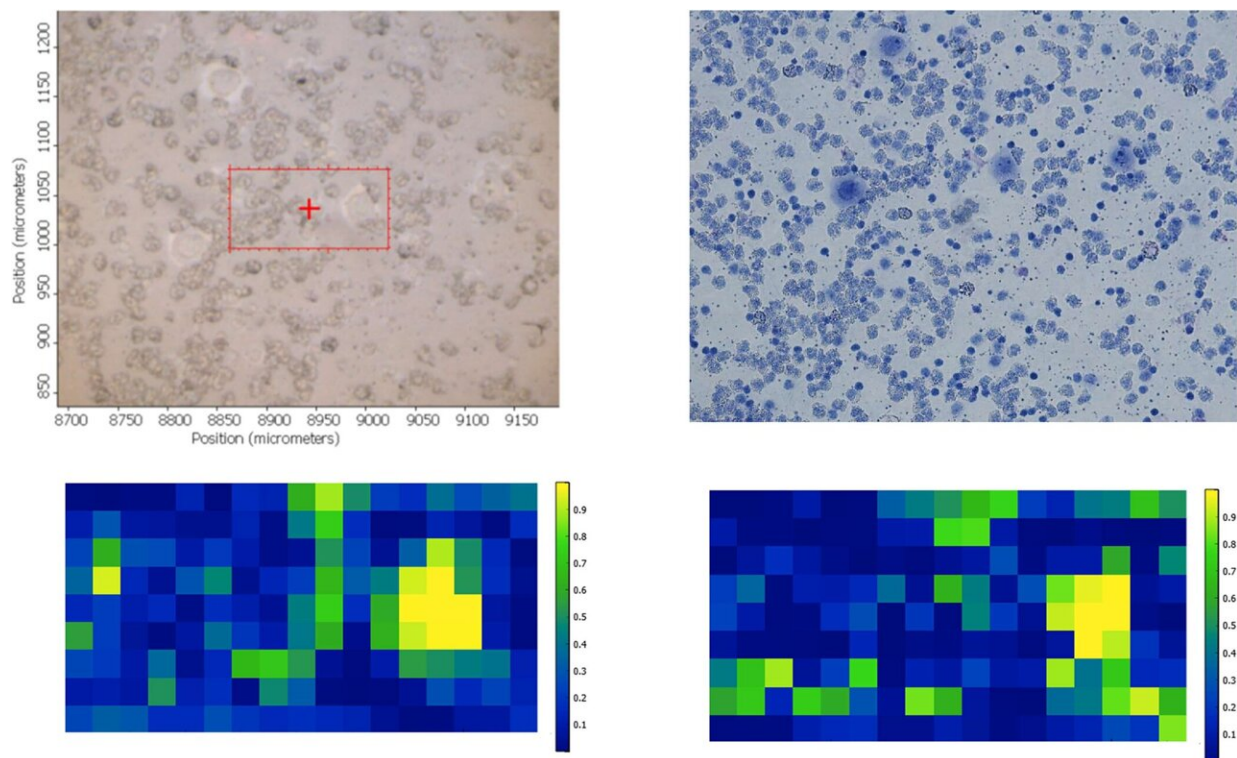


# Researchers demonstrate technique for identifying single cancer cells in blood for the first time

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Brightfield image of a cytospun sample containing PBMC and individual CALU-1 cancer cells. Credit: *PLOS ONE* (2023). DOI: 10.1371/journal.pone.0289824

A pioneering study led by a Keele scientist has demonstrated how a

single cancer cell can be identified in a sample of blood, paving the way for more personalized and targeted treatments for cancer patients.

Led by Professor of Oncology Josep Sulé-Suso, the team of academics from Keele University, the Cancer center at University Hospitals North Midlands NHS Trust, and Loughborough University (Professor Paul Roach), used a technique called Fourier Transform Infrared (FTIR) microspectroscopy, which can separate cells based on their biochemical composition using an infrared light.

Publishing their findings in the journal [\*PLOS One\*](#), the team has shown for the first time that FTIR microspectroscopy, used together with a machine learning algorithm, is able to identify a single lung cancer cell in a sample of blood.

The advent of personalized medicine has greatly improved the treatment and management of patients with cancer, by tailoring therapies to individuals based on their specific needs and the type of cancer they have.

Professor Sulé-Suso and his colleagues believe that by identifying individual tumor cells circulating in blood using this technique, patients can be assessed more effectively during the initial tumor screening, staging, response to treatment, and follow up stages of cancer treatment.

These findings could therefore lead to improving the personalized medicine approach even further by making screening for cancer cells more robust than current processes.

Professor Sule-Suso said, "Identifying cancer cells in blood using this technique could be a game-changer in the management of patients with cancer."

The team has now had approval to expand their research with a further study, looking at [blood samples](#) from patients with different types of cancer, not just lung, to see if this technique can be replicated successfully with other cancer types.

Professor Kamaraj Karunanithi, Director of Research and Innovation at University Hospitals of North Midlands NHS Trust (UHNM), said, "The UHNM Research and Innovation Department is thrilled to back research targeting the early detection of [cancer cells](#) in the bloodstream. Detecting cancer spread early is vital for improving patient care.

"This research has the potential to establish new standards in treating cancer at various stages. The UHNM research strategy not only backs delivery of national and international research but also concentrates on identifying and developing local research in collaboration with our local universities."

**More information:** Lewis M. Dowling et al, Fourier Transform Infrared microspectroscopy identifies single cancer cells in blood. A feasibility study towards liquid biopsy, *PLOS ONE* (2023). [DOI: 10.1371/journal.pone.0289824](#)

Provided by Keele University

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