

New drug target can break down cancer's barrier against treatment

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Cancer research UK scientists at Barts Cancer Institute have found that targeting a molecule in blood vessels can make cancer therapy significantly more effective, according to research published in *Nature*.

The team at Barts Cancer Institute, part of Queen Mary University of London, have found that a molecule, called focal adhesion kinase (FAK), signals the body to repair itself after chemotherapy or radiotherapy, which kill [cancer cells](#) by damaging DNA. When the researchers removed FAK from blood vessels that grew in melanoma or lung [cancer](#) models, both chemotherapy and radiation therapies were far more effective in killing the tumours.

The researchers also studied samples taken from lymphoma patients. Those with low levels of FAK in their blood vessels were more likely to have complete remission following treatment. This suggests that developing drugs to strike out FAK in cancer blood vessels may boost cancer treatments and prevent cancer from coming back.

Dr Bernardo Tavora, lead author on the paper from the Barts Cancer Institute, said: "This work shows that sensitivity to cancer treatment is related to our own body mistakenly trying to shield the cancer from cell-killing effects caused by radiotherapy and chemotherapy.

"Although taking out FAK from blood vessels won't destroy the cancer by itself, it can remove the barrier cancer uses to protect itself from treatment."

Cells lining the blood vessels send chemical signals, called cytokines, to the tumour to help it resist DNA damage and to recover. The researchers demonstrated that this process requires FAK in order to work, and without it, these signals are never sent – making the tumour more vulnerable to DNA damaging therapy.

Dr Kat Arney, Cancer Research UK's science communications manager, said: "This exciting research may have cracked how healthy cells in the [blood vessels](#) are protecting against cancer treatments. This research was only done in mice, but it gives real hope that we can boost the effectiveness of cancer medicine and sensitise cancers to the drugs we have."

More information: Tavora et al. Endothelial-FAK targeting sensitises tumours to DNA-damaging therapy. *Nature* 2014. [DOI: 10.1038/nature13541](#)

Provided by Cancer Research UK

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