re-write CANCER

In the next five years, Manchester can

"Use your blood sample to understand unique molecular features of your cancer in real-time."

How Manchester can...

Circulating tumour DNA (ctDNA) is DNA that comes from cancerous cells. ctDNA can be found in the bloodstream and analysed through taking a blood sample.

Clinical trials taking place in Manchester aim to determine the impact of measuring ctDNA in blood samples to improve patient outcomes.

Here are some of the trials that show

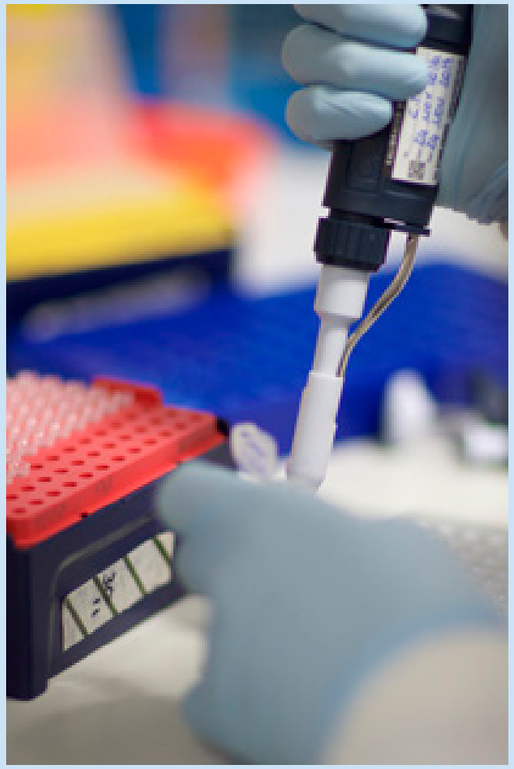
MANCHESTER CANCER

TARGET trial:

Can ctDNA inform treatment choice?

“Taking part in the TARGET trial helped me by enabling my doctors to find the right clinical trials for me. I have now been on clinical trials for nearly two years, which has kept my cancer at bay.”

David Kearney, a prostate cancer patient from Bury in Greater Manchester, who took part in the first phase of the TARGET trial at The Christie



Our previous TARGET trial, published in Nature Medicine 2019, provided a patient’s ctDNA through a simple blood test. The ctDNA is analysed at a molecular level and can help match patients with advanced cancer and few other treatment options to the best available clinical trial for them.

“At the Cancer Biomarker Centre, we do the profiling in the blood to help the clinician determine which clinical trial the patient should be enrolled in, based on the molecular characteristics of that patient’s tumour.” – Prof. Caroline Dive CBE, Director of the Cancer Research UK Manchester Institute (CRUK MI) and Director of the CRUK MI Cancer Biomarker Centre

In contrast to a tumour biopsy, which has traditionally been used to analyse the tumour, a blood test is much less invasive, and reflects the biology of the tumour. With TARGET National we hope to match even more patients onto a specific targeted clinical trial treatment based on their molecular profiling results.

“The TARGET study has brought clinicians and scientists together to develop new approaches to treating patients with advanced cancers” – Dr Matthew Krebs, Clinical Senior Lecturer in Experimental Cancer Medicine

❝ Overall, the study aims to determine whether switching from targeted therapy to immunotherapy based on the level of circulating tumour DNA in the blood, will improve outcomes in patients with advanced melanoma.❞

Prof. Caroline Dive CBE, Director of the CRUK MI and Director of the CRUK MI Cancer Biomarker Centre

CAcTUS trial:

Can ctDNA help rapidly change treatment?

Melanoma is an aggressive type of skin cancer. When it cannot be removed by surgery or has spread to different parts of the body, there are two main types of treatment commonly used:

1) immune therapy, which uses the immune system to kill cancer cells, and

2) targeted therapy, which targets specific molecules to affect the growth and survival of cancer cells.

Led by Prof. Paul Lorigan, Professor and Honorary Consultant in Medical Oncology and Principal Investigator of the CAcTUS trial, the CAcTUS trial is a multi-centre feasibility study that aims to determine the role of ctDNA in guiding the best time to switch between targeted therapy and immune therapy for patients with advanced cutaneous melanoma.

If patients are treated with targeted therapy and they are responding to treatment, there is evidence to suggest this could make the immune therapy more effective. An accurate and dynamic way of monitoring the response to treatment through a simple blood test could help ensure patients are switched treatment at the right time.

Researchers hope the CAcTUS trial will provide information about when to switch treatment, to ultimately improve patient outcomes.

COMPASS trial:

Can ctDNA help detect cancer recurrence earlier?

❝ Our hope is that through this trial we can help transform patient care by developing a simple, convenient blood test that detects cancer recurrence earlier thereby allowing clinicians to give more effective treatment. A reliable negative test could also be used to provide patients with reassurance that the cancer is less likely to return.❞

Dr Phil Crosbie, Senior Lecturer and Honorary Consultant in Respiratory Medicine

When cancer is detected early, surgery can cure or significantly increase the lifespan of patients. However, in around half of lung cancer patients who have surgery, the tumour comes back. This is mainly due to the presence of micro-metastatic disease that is present at the time of surgery but is clinically undetectable.

Following feasibility work across North Manchester, an observational cohort study (COMPASS) opened in 2020. Patients in North and East Manchester who have been treated for lung cancer with either surgery or surgery with adjuvant therapy are invited to give three monthly blood samples which will be analysed by the Cancer Biomarker Centre for circulating tumour cells and ctDNA.

If we can detect this so-called 'minimal residual disease' early, there is potential for earlier intervention and more regular check-ups for these patients.

Future direction:

Across Manchester, researchers are collaborating through multi-disciplinary teams to harness a multiomics approach together with analysis of the immune microenvironment to inform patient decisions.

As well as moving to larger scales of clinical use and in multiple tumour types, researchers are looking at the feasibility of capturing ctDNA in other body fluids, including tears and cerebrospinal fluid (CSF).

Researchers are also using liquid biopsies to complement radiotherapy research, by looking for markers of radioresistance in tumours. This will be combined with novel imaging biomarkers to provide tailored treatment to each patient with photon or proton therapy.

Strong team science approaches to the use of biomarkers within sophisticated clinical trials of targeted medicine or immunotherapy, will provide the best treatment for our patients in Manchester and beyond.

Team science

As a continuum of excellence, Manchester brings together scientists, clinicians, patients and the public in a diverse and collaborative ecosystem where cancer strategies and infrastructure are aligned across Manchester.

From discovery and basic science in the lab, to assay validation for clinical decision making through the Cancer Biomarker Centre, to exceptionally well-designed clinical trial protocols at The Christie, Manchester contains all the pieces of the jigsaw puzzle to ensure our research is a success.

With facilities on a single site, Manchester is in a unique position to ensure a seamless flow of clinical samples from patients into the laboratory to progress translational research and provide more options for our patients.

Working together, our scientists and clinicians are driving new clinical trials with the latest technologies to change cancer care in the NHS and reduce the burden of cancer.

CRUK MI Cancer Biomarker Centre

Manchester Cancer Research Centre

The University of Manchester

At the **Cancer Research UK Manchester Institute Cancer Biomarker Centre** (CBC), scientists are particularly interested in blood-based biomarkers for personalised medicine, with an emphasis on liquid biopsies to aid cancer diagnosis, treatment and detection.

Prof. Caroline Dive has been integral in establishing the CBC, to efficiently bridge the gap between basic science and the clinic to translate biomarkers for clinical use. With over 100 staff and 54 ongoing or in preparation trials and clinical studies, the success of the CBC is based on a skilled, multidisciplinary, sustainable workforce, supported by the Manchester Cancer Research Centre partnership and the Cancer Research UK Manchester Institute.

The Experimental Cancer Medicine Centre (ECMC) network contains world-leading scientists and clinicians who work within early phase clinical research to drive the discovery, development and testing of new treatments for cancer. Led by Dr Natalie Cook, Dr Matthew Krebs, Prof. Fiona Thistlethwaite, Dr Louise Carter and Dr Donna Graham, Experimental Cancer Medicine in Manchester is at the forefront of early phase drug development.

Supporting the newly refurbished NIHR Clinical Research Facility at **The Christie**, now operating as one of the top recruiting centres in Europe, the Manchester Experimental Cancer Medicine team are working with all our Manchester partners in formidable multi-disciplinary collaborations to drive early detection and precision medicine trials.

The Christie

Join us to re-write the future of cancer.

Together we Can~~cer~~

Your donation will help build a world-leading research centre right here. With your help we can make a giant leap towards beating cancer and saving more lives.

manchester.ac.uk/rewrite

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