Scientists use 'virtual experiments' to uncover missing cancer targets

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(Medical Xpress)—Scientists have identified 46 previously overlooked but potentially 'druggable' cancer targets, using a powerful new online approach that allows researchers to carry out 'virtual experiments' to quickly prioritise which are the best targets for drug discovery. The findings are published in the journal *Nature Reviews Drug Discovery* today.

The new approach - created by researchers at Cancer Research UK's Cancer Therapeutics Unit at The Institute of Cancer Research, London - combines the use of a unique online database called canSAR with a new tool that allows researchers to compare up to 500 potential drug targets at the same time in minutes.

This will enable scientists all over the world to systematically analyse unprecedented volumes and varieties of data, to uncover new or previously overlooked drug targets with the potential to lead to innovative cancer drugs.

The researchers demonstrated the power of their new strategy by analysing the Sanger Institute's existing list of 479 cancer genes, revealing a total of 46 potentially druggable cancer proteins that have previously been overlooked for drug discovery, despite their known biological relevance to cancer.

Lead researcher Dr Bissan Al-Lazikani, said: "To find so many overlooked potential new targets for cancer treatments in one project is

very surprising. These results show that, using this new approach, we can find targets for cancer drugs in a smarter and faster way than ever before.

"This new way of harnessing genomic data is a key step towards the discovery of the next generation of cancer treatments. It is a stepping stone between research into the fundamental causes of cancer and new drugs delivering benefits to patients."

Study co-author Professor Paul Workman, director of the Cancer Research UK Cancer Therapeutics Unit and deputy chief executive at The Institute of Cancer Research, said:

"Our new approach will help researchers worldwide to address three major issues that we face today in developing new cancer drugs for personalised medicine. Firstly, it will empower scientists to select the very best targets that are most likely to lead to successful drugs, thereby increasing the success rate in the clinic. Secondly, it will allow researchers to discover the best new drugs much more quickly and at a lower cost. Thirdly, it will enhance innovation, by helping shift the focus away from the tried and tested drug targets while managing the inevitable risk associated with moving into new and exciting areas. Both patients and the pharmaceutical industry will benefit from these advances."

Dr Nigel Blackburn, director of drug development at Cancer Research UK's Drug Development Office, said: "A key problem in cancer research at the moment is how to make sense of the wealth of information coming out of cancer genome studies. This exciting new resource provides a strategy by which scientists can combine this information with both structural and chemical data, to select the very best gene targets for future development. Not only will this save time and money, but it also paves the way for research into promising new

drug targets that until recently may have been overlooked due to a lack of information."

More information: Mishal N Patel et al. Objective assessment of cancer genes for drug discovery, *Nature Reviews Drug Discovery* (2012), DOI: 10.1038/nrd3913

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