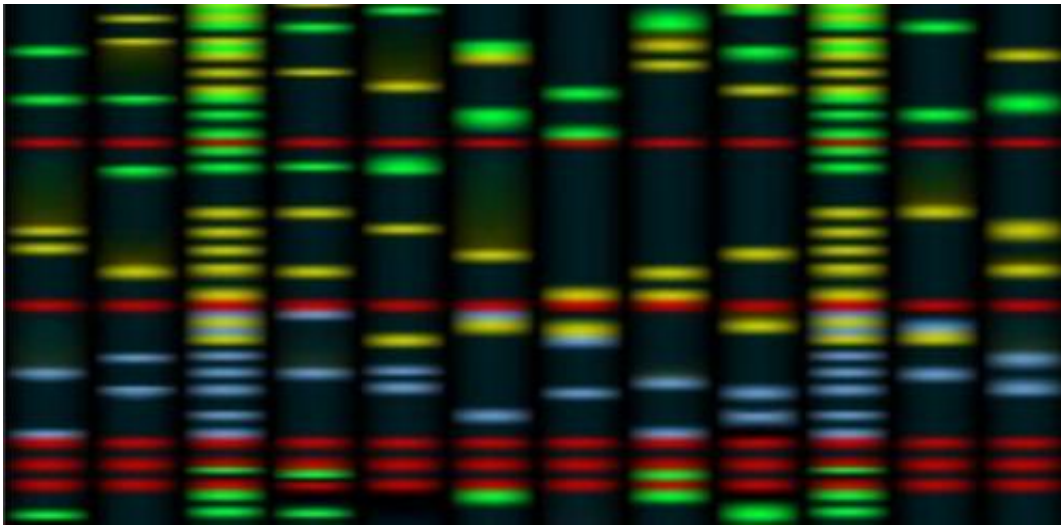


Scientists develop simple blood test to track tumour evolution in cancer patients

May 3 2013



Credit: Alila Medical Images - Fotolia

By tracking changes in patients' blood, Cambridge scientists have created a new way of looking at how tumours evolve in real-time and develop drug resistance. The research was published in the print edition of *Nature* today.

Scientists at the Cancer Research UK Cambridge Institute at the University of Cambridge used traces of tumour DNA, known as circulating tumour DNA (ctDNA), found in [cancer patients'](#) blood to follow the progress of the disease as it changed over time and developed resistance to chemotherapy treatments.

For the study, which was co-directed by Dr James Brenton, Professor Carlos Caldas, and Dr Nitzan Rosenfeld from the University's Cancer Research UK Cambridge Institute, they followed six patients with advanced breast, ovarian and lung cancers and took blood samples, over one to two years. They then focused analysis on those samples that contained relatively higher concentrations of tumour ctDNA,

By looking for changes in the tumour ctDNA before and after each course of treatment, they were able to identify changes in the tumour's DNA that were likely linked to drug resistance following each treatment session.

Using this new method they were able to identify several changes linked to drug-resistance in response to [chemotherapy drugs](#) such as [paclitaxel \(taxol\)](#) which is used to treat ovarian, breast and lung cancers, tamoxifen which is used to treat oestrogen-positive breast cancers and transtuzumab ([Herceptin](#)) which is used to treat HER2 positive breast cancers.

The researchers hope this new approach could facilitate research on how [cancer tumours](#) develop resistance to some of our most effective chemotherapy drugs as well as providing an alternative to current methods of collecting tumour DNA – by taking a sample direct from the tumour – a much more difficult and [invasive procedure](#).

Dr Rosenfeld said: "Tumours are constantly changing and evolving which helps them develop a resistance to many of the drugs we currently give patients to treat their disease. We've shown that a very simple blood test can be used to collect enough tumour DNA to suggest to us what parts of the cancer's genetic code is changing and creating tumour resistance to chemotherapy or biologically-targeted therapies.

"We hope that our discoveries can pave the way to helping us understand how cancers develop drug resistance as well as identifying new potential

targets for future cancer drugs."

Dr Brenton added: "Importantly, this advance means that we will be able to screen a much larger number of genes in the blood to test if specific genetic changes in the cancer explain resistance to treatment. The low cost and high acceptability of a blood sample means that this can be done across hundreds or thousands of patients. This is vital to discover reliable clinical biomarkers."

Professor Caldas said: "The tracking of different cancer clones in real time using a liquid biopsy will have enormous value to identify [drug resistance](#) in the clinic and adjust therapy accordingly."

Provided by University of Cambridge

Citation: Scientists develop simple blood test to track tumour evolution in cancer patients (2013, May 3) retrieved 10 April 2024 from <https://medicalxpress.com/news/2013-05-scientists-simple-blood-track-tumour.html>

<p>This document is subject to copyright. Apart from any fair dealing for the purpose of private study or research, no part may be reproduced without the written permission. The content is provided for information purposes only.</p>
--