The EMBED Study
Summer 2024 Newsletter

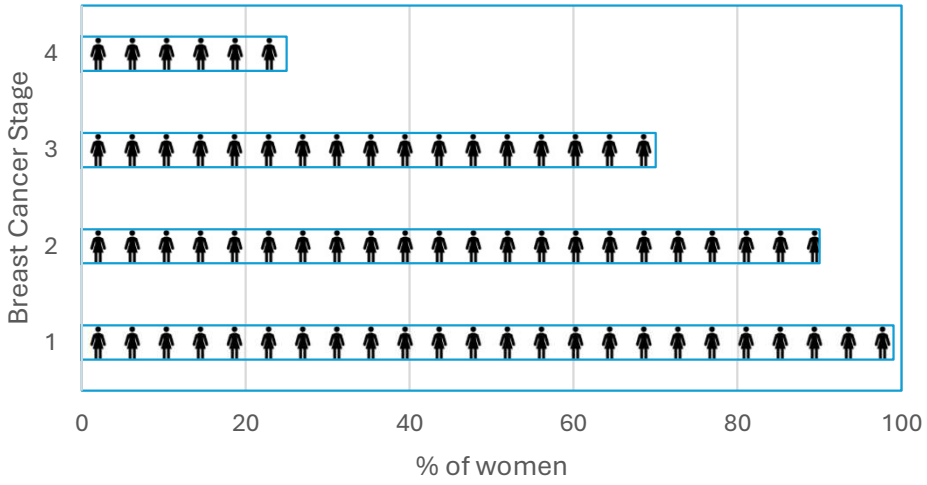
Thank you!
Thank you for being a part of the EMBED study. We really appreciate your time in helping us help future generations of women get an earlier diagnosis of breast cancer. This study would not be possible without the support of all our participants and their families, and the teams, research and clinical at each of our participating centres.
Thank you!

Why was this study important?

Cancer that's diagnosed at an early stage, when it isn't too large and hasn't spread, is more likely to be treated successfully.
Spotting cancer at an early stage saves lives.

Proportion of women surviving breast cancer 5 years or more.

Cancer survival in England, cancers diagnosed 2016 to 2020, followed up to 2021
NHS England



How is Breast Cancer usually detected?

Mammograms are effective in detecting breast cancer early. They can usually detect abnormalities several years before you would feel them.
However, mammograms are not perfect

- Some cancers are not easy to detect because of where they are.
- Some cancers are not easy to detect because the nature of a woman's breast tissue
- Not all abnormalities seen on a mammogram will lead to a cancer diagnosis. Some women therefore have more mammograms and unnecessary procedures than are necessary.

But what if there was another way!

What if there were blood markers that were present in the earliest stages of breast cancer and so a simple blood test could detect cancer?

SUPPORTED BY NIHR | National Institute for Health Research

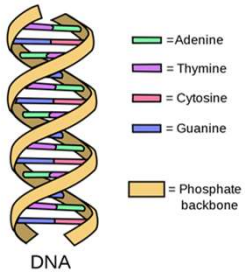
This study is supported by the National Institute for Health Research (NIHR) Cancer Division. The views expressed are those of the author(s) and not necessarily those of the NIHR or the Department of Health and Social Care.

Enter ctDNA : circulating tumour DNA
A possible tool for the earlier detection of Breast Cancer

What is ctDNA?

DNA is short for deoxyribonucleic acid and is the building block of all life.

You might have seen pictures similar to this.



We each have a unique set of DNA in every cell of our body.

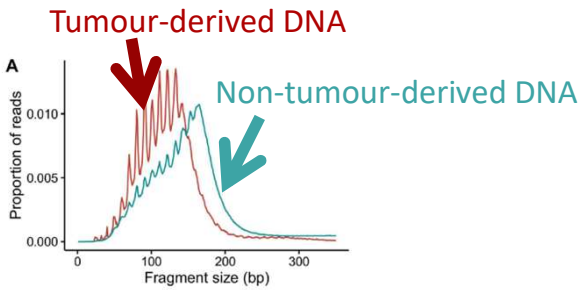
DNA in cancer cells though is different; something has caused the DNA to change.

ctDNA refers to the DNA from cancer cells circulating in the blood stream.

How can it be measured?

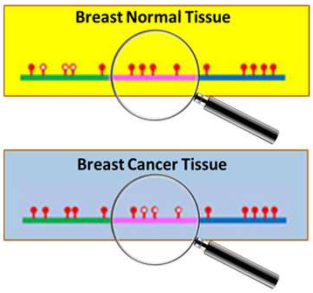
ctDNA fragments differ from healthy DNA fragments.
They can be shorter.
specific

OR they may contain tumour alterations

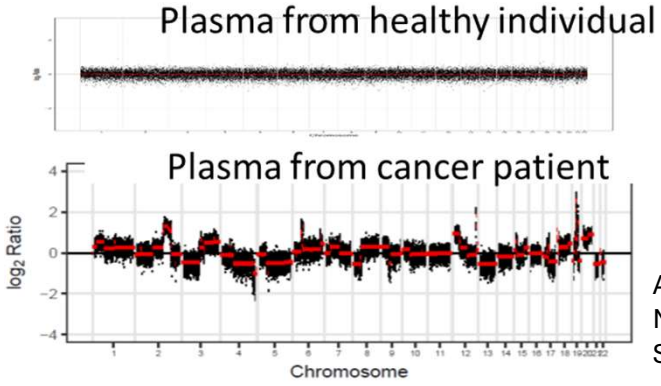


Mouliere F, *et.al.*, 2018, *STM*

OR they may contain modifications to its structure that have been caused by a process called methylation.
Chemical tags attach themselves to parts of the DNA which in turn alters the way they function.



Because of these differences it may be possible, using the very latest technology, to measure small concentrations of ctDNA in the blood.



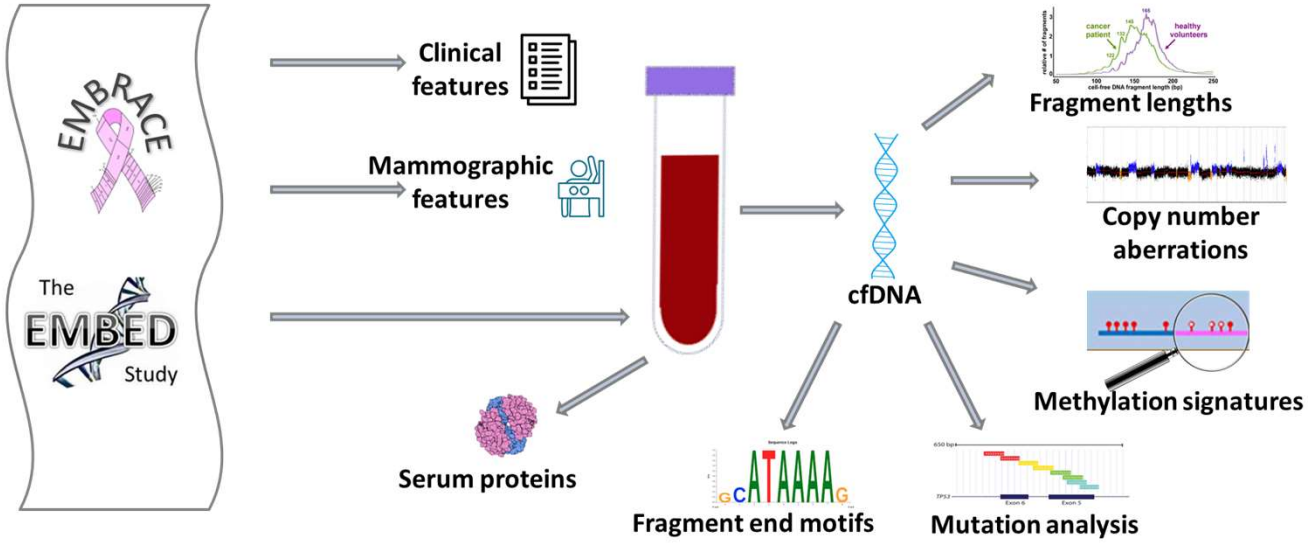
Adapted from
Mouliere F, et al
Sci Transl Med (2018) 10(466):eaat4921)

Why did we do the EMBED study?

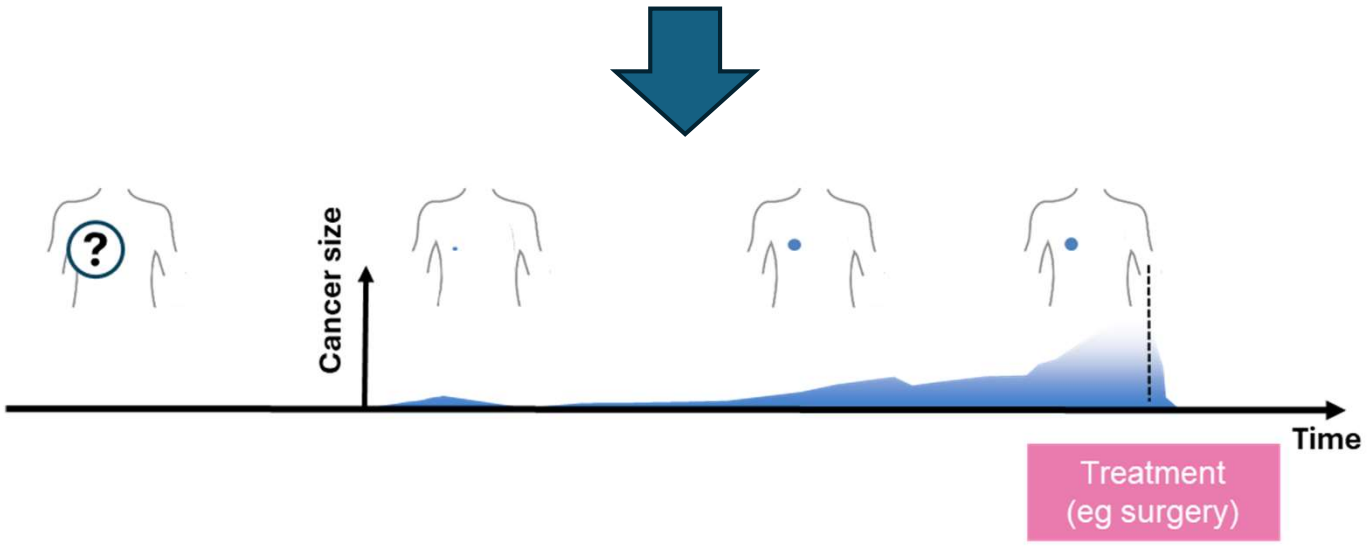
We want to see if ctDNA is measurable, using the very latest technologies, in the months leading up to a breast cancer diagnosis by:

- Adding to the number of samples being collected through our sister study; The EMBRACE Study
- Building a repository of blood samples by collecting samples annually
- Collecting tissue from the tumour in the event of a breast cancer diagnosis
- Collecting mammogram images to augment the findings through blood and tissue samples
- Collecting information through questionnaires

Multimodal analysis plans

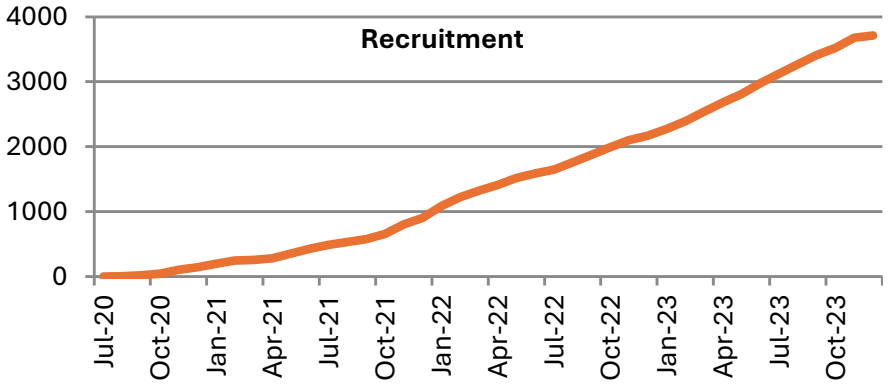


Putting all this together our aim is to be able to detect breast cancer at an earlier stage. This could have far-reaching implications for treatment and progression

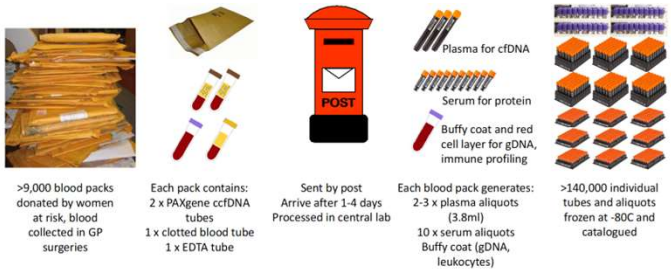


How did it go?

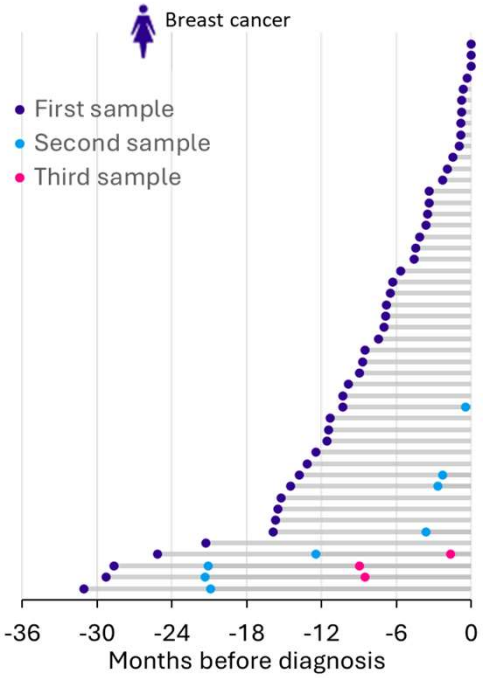
You were one of the 3715 ladies recruited to the EMBED Study from across England.



Your blood sample is
one of over 9000 we have collected
over the course of the study



A small number of women have developed
breast cancer, in some of these cases we
have received up to 3 blood
samples preceding the diagnosis.



What next?

We have been awarded further funding by Cancer Research UK for the next 5 years which will enable us to continue the analysis that has already begun.
Because the analysis work is still ongoing, we don't have results we can share at the moment.

The team!

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Penny Moyle
Fiona Gilbert
Elena Provenzano

Recruiting clinical and research staff
at all our study centres