

New tool to probe cancer's molecular make-up

August 26 2014, by Alison Barbuti



Electron microscopic image of a single human lymphocyte. Credit: Dr. Triche National Cancer Institute

Scientists have shown how to better identify and measure vital molecules that control cell behaviour – paving the way for improved tools for diagnosis, prediction and monitoring of cancer.

Researchers from the Cancer Research UK Manchester Institute based at The University of Manchester – part of the Manchester Cancer Research Centre – and the Institute of Cancer Research, London, looked at protein kinases, molecules that control various aspects of cellular function.

The study, funded by a Biotechnology and Biological Sciences Research Council (BBSRC)/Pfizer CASE studentship and CRUK, was published in *Nature Methods* this week (24 August).

Earlier work has shown that mutations or increases in a range of protein kinases are linked to tumour growth, and for several decades researchers have looked to develop drugs that target and prevent this activity in order to kill [cancer cells](#). Ten types of drugs which reduce the activity have so far been approved for [cancer](#) treatment in patients.

Dr Claus Jørgensen, who led the study as team leader in the Division of Cancer Biology at The Institute of Cancer Research, London, before taking up a new post as head of the Systems Oncology group at the Cancer Research UK Manchester Institute, said: "Protein kinases regulate how cells communicate. When these molecules are deregulated it corresponds to cells "hearing voices" with a resulting change in their behaviour. Doctors need a way to spot changes in kinase levels in individual tumours so they can see how they respond to treatments and match patients to the treatment that works best for them."

The team investigated the make-up of over 200 [protein](#) kinases. They used a technique known as mass spectrometry to develop a method that can both identify and measure the amount of various kinases in a biological sample – for example from a part of a tumour removed in

surgery.

"Our new method can correctly measure the amount of [protein kinases](#) in a sample. It means we can monitor cancer cell behaviour and also how tumours respond to different therapy in cancer patients," added Dr Jørgensen.

More information: "Systematic evaluation of quantotypic peptides for targeted analysis of the human kinome." Jonathan D Worboys, ohn Sinclair, Yinyin Yuan, Claus Jørgensen. *Nature Methods* (2014) [DOI: 10.1038/nmeth.3072](#). Received 07 October 2013 Accepted 14 July 2014 Published online 24 August 2014

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