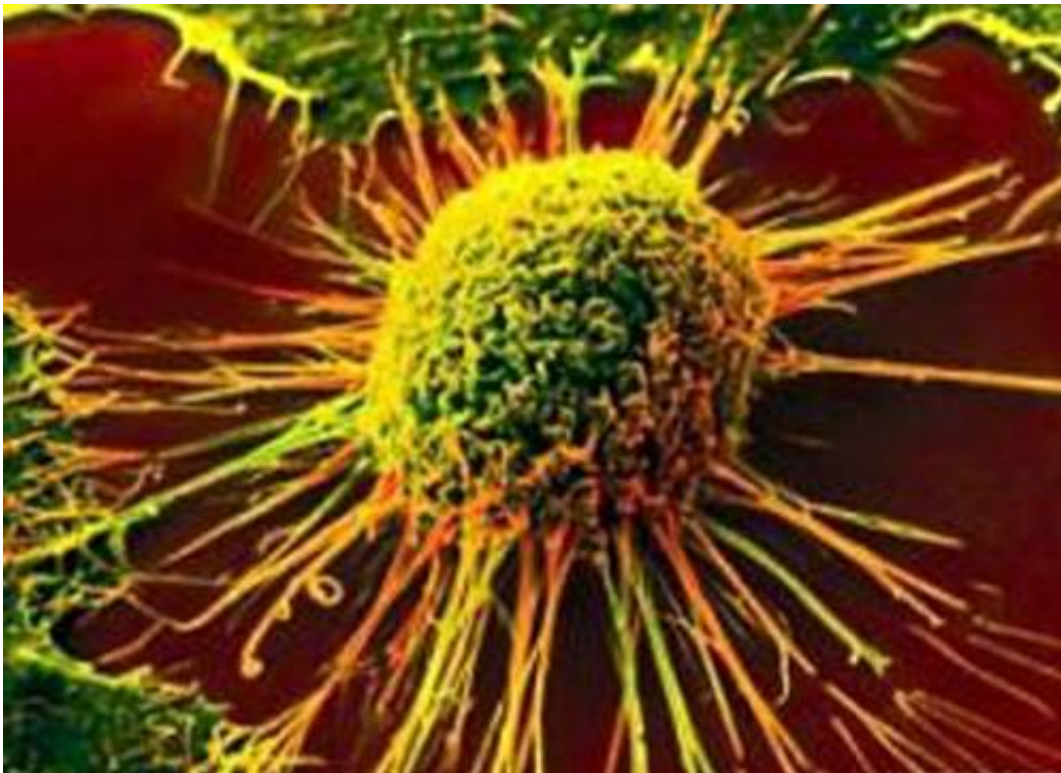


Scientists discover how cells overpower cancer drug

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Cancer Research UK scientists have found how cells adapt to overcome cancer drugs designed to interfere with their genetic controls, according to a study published today in *Epigenetics and Chromatin*.

Normally molecular 'tags' are attached to DNA which send signals to the

cell, telling it how to package its DNA and switch genes on or off.

Drugs called HDAC [inhibitors](#) cause a build-up of certain types of tags, leading to potentially damaging changes in gene activity that can kill [cancer cells](#).

But while HDAC inhibitors can successfully treat certain types of cancer, such as lymphoma, other types survive this disruption.

Scientists from the University of Birmingham, suggest that they do this by activating an in-built 'survival' response to HDAC inhibitors which rebalances the tags, maintaining normal gene activity and keeping the cells alive.

These findings could help identify which patients are suitable for treatment with these drugs. And could help develop future therapies that override the survival mechanism in tumour types that don't respond.

Lead author Dr John Halsall, Cancer Research UK scientist from the University of Birmingham, said: "Our work has shown that some [cancer cells](#) can survive the gene damage caused by HDAC inhibitor drugs, so we've unveiled a new layer of the cancer cell's defence that we need to target to destroy tumours.

"If we work out exactly which types of cancer are vulnerable to these drugs we can use them in a smarter way to treat patients more effectively."

Dr Kat Arney, Cancer Research UK's science information manager, said: "Working out how genes are switched on and off in cancer is vital if we're to truly understand and beat the disease. This study could help us tailor how we use HDAC inhibitors so that more patients could benefit from them, and we'll continue to work towards finding more effective

ways to target cancer's control mechanisms in the future."

More information: Halsall et al. Cells adapt to the epigenomic disruption caused by histone deacetylase inhibitors through a coordinated, chromatin mediated transcriptional response. *Epigenetics and Chromatin*. [DOI: 10.1186/s13072-015-0021-9](https://doi.org/10.1186/s13072-015-0021-9)

Provided by Cancer Research UK

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