have used to start a fire?
- 23) What objects, found at various Neanderthal sites, suggests that they had a sense of aesthetics and beauty? (Ok, this is so cool!)
- 24) What natural coloring agent is often found at Neanderthal sites?
- 25) When were the first Neanderthal remains discovered in the little "Feldhofer Grotto" in Germany?

- 26) What was the sex and age of the first Neanderthal skeleton found?
- 27) What evidence suggests that Neanderthals probably cared for their sick and dying?
- 28) What controversy surrounds the idea of “Neanderthal Burials”?
- 29) What did Neanderthals use to make “glue or pitch”? How do you think might Neanderthals have discovered how to do this?
- 30) How were the tips of throwing spears hardened?
- 31) The method of making multiple tools from one stone core is called \_\_\_\_\_ (this is the Neanderthal’s version of the Swiss Army knife!)
- 32) What is the Neanderthals rock of choice?
- 33) Although stone implements are not found attached to bone or wood handles, how do we know that pitch was used for these purposes?

**Let’s go on into the next room**

- 34) What environmental change took place in Europe around 80,000 years ago?
- 35) What is wrong with our popular mental association of Neanderthals and the frozen tundra of the Ice Age?
- 36) Marvel at the “cute” landscape reconstruction (poor Mammoth....). How do we reconstruct what plants were present during this time?
- 37) What is nearly 10,000 km long and 2,000 km wide at this time?
- 38) How tall did mammoths get (at the shoulder)?
- 39) What characteristic feature did mammoth sport on their head (which by the way, readily distinguish them from mastodon)?

40) When did mammoths go extinct?

*Take a look at the mammoth skull. Imagine you are “pre-scientific” person who has never seen an elephant before. Based on the skull, how many eyes would you have said this “monster” must have had? This is where Greek legends started.....*

41) Why is the Cave Bear called, well, Cave Bear? Does this mean it spent its life in caves? LOL

42) When did cave bears live?

43) What happens to the morphology of cave bears throughout the last glacial period?

44) Perhaps surprisingly (since they seem to have a rather nasty disposition in popular culture), what was the primary diet of cave bears? (this is reflected in their teeth, the surfaces of which look much like....yours!).

45) Ugh, what’s that large bone between the bear’s hindlegs (see, you also learned something new and interesting about bears today)....

46) What two types of hair (fur) did woolly mammoths and woolly rhinoceros have?

47) How else are these members of the “megafauna” adapted to life in the cold?

48) Take a look at the surfaces of the mammoth’s molars? Are these adapted to chopping, slicing, or grinding?

49) Besides rhino and woolies, what other animals roamed these Ice Age steppes (tundra)?

50) We actually have a very good idea of what the diet of the Ice Age herbivores consisted of. How?

51) Mammoths are often shown reconstructed with reddish-brown hair. Why is this probably inaccurate? What was the more likely color (!)?

52) The exhibit lists two drivers behind the extinction of the mammoths, they are.....

**Let’s go take a look at the naked dude in the next room...**

53) Remind yourself again, what evidence do we have that Neanderthals and Humans interbred?

54) How long did Neanderthals and Humans share Eurasia with each other?

55) By which “land route” did the African ancestors of humans arrive in Europe between 45,000 and 60,000 years ago?

56) Speculations about why Neanderthals died out are as numerous as there are people who love them. The exhibit mentions a “measurable” index that would have contributed to their demise by the time modern humans arrived. What was it?

57) How are Ice Age hyenas and Neanderthals rivals?

58) What significant discovery was made in the Denisovan Cave in Siberia?

Now take a moment and watch the rather cleverly designed audio/visual show (the headsets provide English translations). Take a moment to reflect. This is more than just learning about some extinct species. It is about looking in the mirror. How would modern society treat Neanderthals today?