

How do hormones affect tumor DNA in men with breast cancer?

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Breast cancer in men is rare, and men with breast cancer receive the same anti-hormonal therapy as women. Often with effect, but there was no scientific basis for it before now. Cancer researchers led by Wilbert Zwart from the Netherlands Cancer Institute and OncoCode Institute are now the first to clarify how hormones affect tumor DNA in men with breast cancer.

Most tumors in men barely differ biologically from those in women. But in tumors that react badly to anti-hormonal [treatment](#), the researchers saw subtle differences between the two sexes. These new insights constitute another major step towards the best personalized treatment for men and women.

The researchers published their findings on February 2 in the scientific journal *Nature Communications*.

Therapy based on treatment of women

Approximately 100 men per year are diagnosed with breast cancer in the Netherlands, compared to more than 14,000 women. In the vast majority of breast cancers, both in men and women, the tumor is hormone-sensitive. This means that hormones, like estrogen, influence the DNA, causing the tumor to grow and eventually to spread. Anti-hormonal therapy, aimed at blocking the [female hormone estrogen](#), is therefore also often part of the treatment for men. Often with effect but also with

stressful side effects. However, there was not yet a scientific basis for giving men the same treatment as women. The researchers, led by Wilbert Zwart, have now mapped the hormonal function over the entire tumor DNA for the first time and compared men and women.

The first conclusion was that by far most of the breast tumors in men and women are barely distinguishable from each other. This provides a scientific basis for the current practice of giving men and women the same anti-hormonal therapy.

But as with women with hormone-sensitive [breast cancer](#), there are also men whose [cancer](#) still comes back despite the treatment. This group is therefore likely to benefit from a different or supplementary approach. And it is precisely in this group of men that the DNA profiles of the tumor appear to be gender-specific.

Wilbert Zwart: "We had already seen that very specific patterns in women are predictive of the course of the disease. In patients with a less favorable course of the disease, other sites of the DNA are active under the influence of hormones. That says something about the therapy sensitivity of each individual [tumor](#) and this knowledge is essential when looking for a personalized therapy. In men, we also see specific patterns that are different than in [women](#). If we are to work towards a personalized [therapy](#) for men, the selection of medicines may, therefore, have to be slightly different. But a lot of research is still needed for this."

More information: Tesa M. Severson et al. Characterizing steroid hormone receptor chromatin binding landscapes in male and female breast cancer, *Nature Communications* (2018). [DOI: 10.1038/s41467-018-02856-2](#)

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