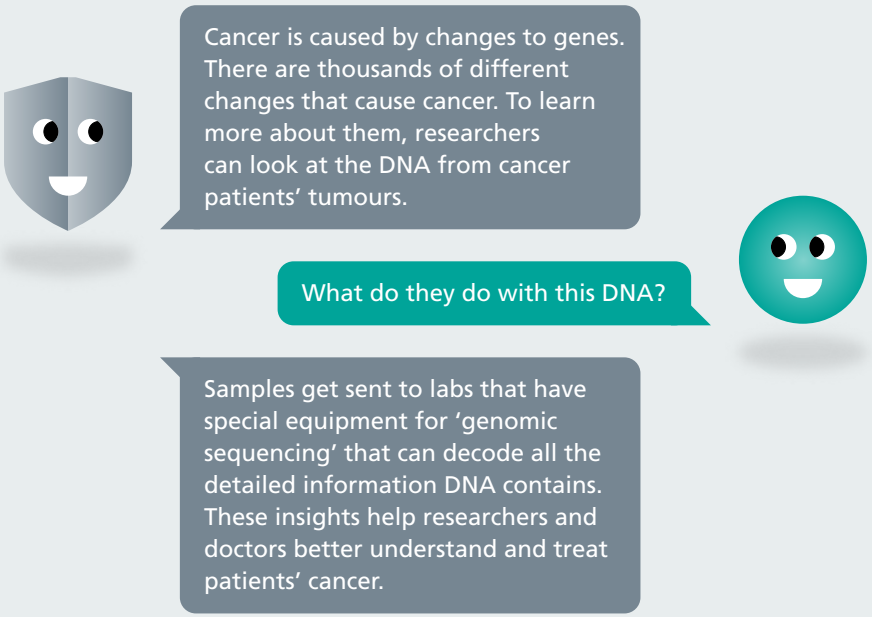
CASE STUDY

Cancer Genomics

Using genomic data to improve cancer treatment



Wessex SECURE DATA ENVIRONMENT

Part of the **NHS Research Secure Data Environment Network**

NHS

But isn't everyone's experience of cancer different?

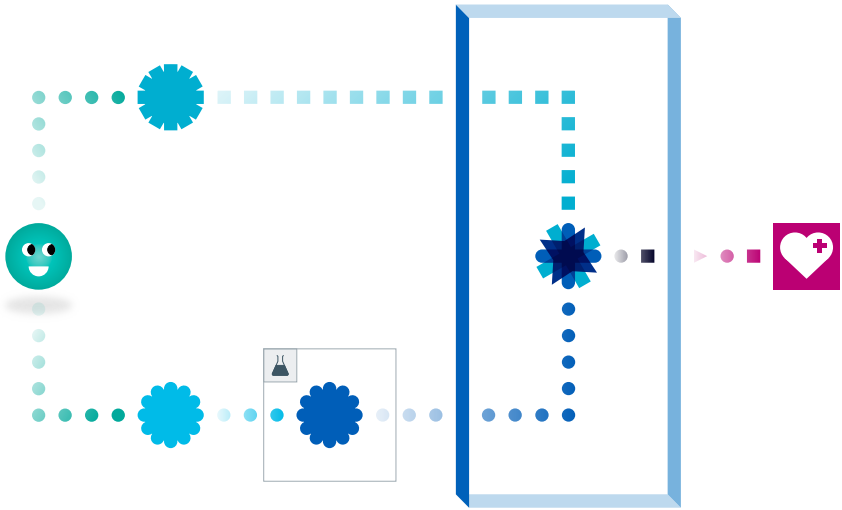
Yes, information about patients' individual journeys is also important for providing more personalised care. If information from patients' medical records can be linked with genetic sequencing data, researchers and doctors will be able to match cancer patients with the best treatments.

But if they have all this data, why aren't they already doing this?

That's a very good question! Partly it is because there is so much data that only some of it gets prioritised and used.

Another challenge is that this data is currently stored in different places. To be able to bring it all together securely in the SDE, we are working to build effective data transfer and storage systems.

Over time, the project's goal is to create a unified system. So, if a patient moves from one hospital to another, insights about their cancer can still be understood and interpreted in the same way by different people in different places.



The process starts with **you**. Cancer patients regularly have medical tests to help monitor their cancer. **Data from these tests is stored in NHS patients' records**. Cancer patients also have **DNA samples taken from their tumours** so doctors can better monitor and treat them. These tumour DNA samples get sent to **genomics labs** where **genomic sequencing data** is generated. This genomic sequencing data helps decode information about specific cancers and the patients who have them. If **genomic sequencing data is brought together with data on cancer patients' journeys** in the **SDE**, it can lead to **more personalised, effective and efficient cancer treatment.**

Patient and Public Benefits of this research
Our research team wants to capture and record **genomic variants** in DNA from cancer patients' tumours. Looking at this data, along with other medical information about patients' cancer journeys, will enable us to match exact cancer variants to the drugs that best target them, speeding up the time it takes to find the most effective treatment for patients, and this can help save lives.

NHS Data to be used: DNA from tumour biopsy, information from cancer patients' medical records.

Additional Data: Genomic sequencing data (from the genomics lab).

Background
Cancer is a genetic disease—it is caused by changes to genes. Sometimes these changes, called genomic variants, are inherited by our parents, and other times they only exist in a tumour. Tumours can be caused by thousands of variants. Learning more about these variants and comparing this data to information on cancer patients' journeys, can help us better understand how to target and treat patients' different cancers more efficiently and effectively.

However, right now, even though we have a lot of data on patients' cancer journeys and a lot of data from genomic sequencing, this data is not meeting up. Only a trickle of information gets looked at, the rest is left behind in databases. This means opportunities to help patients are being missed.

What's Next?
In 2024 the team will be working to test and secure the processes we will use to bring together files and create links in the SDE between genomic sequencing data and data from patients' NHS records.

Research Partners:
University Hospital Southampton, University of Southampton, Central and South Genomic Medicine Service

The human genome is the entire collection of genetic information that makes up a person. A person's set of **genomic variants** is what makes them unique from another person.