SUMMARY NOTE: VISIT TO THE ROSALIND FRANKLIN LABORATORY, LEAMINGTON SPA (DECEMBER 2021)

Summary

On Monday 13 December 2021, the Chair of the Committee (Rt Hon Greg Clark MP), and Committee members Aaron Bell MP and Graham Stringer MP, visited the Rosalind Franklin Laboratory, Leamington Spa. This note aims to summarise the key points of discussions and has been agreed with the Rosalind Franklin Laboratory.

Background to the laboratory

The Rosalind Franklin Laboratory is publicly owned by the Department of Health and Social Care (DHSC) and began processing PCR tests in June 2021. It is the largest of the 10 Lighthouse laboratories stood up in the UK by the NHS, academia, not-for-profit organisations and industry in collaboration.

The GOV.UK website explains that:

> The facility is part of the Lighthouse laboratory network, with the ability to process a higher number of tests per day at a lower cost per test. The shared expertise from the Lighthouse network has been invaluable to shaping the workflow and technology deployed at the site.

Currently, only covid-19 tests and reflex assay tests are processed at the RFL. However, in due course the lab is expected to "use some of its capacity for variants of concern (VOCs) testing" (i.e. sequencing). When at full capacity, the lab is expected to be able to process hundreds of thousands of tests a day.

The visit

Overview

The visit consisted of a tour of the laboratory, led by Professor Dame Anna Dominiczak, Director of Laboratories, Department of Health and Social Care (seconded from her academic position until the end of March 2022), Dr Robert Howes, Site Director, Rosalind Franklin Laboratory and Steve Blake, Project Director. The Committee also met Emma Millican who works for LGC Technology, the UK company which supplies testing equipment, reagents and consumables to the Milton Keynes and Rosalind Franklin labs. There was also an opportunity for a conversation about challenges facing the laboratory and covid-19 testing more widely, and future opportunities offered by facilities such as the Rosalind Franklin Laboratory.

Key points of discussion

Summarised below are the key points of discussion from the visit:

1. The laboratory (which had previously been a warehouse) was still under construction but it had been designed, built, constructed and become operational in a year, which was considerably quicker than the three and half year international average for constructing a laboratory of this size. It differed from, for example the Newcastle Lighthouse laboratory, which repurposed and adapted an existing laboratory.

2. The Rosalind Franklin Laboratory (RFL) was made up of a series of lines (i.e. self-contained modular laboratory units), which made it easier to open the laboratory while building work was still underway. It also meant if equipment needed changing or updating it could be done line-by-line rather than having to halt the work of the entire laboratory. Further, it was possible to use a line for training and demonstration purposes while the rest of the laboratory was still operating.

3. The advantage of Lighthouse laboratories was that they allowed for high throughput of covid-19 tests, which was essential when there was a high volume of tests to be processed. It also allowed for PCR tests to be processed at lower costs representing value for money. However, there was an acknowledgement that there was some role for local testing in addition to larger-scale Lighthouse facilities, although this would not be able to meet nearly enough demand and would be unable turnaround tests quickly enough.

4. The majority of the c. 700 staff working at the RFL were local and if the laboratory increased capacity it would be able to employ more local staff (PCR capacity in the UK was currently about 600,000 tests per a day).

5. The majority of the costs incurred by the laboratory were for reagents and consumables (they had never had any issues accessing reagents). Staffing costs were also substantial but small in comparison to the cost of reagents and consumables. Capital costs were much smaller. Following the visit, the RFL provided the Committee with the following financial information:

RFL Spend in £m's	FY21 + FY22 RDEL	CDEL	Total
Build			
Infrastructure		146	**146**
Lab Lines , IT and Programme Teams	24	64	**88**
	24	**210**	**234**
Operational			
Consumables and Reagents		107	**107**
Fixed Costs	85		**85**
	85	**107**	**192**
Total	**109**	**317**	**426**

6. The laboratory processed tests from test centres, at home PCRs and from specific settings such as adult social care and from prisons.

7. Robotics and automation helped with efficiency at the laboratory (e.g. with how the tests were processed and extracts taken from the testing tubes). There was a question as to whether automation could be further utilised—unpacking the boxes of test samples was, for example, still a manual task.

8. The different parts of the testing process happened in different laboratories along each line and took around six hours end-to-end:
    - small amounts of liquid from each tube were extracted and put into a tray (of 96)—at this point samples were disposed of as medical waste,
    - four trays could then be put together into a compressed tray (384 samples);
    - then samples were taken from six compressed trays and added to the tape (2,304 samples) which would be put through the hydrocycler testing machine (with up to c. 12,000 samples per run—theoretically with three machines the RFL could run 450,000 tests a day but it never intended to use more than 80% of its capacity (running at 80% capacity was the international standard)); and
    - results were reported directly to Test and Trace and any sequencing took place at a later stage.

9. Some of the equipment used in the covid-19 testing process was not designed for 24:7 use, but rather for research purposes. As a result, its

overuse did occasionally result in malfunction. However, the Rosalind Franklin Laboratory had maintenance capacity on site and on contract.

10. The positive rates of tests was:
    - c. 18–20% of samples from test centres;
    - c. 6–7% of samples from social care settings; and
    - c. 17–18% of samples from home PCRs.

11. Genotyping capability had been developed within the laboratory and the implementation of sequencing capabilities continued to be progressed. Two of the assay tests used at the laboratory currently could give a 90% indication of whether the variant the person was infected with was Omicron. It was important to know the variant that people were infected with as it helped to identify when new variants emerged. It would not be feasible long term to continue sending samples to the Sanger Institute for sequencing as it was set up to be a research institute and could not divert its attention indefinitely.

12. There had been no cases of workplace transmission at the laboratory (staff had to test using a lateral flow test every day before coming to work). Vaccination was also offered at the laboratory for staff.

13. Those hosting the Committee thought that there were many opportunities presented by the laboratory when the UK reached an endemic situation with covid-19 and the laboratory could also play a role in future pandemic preparedness.

14. Those hosting the committee reflected that the fluctuating nature of demand for PCR testing as the pandemic evolved had led to the need to carefully balance and adapt the size of the laboratory network.

15. In considering the future of the laboratory, those hosting the Committee suggested that depending on demand and capacity for processing PCR tests for covid-19, each line of the laboratory could be used for testing different viruses or disease (e.g. BRACA 1 and 2; genetic causes of high cholesterol could be screened to enable preventative medicine; and cancer screening).It was also explained that increasing testing for other conditions could help increase detection rates for medical conditions which should be detected by the health system. For example, at present only 7% of people who could be treated early to lower their cholesterol and prevent early heart attacks and strokes were being identified by genetic screening. The current ambition was to increase this to 25%. It might be possible to increase this to 75% if the RFL diagnostic capacity could be utilised in this way.