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Scientists uncover vast numbers of DNA 'blind spots' that may hide cancer-causing mistakes

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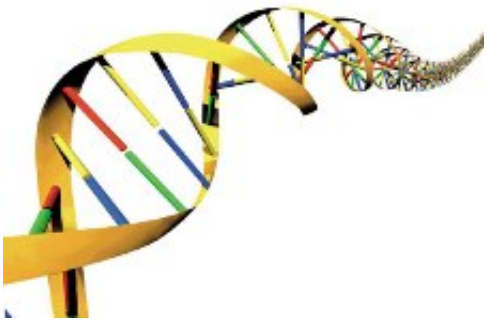

Cancer Research UK scientists have found more than 400 'blind spots' in DNA which could hide cancer-causing gene faults, according to research published today in *Cancer Research*.

The researchers found hidden faults in areas that are tricky for gene-reading technology to decode. This technique, which unravels cancer's genetic blueprint, is an important part of the research that scientists carry out to understand more about cancer's biology.

By finding new ways to unlock these blind spots in the future, the researchers hope this will help us understand these mistakes and whether they lead to cancer. This could be a step towards developing tests to spot

cancers earlier or provide new tactics for discovering future cancer treatments.

The team, from the Cancer Research UK Manchester Institute, compared two giant gene databases made from cancer cells grown in labs and cross-checked all the genes that are known - or are likely to be - involved in cancer to unearth the problem areas.

They found that the 400 blind spots in the genes were hidden in very repetitive DNA areas which cause the gene-reading technology to stutter. This problem reading the genes could conceal mistakes which might play a vital role in cancer.

Lead researcher Andrew Hudson, at the Cancer Research UK Manchester Institute at The University of Manchester, said: "The genes behind cancer are like a story. While we've been able to read most of the book using gene-reading technology, the limits of these tools mean some pages are missing.

"These pages could just be unimportant filler, but we wonder if they might hold important twists in the plot which could affect our understanding of cancer. The next step in our work will be to find a way to open up these areas to help piece together the full story."

Nell Barrie, Cancer Research UK's senior science information manager, said: "We're at an unprecedented point in cancer research. As research accelerates we're revealing more and more about cancer's secrets and central to this is our better understanding of how genetic changes drive the disease."

"By delving deeper into cancer's genetic origins we can spot the ways the disease is triggered and develops. This could help us to tackle it from the root, giving more cancer patients a chance at surviving the disease."

The University of Manchester, including the Cancer Research UK Manchester Institute, joined forces with Cancer Research UK and The Christie NHS Foundation Trust to form the Manchester Cancer Research Centre, allowing doctors and scientists to work closely together to turn scientific advances into patient benefits sooner.

More information: Hudson et al. Discrepancies in Cancer Genomic Sequencing Highlight Opportunities for Driver Mutation Discovery. *Cancer Research*. DOI: 10.1158/0008-5472.CAN-14-1020

Provided by Cancer Research UK