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The Molecular Basis of Prostate Cancer

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Prostate cancer is a significant public health problem because of its prevalence among North American men. American Cancer Society statistics revealed that in 1996 317,000 new cases of prostate cancer will be diagnosed and 44,000 men will die of this disease.

There are significant interracial differences in the incidence of prostate cancer, with Chinese / Japanese men at the low end of the spectrum and African-American men with the highest incidence of prostate cancer in the world. Results of an epidemiologic survey suggest that positive correlates of prostate cancer are: aging, testicular androgen, dietary factors (such as fat intake), and genetic predisposition. Comparative studies on the incidence of prostate cancer in Japanese and Chinese natives and immigrants reveal that environmental / dietary factors play a dominant role in influencing prostate cancer progression. A number of preventive strategies are suggested and being implemented in the United States for prostate cancer patients.

To improve on the ability to diagnose, prognose, prevent, and treat men with prostate cancer, our laboratory has developed a series of cell-lineage related prostate cancer cells as models to analyze prostate cancer growth and progression. These models have been used to study the molecular mechanisms controlling prostate cancer growth and metastasis and the cloning of genes that may represent stage- and progression-specific at the various stages of human prostate cancer progression. Moreover, we have devised drug and gene therapy approaches to specifically target the interaction between prostate cancer cells and their microenvironment. I will summarize our recent findings in these areas and will also review the progress made by other laboratories.