Medical Xpress

Loss of Y chromosome can explain shorter life expectancy and higher cancer risk for men

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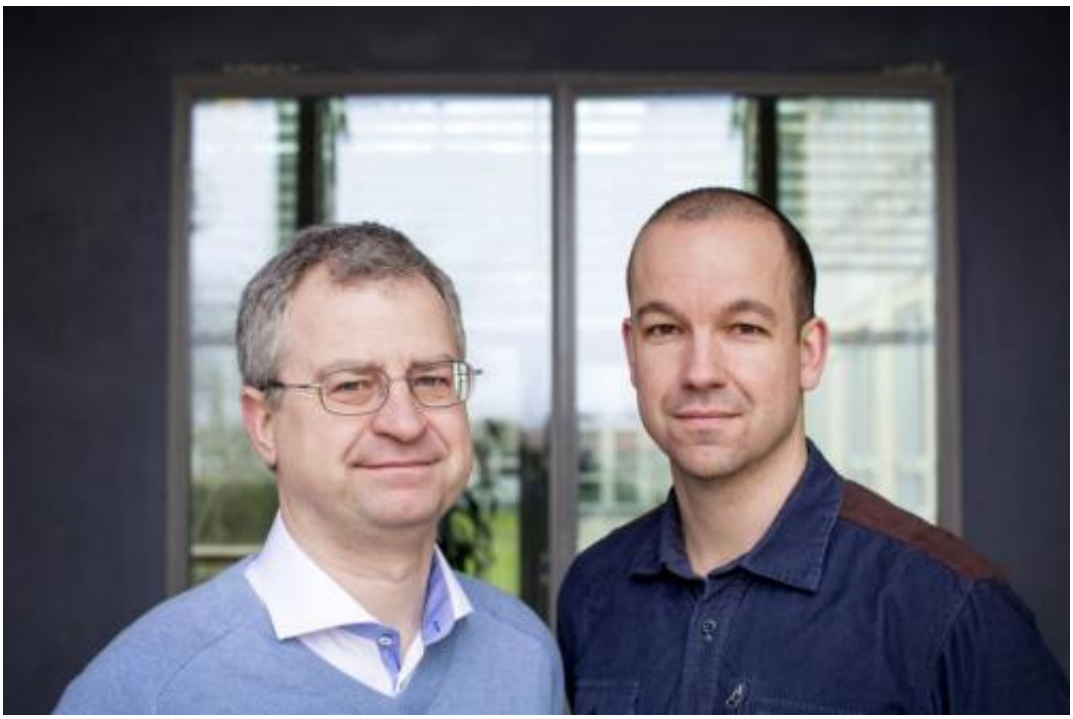

Jan Dumanski and Lars Forsberg. Credit: Mikael Wallerstedt

It is generally well known that men have an overall shorter life expectancy compared to women. A recent study, led by Uppsala University researchers, shows a correlation between a loss of the Y chromosome in blood cells and both a shorter life span and higher mortality from cancer in other organs.

Men have a shorter average life span than women and both the incidence and mortality in cancer is higher in men than in women. However, the mechanisms and possible risk factors behind this sex-disparity are largely unknown. Alterations in DNA of normal cells accumulate throughout our lives and have been linked to diseases such as cancer and diabetes.

In a study recently published in the journal *Nature Genetics* an international team of researchers have analysed the DNA in blood samples from a group of more than 1,600 elderly men. They found that the most common genetic alteration was a loss of the Y chromosome in a proportion of the white blood cells.

The group of men was studied for many years and the researchers could detect a correlation between the loss of the Y chromosome and shorter survival.

"Men who had lost the Y chromosome in a large proportion of their blood cells had a lower survival, irrespective of cause of death. We could also detect a correlation between loss of the Y chromosome and risk of cancer mortality", says Lars Forsberg, researcher at the Department of Immunology, Genetics and Pathology, Uppsala University, who has led the study.

The Y chromosome is only present in men and the genes contained on the Y chromosome have so far mostly been associated with sex determination and sperm production.

"You have probably heard before that the Y chromosome is small, insignificant and contains very little genetic information. This is not true. Our results indicate that the Y chromosome has a role in tumour suppression and they might explain why men get cancer more often than women. We believe that analyses of the Y chromosome could in the

future become a useful general marker to predict the risk for men to develop cancer", says Jan Dumanski, professor at the Department of Immunology, Genetics and Pathology, Uppsala University, and responsible for the study.

More information: Mosaic loss of chromosome Y in peripheral blood is associated with shorter survival and higher risk of cancer. Lars A. Forsberg et al. *Nature Genetics*. April 28th 2014. dx.doi.org/10.1038/ng.2966

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