Historians rely mostly on documents, or written records, to create their pictures of the past. However, no written records exist for the prehistory of humankind. In fact, prehistory means the time before writing was developed. The story of prehistoric humans depends on archaeological and, more recently, biological evidence. Archaeologists and anthropologists use this information to create theories about our early past. Archaeology and Anthropology Archaeology is the study of past societies through analysis of what people left behind. Archeologists dig up and examine artifacts—objects made by humans. Artifacts may be tools, weapons, art, and even buildings made by early humans. Anthropology is the study of human life and culture. Culture includes what people wear, how they organize their society, and what they value. Anthropologists use artifacts and human fossils to create a picture of peoples' everyday lives. Fossils are rocklike remains of biological organisms—a leaf imprint or a skeleton. Archaeologists and anthropologists have developed scientific methods to carry out their work. They excavate, or dig up land, at sites around the globe to uncover fossil remains of early humans, ancient cities, burial grounds, and other objects. The examination and analysis of these remains give archaeologists a better understanding of ancient societies. By examining artifacts such as pottery, tools, and weapons, for example, these scientists learn about the social and military structures of a society. By analyzing bones, skins, and plant seeds, they are able to piece together the diet and activities of early people. One of the most important and difficult jobs of both archaeologists and anthropologists is dating their finds. Dating Artifacts and Fossils Dating human fossils and artifacts helps scientists understand when and where the first humans lived. One method used to determine age is radiocarbon dating. All living things absorb a small amount of radioactive carbon, or C-14, from the atmosphere. After a living thing dies, it slowly loses C-14. By measuring the amount left in an object, a scientist can figure its age. This method is accurate for objects no more than about 50,000 years old. For objects dating back to 200,000 years ago, scientists can make relatively precise measurements using thermo-luminescence. This measures the light given off by electrons trapped in the soil surrounding fossils and artifacts. Microscopic and biological analyses of organic remains—such as blood, hairs, and plant tissues left on tools and weapons— give scientists still more information. Such analyses have shown that blood molecules may survive millions of years. This recent scientific discovery is especially useful in telling us more about humans, their use of tools, and the animals they killed. Ancient deoxyribonucleic acid (DNA) is providing new information on human evolution. The analysis of plant remains on stone tools yields evidence on the history of farming. All of these techniques give us insight into the lives of early peoples. Early Development Using remains and technology, scientists identify important stages in human development. HISTORY & YOU How did humans change? Read about the early stages of human development. In recent decades, modern science has produced a clearer picture of how early humans developed. Pieces of the puzzle are still missing, however. When a new skull or skeleton is unearthed, scientists may find that they have to revise their ideas about prehistoric human life. Hominids to Homo Sapiens What is a hominid? A hominid was a humanlike creature that walked upright. The earliest hominids lived in Africa four million years ago. They existed for millions of years, slowly changing over time. Louis and Mary Leakey spent most of their lives searching for clues about early human life. They made a dramatic discovery of a skeleton at Olduvai Gorge in East Africa. According to their son: PRIMARY SOURCE "My father was ill that morning, so my mother set out alone . . . but found very little until just before noon, when she

noticed a scrap of enormously thick bone protruding from beneath the surface. She instantly realized that it was part of a hominid skull—and that two teeth were embedded in the rock just above it. Elated, she drove back to camp to tell my father Louis. As he remembered it, she rushed in crying, 'I've got him! I've got him! I've got him!'" —Richard Leakey, TIME, July 17, 1959 Leakey's discovery of a hominid in 1959 was the oldest at that time—about 1.8 million years old. For decades, scientists assumed these earliest of upright creatures must also have used tools. In 1974, Donald Johanson challenged this theory when his team found a new skeleton in Ethiopia. Johanson nicknamed the female skeleton "Lucy" and suggested that she was the common ancestor for several types of early human life. Scientists called this type of hominid Australopithecus (aw•STRAY•loh•PIH• thuh•CUS), or "southern ape." It flourished in eastern and southern Africa. In a 1991 interview, Johanson explained why "Lucy" changed the ideas of many scientists about hominids that walked upright: PRIMARY SOURCE "People felt that there were a number of evolutionary changes, which all went together. That our ancestors stood up to free their hands so that they could make and use stone tools. In order to make and use stone tools, they had to have large brains . . . Here comes Lucy, about 3.5 million years old . . . very small brain, . . . and we have never found any stone tool, stone artifacts, associated with her species. Yet she is walking upright. So it appears that . . . walking on two legs, precedes by perhaps as much as a million and a half years, the manufacture of stone tools and the expansion of the brain." —Donald Johanson, 1991 interview From 2.5 to 1.6 million years ago, a more advanced hominid developed with a somewhat larger brain. This hominid was named Homo habilis, meaning "handy human." Homo habilis may have used stone tools. The earliest remains of this hominid were discovered near Olduvai Gorge. Another hominid, Homo erectus, "upright human," existed from 1.8 million to 100,000 years ago. Although other hominids walked on two legs, Homo erectus had arms and legs in modern human proportion. Remains in Asia show that Homo erectus was probably the first hominid to leave Africa. Around 200,000 years ago, Homo sapiens emerged. Homo sapiens, "wise human," showed rapid brain growth and mastered fire. Two kinds of early humans descended from Homo sapiens: Neanderthals and Homo sapiens sapiens. In the Neanderthal, a valley in Germany, the earliest remains of Neanderthals, or Neandertals, were found. They probably lived between 100,000 b.c. and 30,000 b.c. Other Neanderthal remains have been found in Europe and Turkey. Besides using many kinds of stone tools, European Neanderthals made their clothes from animal skins. Neanderthals seem to be the first early people to bury their dead. According to some scholars, burying the dead indicates a belief in an afterlife.