

Better equipped in the fight against lung cancer

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Lung cancer is the third-most common type of cancer in Germany, affecting both men and women. However, immunotherapies are successful in only 20 percent of cases. Researchers at Friedrich-Alexander-Universität Erlangen-Nürnberg (FAU) have now discovered a special mechanism that regulates tumour growth in lung cancer. This opens up new possibilities in the treatment of lung cancer patients. The results were published in the journal *Oncoimmunology*.

The body's immune system sometimes responds to [lung cancer](#) but sometimes it fails, letting the cancer take over.

The immune system is capable of recognising and eliminating pathologically mutated cells. "Sometimes, the immune system responds to lung cancer, but sometimes it fails, letting the cancer take over," says Prof. Dr. Susetta Finotto, head of the Department of Molecular Pneumology at Universitätsklinikum Erlangen. The reason that this [immune response](#) is switched off in lung cancer patients has not yet been sufficiently researched.

The body usually reacts to tumour cells with an immune response. An important signal molecule, the so-called transcription factor Tbet, plays a role in tumour defence, whereby T helper cells of group 1 (Th1 cells) and CD8 T cells (that combat tumours) are formed. The lung tumour grows if there is a lack of Tbet in the [immune cells](#). Prof. Dr. Susetta Finotto and her team of researchers discovered this during previous research.

In the latest study carried out by Prof. Susetta Finotto's team, Dr. Katharina Kachler researched the role of so-called Treg cells in lung cancer in more detail for her dissertation. The translational study was carried out in collaboration with Dr. Denis Trufa and Prof. Dr. Horias Sirbu, both from the Department of Thoracic Surgery at Universitätsklinikum Erlangen.

Treg cells are immune system regulators. While Treg cells play an important role in preventing inflammatory response in the lungs, not enough research has been carried out on their function in lung carcinoma. Research to date has shown, however, that Treg cells suppress the anti-tumour response of the body and thus promote tumour growth.

Researchers have now discovered that lung tumours are capable of reprogramming the immune response—they produce the messenger substance TGF-beta, a protein that regulates cell growth and induces Treg cells in the surroundings. This means that cells aren't activated to fight the cancer, but allow the tumour to grow instead.

"Precisely those Th1 cells with Tbet that are responsible for anti-tumour immune defence are the ones that are switched off," says Prof. Susetta Finotto. "This newly-identified TGF beta-dependent mechanism in lung cancer is very important for the regulation of tumour growth in the [lung](#) and offers new approaches for [lung cancer therapy](#)," she explains.

This discovery, which the researchers have published in the journal *Oncoimmunology*, could increase the survival rates of [lung cancer patients](#). "In order to make clinical immunotherapy more successful in future, our solution would be to give patients TGF inhibitors in addition to conventional immunotherapy, thus cancelling out the Treg cell blockade that blocks the immune response to [tumour growth](#)," explains Prof. Finotto.

More information: Katerina Kachler et al, The role of Foxp3 and Tbet co-expressing Treg cells in lung carcinoma, *OncoImmunology* (2018). [DOI: 10.1080/2162402X.2018.1456612](https://doi.org/10.1080/2162402X.2018.1456612)

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