

Researchers reveal new mechanism to 'activate' the immune system against cancer

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Prof. Erez Levanon, Mina and Everard Goodman Faculty of Life Sciences.
Credit: Bar-Ilan University

A new mechanism for activating the immune system against cancer cells allows immune cells to detect and destroy cancer cells better than before, according to a study published this week in the journal *Nature*.

The study was led by Prof. Nick Haining, of Harvard Medical School, and co-authored by Prof. Erez Levanon, doctoral student Ilana Buchumansky, of the Mina and Everard Goodman Faculty of Life

Sciences at Bar-Ilan University, and an international team.

The focus of the study is a mechanism that routinely serves the cell by marking human virus-like genes in order to avoid identifying them as viruses. Now, Prof. Levanon, together with the Harvard team, has discovered that when inhibiting this mechanism, the immune system can be harnessed to fight cancer cells in a particularly efficient manner, and most effectively in lung cancer and melanoma.

"We found that if the mechanism is blocked, the immune system is much more sensitive. When the mechanism is deactivated, the immune system becomes much more aggressive against the [tumor cells](#)," said Levanon.

In recent years, a new generation of cancer drugs has been developed which blocks proteins that inhibit immune activity against malignant tumors. These drugs have shown remarkable success in several tumor types. This year's Nobel Prize in Medicine was awarded to James Allison and Tasuku Honjo, who discovered the key genes of this mechanism. Despite this achievement, the current generation of drugs helps only a small number of patients, while most of the drugs fail to cause the immune system to attack the tumor. It is hoped that the new discovery will allow enhanced activity of the [immune system](#) to attack [cancer cells](#). A number of companies have already begun research to screen for drugs that will operate on the basis of this discovery.

More information: Jeffrey J. Ishizuka et al, Loss of ADAR1 in tumours overcomes resistance to immune checkpoint blockade, *Nature* (2018). [DOI: 10.1038/s41586-018-0768-9](https://doi.org/10.1038/s41586-018-0768-9)

Provided by Bar-Ilan University

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