African DNA Could Hold the Key to a Cure for Cancer

But scientists continue to overlook Africans in genome research.

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Scientists have used DNA to develop treatments for diseases such as cancer and diabetes for almost 15 years. But, according to Newsweek, researchers have been ignoring the DNA of Africans in their search for many treatments, including a cure for cancer.

In 2003, researchers completed work on the Human Genome Project, which sequenced an entire set of human DNA, about 20,000 genes that encode proteins that guide all our biological functions.

Because it was believed that small differences in DNA from person to person were responsible for why folks inherit certain conditions, researchers sought to study a variety of genomes to look for certain variations in DNA's single bases, as the chemicals that make up genetic material are known.

These changes are called single nucleotide polymorphisms (SNPs). Although often harmless, these swaps can, in fact, alter how a gene works, thus increasing the risk for certain diseases and conditions including Alzheimer's, male infertility and cancer. Certain SNPs could also affect how an individual might respond to a particular medication. Furthermore, SNPs can be passed down to the next generation.

Researchers conducted genome association studies to determine whether certain genetic variants were associated with certain traits. Scientists compared the genomes of many people, but the genomes of Africans were mostly left out of the mix.

Using African DNA in genome research offers many benefits. One of the most important is that Africans' genomes are some of the most diverse on the planet because modern Homo sapiens originated in Africa 200,000 years ago. As Mary-Claire King, PhD, a geneticist at the University of Washington, and colleagues put it in a paper, "About 99 percent of our evolutionary experience as a species was spent in Africa."

In the Newsweek article, author Jessica Wapner explains, "SNPS involved in diseases like cancer are usually rare, and a rare SNP found in the genome of someone with cancer could lead a researcher to link the two."

However, what may be considered an uncommon mutation among Europeans, may turn out not to be so rare if Africans are included in such research, a discovery that could keep scientists from following false leads and help save valuable time and money in the long run.

“Given the vast genetic variation that exists in African genomes,” said Charles Rotimi, PhD, a Nigeran-born scientist who specializes in genetics and health disparities, “it is likely that we can find genetic variants that are important to cancer that may not be discovered from other human populations.”

Despite the potential benefits of using African DNA in genome research, a 2016 study showed that its use in such research had increased by only 3 percent since 2009. What’s more, only 19 percent of the 2,511 genome-wide association studies include people of color.

According to Sarah Tishkoff, PhD, a geneticist at the University of Pennsylvania in Philadelphia, “Increasing genomic research in Africa is going to benefit not just people of African descent, but all people.”

Click here to learn how elephant DNA may hold the key to more effective cancer treatment.
