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Clip from Episode 3: Human Origins

Host: David Christian, historian, founder of Big History, and emeritus professor at Macquarie University, Sydney, Australia

Guest: Michael Archer, paleontologist and evolutionary biologist at the University of New South Wales, Sydney, Australia

Mysteries of Our Human Origins

David Christian: How close are we to other hominins or should I say hominids?

Michael Archer: Hominids, hominids is better. So, hominids actually includes the great apes, the gorillas, the chimps. So, within that group, hominins are the smaller group that are more human like. It's about a 5- or 6-million-year-old part of the bioblob. And how close are we to the various parts.

David Christian: Say Neanderthals.

Michael Archer: Yeah, Neanderthals are very good example, and they've been argued about for so long. I mean, when we first discovered Neanderthal skulls, they looked so unusual, gigantic beefy brows and big jaws and sloping foreheads. They thought, this isn't *Homo sapiens*; this can't be our species. So, they were given a new species name. The game has moved on, and now we're not so sure, because it now turns out that something like 6% of the DNA of Europeans is actually Neanderthal DNA.

David Christian: Six percent?

Michael Archer: Six percent, so nobody can say anymore that, you know, Neanderthals are different than us; actually, they live within us. Even many of the Southeast Asian peoples and Australians and New Zealanders, a lot of these people have about 4% of another human, another hominin, the Denisovans, a new group we've discovered recently, an extinct group of humans, and yet their DNA appears to have still persisted in a lot of the peoples in Southeast Asia. So, did these people, did these species become extinct or simply absorbed by us? What we do know for sure is they were hybridizing. Humans are mischievous things. All the hominins seem to have occasionally thought, I like that one over there, or not so much that one over there. So, there was a lot of intermingling, a lot of genetic mixing. And that accounts for how come a lot of these, the DNA of what we otherwise previously assumed were extinct hominins are actually still within us. It's complicated stuff.

David Christian: I think I read recently, recent research arguing that the genes that we, that Europeans, I should say, acquired from Neanderthals, may have been crucial to enabling them to settle Europe.

Michael Archer: Yes.

David Christian: Does that sound plausible to you?

Michael Archer: It's fascinating, isn't it, because some of these genes may relate to the ability to breathe more rarefied air, colder temperatures. These same genes are fascinating to those of us who are trying to understand how did an Asiatic elephant become a mammoth? Because the same processes are involved, often the same genes in these different groups that are evolving and enabling animals that are extending into new areas to adapt and survive in those areas. We even know now today, amazingly, in Tibet, the people that are living up in Tibet, normal *Homo sapiens*, it's us. But yet, those people who live there have different lung capacities, different ability to survive. If you suddenly took a trip up to where they are, you'd drop dead in your tracks, and yet, they're evolving now. Evolution has not stopped in humans. We're continuing to adapt to the various environments we're in. Question is, are we going to be able to adapt fast enough to the changing world that's coming?

David Christian: Because now we're speeding up the process of change.

Michael Archer: Absolutely.

David Christian: Yeah.