

## Evidence of Human Evolution

Dr. Rick Potts: 00:01 Evolution involves change over time. I have here five skulls of five different fossil individuals out of about 6,000 fossil individuals that are known that helped document the course of human evolution. Well, you can see from just these five, representing about two and a half million years ago, to about a million years ago, to near the present, that there were changes in the size of the brain case, and also in the size and shape of the face. You can see that the brain got larger over time, and that the face generally got smaller over time until you get to our species where we have the largest brain and the smallest face that's tucked in underneath the brain case. That's very different from what we have two and a half million years ago, with a small brain case and a large sloping face. (00:53) What we see then is change over time in the physical form, in this case brain size and the size of the face, but human evolution evolved not only change in the physical form of early humans up to ourselves, but also change in behavior. I have some of the stone tools that help show us some of the changes that occurred in the behavior seen in the archeological remains. We have the earliest stone technologies known back to a little bit more than two and a half million years. The earliest technologies consisted of basically a rock, like a cobblestone like this, which was battered, and you also have the core. The hammer stone was brought back down on this cobble, and flake scars were made. What flew off from the cobble itself were the sharp stone flakes, which were really useful for cutting meat off of animal bones, and also maybe whittling a stick. That stick could be used to dig in the ground for roots and tubers, or maybe even deeper into the ground for water during times when things were dry. (01:59) About one and a half million years ago, we see that the early humans were able to make really large flakes, and to take those flakes and to strike them all the way around creating a sharp edge all the way around. This was a really handy tool to carry around with you for a lot of different purposes. This is the oldest known hand axe, and hand axes were around for yet another million years. Things change pretty

slowly. Well, what we see then, beginning about a half million years ago, is that the stone hand axes became smaller, and they became more and more refined, to the point where they became almost really pieces of art, really beautiful craftsmanship. Then technology kept getting smaller as you see these fine blades. Then even the innovation of arrowheads. Arrowheads were great, of course, for killing fast and dangerous prey. The history of technology has been pretty much the same ever since, going from big and clunky to really small and refined. (03:03) We then see over the next 100,000 years up to the present, innovation really picks up. We have the origin of say bone harpoons, which were used for fishing, and also objects where we see symbolic markings for the first time on the bones, on antlers, and on many different kinds of objects. Indicating that early humans were beginning to live in a symbolic world where they used language to communicate with one another. We even have artifacts like this. This is one of the oldest known artists' palettes. Humans of our species put pigment over this flat surface, and they used that pigment, and sometimes put it in their mouth to make paint or mixed it with water, and they put art onto cave walls. These fantastic painted caves that we know from Europe, from Africa, from Asia, and Australia, and eventually all around the world, and that represents the origin of art. (04:04) What we have then here is not only change in physical form, brain size and the size of the face, but also change in behavior, and that's evolution.

[Return to the web page for this video, "Evidence of Human Evolution"](#)