

# Genetics may predict why calcium increases risk for prostate cancer

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A study led by University of Southern California (USC) epidemiologists suggests that a high intake of calcium causes prostate cancer among African-American men who are genetically good absorbers of the mineral.

"High dietary intake of calcium has long been linked to [prostate cancer](#) and this study suggests that these associations are likely to be causal," said Sue Ann Ingles, Dr.P.H., associate professor of preventive medicine at the Keck School of Medicine of USC and principal investigator of the study. "At this point, however, we're not in a position to make any public health recommendations."

Ingles and colleagues at Wake Forest Baptist Medical Center and the [Cancer Prevention](#) Institute of California studied 783 African-American men living in the San Francisco and Los Angeles areas, 533 of whom were diagnosed with prostate cancer. They studied the effects of genotype, [calcium intake](#) and diet-gene interactions.

The study is one of the few to explore genes related to [calcium absorption](#) or to examine diet in a large African-American population. Although prostate cancer is 36 percent more common among African-Americans than in non-Hispanic whites, data on the diet-cancer link primarily comes from Caucasian populations. The team targeted a genetic allele that is more common in populations of African origin than in other populations and which is associated with regulating the absorption of calcium.

In the United States, more than 240,000 men are diagnosed annually with prostate cancer and about 33,720 die from the disease, according to the National Cancer Institute. Only lung cancer kills more American men. According to the Prostate Cancer Foundation, there are no proven strategies for preventing the disease, but changes in diet and lifestyle have shown to reduce the risk of disease progression.

The paper, published online by the [Journal of Bone and Mineral Research](#) in September, found that men who reported the highest intake of calcium were two times more likely to have localized and advanced prostate cancer than those who reported the lowest. Men with a genotype associated with poor calcium absorption were 59 percent less likely to have been diagnosed with advanced prostate cancer than men who genetically were the best absorbers of calcium. And, among men with calcium intake below the median, genetically poor absorbers had a 50 percent decreased risk of having advanced prostate cancer than the best absorbers.

The results pose somewhat of a "conundrum," Ingles said. Although calcium appears to increase risk for prostate cancer, it is essential for bone health and appears to protect against colorectal cancer, she said.

But African-Americans generally have strong and healthy bones and regular screening can help catch colorectal cancer, said first author Glovioell W. Rowland, Ph.D., a post-doctoral fellow in the Keck School's Department of Preventive Medicine.

"It may be possible in the future to personalize treatment by genotype," Rowland said. "But, first, our results have to be confirmed by studies of different races to indicate whether it's the allele that causes the disease or something else that's highly associated with African-American men."

Co-author Gary G. Schwartz, Ph.D., associate professor of cancer

biology and epidemiology and prevention at Wake Forest Baptist, said the findings provide some clarity about the link between calcium and prostate cancer. Unlike age and race, which are fixed risk factors for prostate cancer, diet is modifiable.

"We now have a better understanding of why calcium in diet may increase the risk for prostate cancer and who is at increased risk," Schwartz said. "If our results are confirmed, it gives much better insight into the preventable causes of prostate cancer. So if I know I'm a good absorber of calcium, I may want to be careful about the use of [calcium](#) supplements."

Provided by University of Southern California

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