
Smoking causes damage to the Y chromosome

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New research may explain why smoking causes several types of cancer in men.

It is the Y chromosome that makes men. This spring, researchers showed that damage to the Y chromosome increases the risk of cancer in all parts of the body. This was considered to be a natural change affecting older men.

In a new study, researchers have now demonstrated that smoking contributes to the decline of Y chromosomes in blood cells.

Strong motivation

“This discovery may be very persuasive for smokers” to quit smoking, says Lars Forsberg from Uppsala University. Forsberg led the study, published in the journal *Science*.

The new results may help explain why men have a lower life expectancy than women and why smoking is particularly dangerous for men, according to a news release from the university.

Smoking seems to be the main reason for damaged Y chromosomes. In the study, heavy smokers lost the most chromosomes, and if they quit, the damage was partially repaired.

Link to cancer

It is not clear that the chromosome damage is the direct cause of the cancers. Another, as yet unknown factor, such as damage to larger parts of the genetic material, could also play a role.

But researchers speculate on a possible explanation. The white blood cells that fight cancer cells may be weakened when they lack a Y chromosome.

The study builds on a long-term survey of Swedish men. A group of nearly 3,000 elderly men were followed from 1970, and a group of nearly 500 were followed from 2001. In addition, the study included identical twins.

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 [Long-term studies of over 3000 Swedish men show that smoking damages Y chromosomes, the part of the genetic material that makes men men. This kind of damage is associated with an increased risk of cancer. \(Illustrative photo: Microstick\)](#) [10]

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[J.P. Dumanski et al.: Smoking Is Associated with Mosaic Loss of Chromosome Y, Science, December 2014, doi:10.1126/science.1262092](#) [15]

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