



## Functions and potential of the latest p53 gene therapy

The cause of cancer is the mutation of DNA. Gene therapy aims to minimize the mutated cells. If a gene therapy strikes, it shows already after 2 to 3 weeks positive results. Since there is no development of resistance in gene therapy, it is also used in weakened and diseased immune systems.

First, the principle of gene therapy:

Almost all diseases have genetic causes, ranging from allergies to autoimmune diseases to cancer. Animal experiments have already shown in the 1980s that it is possible to replace and correct disease-causing genes with therapeutic genes.

Gene therapy heals the real causes of disease and not just the so-called symptoms. Thousands of people have been treated in clinical trials for cancer and other serious illnesses. The principle is usually the same and simple: the therapeutic genes are introduced into the tumor cell with a gene-transporting vector, the biggest problem with all gene therapies is the transport of new healthy genes. Until recently, four viruses were used that did not turn out to be harmless and that did not release enough therapeutic genes into the DNA. P53 protein is a tumor suppressor, it is one of the key cell growth regulators, and it is also at the center of oncological research, using a liposome vector.

**With the new liposomal-based p53 gene therapy, seven times more therapeutic genes are introduced into the DNA without any side effects.**

## Benefits of gene therapy

- suppression of gene expression of growth factors, resulting inhibition of the cell cycle and therefore, no further cell division.
- No side effects, so far several hundred people have been treated and had no side effects.
- stopping the cell cycle if the DNA is damaged. If the damage proves to be repairable, the cell cycle will continue.
- The cell gains time to repair the damage and, in the event of non-repairable damage, promptly induce pre-programmed cell death. (Apoptosis)
- Some of the proteins involved in cell adhesion prevent tumor cells from scattering in the body and inhibit the formation of metastases.
- Gene p53 ensures that a cell divides only if its genome is intact and that is not the case with a tumor cell. In over sixty percent of all cancer cases, a mutation of the p53 protein is detectable.