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UROLOGICAL CANCER

Cause and effect in prostate cancer

Although it has been known that prostate cancer has a strong hereditary element, this pattern has not been linked to a particular gene, until now that is. Researchers led by Kathleen Cooney have found that germline mutations in the *HOXB13* gene are associated with a significantly increased risk of developing prostate cancer.

Cooney explains, "family history is a recognized risk factor for prostate cancer; however, it has been very difficult to uncover the molecular basis of hereditary prostate cancer. We followed up on previous studies from us and others, which suggested that there may be a prostate cancer susceptibility gene on chromosome 17q." Based on this previous work, the researchers sequenced 202 genes in the 'susceptibility region' in the germline DNA from their chosen individual, the youngest patient with prostate cancer from a cohort of 94 prostate cancer families from the University of Michigan and Johns Hopkins University.

Cooney described the main finding of the research: "we identified a recurrent mutation (G94E) in the *HOXB13* gene in four out of 94 families. All 18 men with prostate cancer in these four families has the mutation. Additional studies of cases from the University of Michigan and Johns Hopkins University confirmed that there was a higher mutation frequency in cases (1.4%) compared to controls (0.1%)."

This genetic mutation is not common and its relationship to hereditary prostate cancer needs to be firmly established in follow-up studies. If this is confirmed then it could be possible to use this mutation as part of a genetic screening program for hereditary cancer, or as a therapy target. So, could *HOXB13* be prostate cancer's *BRCA*?

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Original article Ewing, C. M. *et al.* Germline mutations in HOXB13 and prostate-cancer risk. *N. Engl. J. Med.* **366**, 141–149 (2012)