U.S. Department of Health and Human Services
NIH News
National Institutes of Health

National Human Genome Research Institute (NHGRI)

FOR IMMEDIATE RELEASE
Wednesday, October 11, 2006

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Researchers Publish Results of Largest Genome-Wide Linkage Study of Prostate Cancer Among African American Men

Collaborative Effort May Open Doors to Improved Diagnosis and Treatment

Bethesda, Md. — Researchers from 12 institutions, including the National Human Genome Research Institute (NHGRI), part of the National Institutes of Health (NIH), today announced the results of the first genome-wide linkage study of prostate cancer in African Americans. Using genetic markers, researchers identified several regions of the human genome that likely contain genes that, when altered, increase the risk of developing prostate cancer.

The study was conceived, implemented and executed primarily by African American investigators. Published in the journal, *The Prostate*, the findings represent a milestone in years of research designed to identify genetic risk factors for prostate cancer and to help determine if heredity plays a role in the disparity in prostate cancer rates seen in African American men.

The African American Hereditary Prostate Cancer (AAHPC) study network recruited 77 African American extended families, which encompassed a total of 418 men with prostate cancer, to participate in this study. All of the families studied had at least four men who have been diagnosed with prostate cancer. Using genetic markers, researchers were able to map several important regions of the human genome that likely contain genes that, when mutated, predispose these men to developing prostate cancer.

"We now must sift through millions of bases of genome sequence to identify the proverbial needle in the haystack," said the study's senior author, John Carpten, Ph.D., who is director of the Integrated Cancer Genomics Division at TGen in Phoenix. "The discovery of these genes will hopefully lead to new and improved modes of diagnosis and treatment for some men with prostate cancer. This work speaks to our committed efforts to help reduce the disparity in prostate cancer rates seen in African American men."

According to the National Cancer Institute, the annual incidence of prostate cancer among African American men is 277 per 100,000 compared to 168 per 100,000 for white men. The annual death rate from prostate cancer is 73 per 100,000 for African American men compared to 30 per 100,000 for white men. Family history is the most significant risk factor known for prostate cancer among all men, including African Americans.

"We hope today's findings — and the discoveries we expect to make in future years — will inspire the worldwide research community to view this study as a model for many other genetic studies of common diseases," said NHGRI Director Francis S. Collins, MD, PhD, who was one of the study's co-authors. "Not only does this study represent one of the most impressive collections of prostate cancer families from any ethnic group, it demonstrates the importance of setting up a network of principal investigators who are close to the community under study."

The paper's first author, Agnes B. Baffoe-Bonnie, MD, MPH, PhD, who is an associate member at the Population Science Division at the Fox Chase Cancer Center in Philadelphia, said these findings greatly add to our understanding of hereditary prostate cancer in African Americans. "I commend the many families who took the time to participate in this important research and praise their commitment to advancing medical knowledge. These important findings will be applied to prevention and treatment strategies," Dr. Baffoe-Bonnie said.

AAHPC is the largest study to date that focuses on prostate cancer in African American families. The families studied came from Chicago, Detroit, Houston, New York, Washington, D.C., Atlanta and South Carolina.

"Since this disease is so important in this population, this is a critical study in terms of our ability to understand the molecular mechanisms responsible for the disproportionate risk observed in African American men for both diagnosis of and mortality from prostate cancer," said William B. Isaacs, PhD, of Johns Hopkins University School of Medicine in Baltimore, who is head of the International Consortium for Prostate Cancer Genetics. "The mapping information provided by these researchers will provide essential information necessary for the ultimate identification of the genes involved, and hopefully for mechanistically based efforts to address this disparity."

The AAHPC was a collaborative effort involving 12 institutions nationwide: TGen; Fox Chase Cancer Center; NHGRI; the Comprehensive Cancer Center at the Ohio State University in Columbus; the National Human Genome Center, the Department of Microbiology and the Division of Urology at Howard University, Washington; Midtown Urology in Atlanta, the Columbia-Presbyterian Medical Center in New York; the Michael Reese Hospital in Chicago; the MD Anderson Medical Center in Houston; the University of Illinois in Chicago; the University of South Carolina in Columbia; and the Karmanos Cancer Institute, Wayne State University in Detroit.

How to Create a Family Health History
To help people in the task of creating their family health histories, the U.S. Department of Heath and Human Services offers a free, computerized tool that organizes health information into a printout that can be can taken to health-care professionals. The tool, called "My Family Health Portrait," is available at https://familyhistory.hhs.gov/.

NHGRI played a seminal role in starting the AAHPC study by helping to bring the investigators together. In addition, the Institute made long-term contributions to the study's design and provided funding for data collection efforts. Additional information about NHGRI can be found at www.genome.gov.

The National Institutes of Health (NIH) — *The Nation's Medical Research Agency* — includes 27 Institutes and Centers and is a component of the U.S. Department of Health and Human Services. It is the primary federal agency for conducting and supporting basic, clinical and translational medical research, and it investigates the causes, treatments, and cures for both common and rare diseases. For more information about NIH and its programs, visit www.nih.gov.

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