



Ancestry

The story of us



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The fossil record places human origins in Africa. But, how did we end up all over the globe? Why do we possess such a variety of physical features and characteristics? The story of human ancestry is written in our genes.

Every person has a unique genetic makeup comprised of recombined portions of their parent's DNA. Some parts of the DNA chain can remain essentially intact across generations and are altered only through mutations which result in identifiable genetic markers. If a parent passes down that mutation to a child, who passes it to their kids, and so on, the genetic marker acts as a family seal stamped on the DNA. These genetic markers allow us to trace our familial lineages back many generations.

Genetic ancestry testing is a way for people interested in family history to go beyond what they can learn from relatives or historical documentation. Direct-to-consumer genetic testing companies can compare an individual's DNA markers with those of DNA databases from other individuals around the world. Examination of a person's genome can provide clues about where their ancestors may have originated.

Ancestry testing does have several limitations. Providers compare findings to their own database of test results, so ethnicity estimates may not be consistent from one company to another. And there is little regulation of direct-to-consumer genetic testing so it can be difficult to

assess the quality of the services being offered. As the size of the databases increase with each new participant, the accuracy of results should improve.

Ancestry is messy because reality is messy. Human genetic history is an ebb and flow of populations experiencing periods of isolation and periods of migration, leading to regular mixing of gene pools, which in turn gives every individual alive today a richly complex lineage.

As a consequence, there are few, if any, absolute genetic differences that distinguish a given human population from all others. Instead, most variations are those of degree or frequency in tiny portions of the genome. More than anything, modern genomics has shown us that there is much more that unites all humans than distinguishes us from each other.

Genomics is a rapidly growing field with countless applications beyond what we've explored here. It provides us with an exciting tool for understanding the past, as well as the potential future, of life on our planet. You'll be hearing a lot about genomics as it develops—so keep an eye out to learn more, and to see where this research will take us!