Jonathan Quang 5/18/15

Neanderthal Lab SLS44-09/Period 4,5

Aa) The two theories on Neanderthals place in the hominid family tree are that Neanderthals were a predecessor of sorts for modern humans and that Neanderthals were an entirely different species.

Ab) Climate change is not an easy explanation for the decline of Neanderthals because of the fact that they have survived glacial climates before. Their barrel chests and stocky limbs plus the addition of animal skins would have kept the Neanderthals warm. In addition, the Neanderthal's ambush hunting strategy was used for large solitary mammals that were present in the cold environment.

Ac) Evidence has begun to show that the boundary between Neanderthals and modern humans is blurrier than previously expected. For example, both exploited marine resources and small game, and both used roughly the same tools for the same purpose. Both also used tree resin to bind stone to wood. Neanderthals and modern humans also contain the same gene that enables them to speak, the FOXP2 gene.

Bd) Mitochondrial eve was a woman who founded a new linage of mitochondrial DNA.

Be) The types of sequences used to analyze DNA are microsatellites, small, repeating segments of DNA, single nucleotide polymorphisms, swaps of one nucleotide for another, and copy number variants, large deletions or duplications of DNA. These sequences are used to analyze DNA because similar members of a population are likely to have similar sequences. The way to identify this is by microsatellites, single nucleotide polymorphisms, and copy number variants among collected DNA samples.

Bf) Native Americans have much less diversity than Africans because each time a group splits off from the original African population, the group only carries a portion of the gene pool available to the original Africans.

Bg) A study by Pardis C. Sabeti of the Broad Institute in Cambridge and her colleagues indicated that hundreds of regions of the human genome are still undergoing selection. Some of these regions govern hair follicles, skin color, disease resistance. Some human populations are also adapting to regional differences in food and sunlight.

Ch) A founder mutation is a mutation that appears in many people of a certain population because that population was spawned from a small group of people who had a certain mutation and essentially started that population.

Ci) Founder mutations have survived because many of them are recessive. People who have only one copy of the allele for the mutation, but also have the dominant allele, will only express the dominant allele. This enables these people to be carriers, and pass on the recessive allele since they are not affected by it.

Cj) The PTC gene has been used to trace the migratory patterns of early humans by being present in seven different forms in sub-Saharan Africa, but one major taster and one major nontaster forms have been found outside of the sub-Saharan population. This suggests that a small group of humans migrated out of Africa and carried the two forms with them.

Dk) The evidence indicates that humans are all "African" is that the genetic variation in Africa is greater than nearly all populations of humans outside of Africa. Populations outside of Africa also share similar sequences to those in Africa.

Dl) When Neanderthal DNA was compared to human DNA, it was found that the Neanderthal was not significantly closer to one African DNA sample than another. However, European and Chinese DNA samples had more matches than the African DNA samples.

Dm)The speaker stated that the DNA analysis shows that somewhere in the Middle East, African populations that left Africa bred with Neanderthals. These bred populations then spread throughout the Eurasian area.

Dn) The fragment of the pinky told the researchers that the organism to whom the pinky belongs has a common ancestor with Neanderthals about 640,000 years ago, and a common ancestor with modern humans about 804,000 years ago. The DNA of this human shared some similarities to those in Pacific islands despite being found in southern Siberia.