

Genetic differences may cause higher rates of prostate cancer in African-American men

September 20 2011

Genetic differences in prostate cells seem to be a root cause of the prostate cancer disparities between African-American men and white men, according to findings presented at the Fourth AACR Conference on The Science of Cancer Health Disparities, held here Sept. 18-21, 2011.

Prostate cancer is the second most common cancer among U.S. men, with occurrences and mortality rates higher in African-American men compared to white men.

"There are a lot of socioeconomic and environmental factors that create differences in levels of prostate cancer in these two groups," said Bi-Dar Wang, Ph.D., assistant research professor of pharmacology and physiology at the George Washington University. "We've found that [genetic elements](#) play a role in these disparities as well."

Wang and colleagues analyzed normal and cancerous prostate tissue samples from African-American and white men who underwent prostate biopsies. They looked at two key genetic pieces: [messenger RNA](#) (mRNA), which carry codes from DNA that is then used to make proteins; and microRNA, shorter [RNA strands](#) that regulate that process by binding to mRNA and interrupt the gene expression or [protein translation](#).

The results showed enough differences between African-American and white men to determine that each race has "population specific" mRNA

and microRNA.

Specifically, they found nearly 400 mRNAs were differentially expressed between the cancerous prostate tissues of African-American and white men. These differences are crucial because mRNA and microRNA affect the biological pathways by which prostate cancer tumor formation is either promoted or stopped, according to Wang.

Wang believes these results are important because instead of focusing on socioeconomic and environmental factors, the researchers focused on biological differences, which could lead to more specialized treatment options in the future.

"It is still too early to conclude any novel treatment strategy based on our results. However, the genomic analyses of prostate cancers have revealed that differential mRNA and microRNA expression and the associated gene network rewriting may be critical in prostate cancer health disparities," said Wang. "These findings will advance our knowledge on the molecular mechanisms underlying prostate cancer disparities and may help with the development of novel strategies for prostate cancer detection and personalized treatment for African-American men."

Provided by American Association for Cancer Research

Citation: Genetic differences may cause higher rates of prostate cancer in African-American men (2011, September 20) retrieved 5 May 2024 from <https://medicalxpress.com/news/2011-09-genetic-differences-higher-prostate-cancer.html>

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