May 16, 2020

Sample reception, unpacking and barcoding

In 1 collection

Leigh Jones[1], Philip Walker[1], Robert Goldstone[1], Simon Caidan[1]

[1]The Francis Crick Institute

1 Works for me dx.doi.org/10.17504/protocols.io.bfe5jjg6

Crick COVID-19 Consortium

Jerome Nicod
The Francis Crick Institute

ABSTRACT

This protocol is part of the Crick COVID-19 RT-PCR Testing Pipeline collection.

This work involves handling and processing of clinical nasal or throat Swab samples from NHS staff or patients who are suspected of being infected SARS-CoV-2.
➢ This SOP is to be followed in order to avoid infection exposure to the virus

Purpose of examination / Clinical relevance

At the end of 2019, several pneumonia cases were reported in Wuhan, China and the pathogen was confirmed as a new viral strain. World Health organization has named the newly identified coronavirus as 2019-nCoV, also known as SARS-Cov-2. The disease developed into a dangerous pandemic, posing major challenges to the NHS. Although more research is necessary to better understand the virus, in response to the emergency, simple and rapid testing is essential to identify the virus in infected individuals. This will aid the implementation of efficient interventions to contain the spread, and distinguish healthcare workers who have been infected, and are required to self-isolate, from those showing similar symptoms but which are not 2019-nCoV associated. The latter category may continue to work, alleviating stress on hard-pressed healthcare resources. 2019-nCoV is an RNA virus, and the diagnostic tests detect viral RNA in swabs from patient airways using a reverse transcriptase PCR assay. Samples are submitted to HSL, an accredited reporting laboratory, and transferred to the Crick for testing. The first step of the process is sample receipt at the Crick. This SOP describes the inactivation of the virus.

SAFETY WARNINGS

This work involves handling and processing of clinical nasal or throat Swab samples from NHS staff or patients who are suspected of being infected SARS-CoV-2.
➢ This SOP is to be followed in order to avoid infection exposure to the virus

Safety Information – routes of infection

Person-to-person spread is thought to occur mainly via

- respiratory droplets produced when an infected person coughs or sneezes or
- by contact with droplets and contaminated fomites.

Personal Protective Equipment (PPE)

The following Personal Protective Equipment (PPE) must be worn at all times in the sample receipt and processing area:

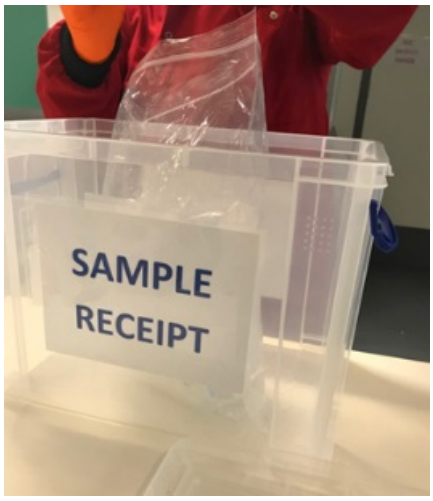
Citation: Leigh Jones, Philip Walker, Robert Goldstone, Simon Caidan (05/16/2020). Sample reception, unpacking and barcoding. https://dx.doi.org/10.17504/protocols.io.bfe5jjg6

- A Howie style lab coat which must be worn at all times.
- nitrile or neoprene disposable gloves.

1 **Location of sample receipt and processing area:**
Clinical samples are delivered by courier and transferred to sample reception area by nominated staff.

At the Receipt station, staff will act in the following capacities:
- Sample Checker (SC)
- Barcode Operator (BO)
- Barcode Label Operator (BLO)
- Sample Sorter (SS)

Sample packaging:
Incoming sample packs arrive in a UN3373 medical carrier. They are then transferred to a really useful box.



Multiple samples are initially triple bagged
- Each sample is in 2 sample bags.
- The sample bags are grouped in a larger outer bag (the sample pack).

Citation: Leigh Jones, Philip Walker, Robert Goldstone, Simon Caidan (05/16/2020). Sample reception, unpacking and barcoding. https://dx.doi.org/10.17504/protocols.io.bfe5jjg6

Registering Samples on Tube Tracker: **Logging into Tube Tracker**

2

Tube Tracker is a software system to track the whereabouts of samples from the hospital site to the testing laboratory.

Open up the internet browser (Google Chrome) and search for the designated tube track website.

3 Click on “Logon” in the top right hand corner of the screen.

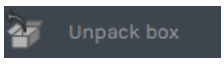
4 All users must have an individual login for the system; generic accounts must not be used.

5 Log in using the username and desgnated password supplied.

6 Once a username and password have been entered the relevant location will be visible now click on “Sign In”.

Registering Samples on Tube Tracker: **Unpacking the contents from the bag**

7 Once samples arrive into the laboratory they will need to be unpacked from each bag received. Click on the icon “Unpack Box” from the main menu on the left hand side of the screen.



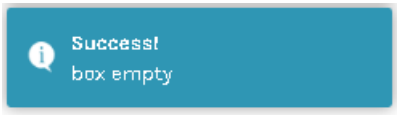
8 Scan the barcode label which should be on the outer bag into the field ‘unpack box’. Always make sure the cursor is inside the field before scanning the bag barcode.

9 The contents of the box will appear to the right of the screen.

10 Begin scanning the barcodes of each individual sample to unpack and receive them. This will automatically update the sample audit trail to show when and where each sample has been received, and which user received it.

11 When all samples have been unpacked from the box, a message will appear to the bottom right of the screen indicating that the box is now empty.

Citation: Leigh Jones, Philip Walker, Robert Goldstone, Simon Caidan (05/16/2020). Sample reception, unpacking and barcoding. https://dx.doi.org/10.17504/protocols.io.bfe5jjg6



Registering Samples on Tube Tracker: **Missing samples**

12 If there are any missing samples, for example, a sample has been scanned into the bag but is not physically in the bag then this must be marked as “missing”.

13 To mark samples as missing click on the following symbol that appears next to each sample number in the list. **Please ensure that the correct samples are marked as missing as once this has been clicked it cannot be undone.**

14 Notify the site that sent this sample so they are able to investigate what has gone wrong.

15 If there are any samples that are physically in the bag, but have not been tracked into the bag, the following message will appear:

16 Click “Yes” and the system will show on the audit trail for that sample that is has been unpacked. **Please ensure you have scanned the correct barcode before selecting yes, especially if there are other barcodes on the sample.**

Registering Samples on Tube Tracker: **Reporting System issues**

17 There may be times when the system is slow, or error messages appear such as ‘bad gateway’. This can be due to server issues. In most cases refreshing your browser and/or logging off and logging back on can resolve these. However, if the issue persists, please report using the contacts that have been provided for escalation.

Processing of “***correct***” clinical nasal or throat swab samples: **Receipt** *(Sample Checker's tasks)*

18 **Sample Checker will:**

Open the really useful box of incoming samples.

19

Risk of exposure due to damaged or leaking materials!

Citation: Leigh Jones, Philip Walker, Robert Goldstone, Simon Caidan (05/16/2020). Sample reception, unpacking and barcoding. https://dx.doi.org/10.17504/protocols.io.bfe5jjg6

Without opening a sample pack bag, visually inspect the samples within it for gross leakage.

If **no leakage** seen, proceed to next step.

If **leakage** is observed
- Do not open the sample pack or remove any sample bags
- If a member of health and safety (H&S) is not already in attendance, contact health and safety immediately
- H&S will spray the sample bags with distel disinfectant
- Place the sample pack into a designated really usefull box labelled ‘leaked samples’
- Place the lid on the really useful box
- Transfer the samples to the CL3 facility to disinfect and recover any remaining usable samples
- Usable samples will start at receipt stage again
- Unusable samples will be disposed of via autoclave process

20 Open a sample pack.

21 Working with one sample bag at a time, remove a sample from the sample pack.

22

Risk of exposure due to samples eg faeces, urine and blood!

Visually inspect the individual sample bag to ensure **appropriate sample**.

If **appropriate sample** seen, select case '*Correct Sample*'.

If **incorrect sample** is observed, select case '*Incorrect Sample*'.
Step 22 includes a Step case.
Correct
Incorrect

step case

Correct

23

Risk of exposure due to damaged or leaking materials!

Visually inspect the individual sample bag for **leakage**.

If **no leakage** seen, select case '*No Leakage*'.

If **leakage** is observed, select case '*Leakage*'.
Step 23 includes a Step case.
No Leakage

Citation: Leigh Jones, Philip Walker, Robert Goldstone, Simon Caidan (05/16/2020). Sample reception, unpacking and barcoding. https://dx.doi.org/10.17504/protocols.io.bfe5jjg6

Leakage

step case

No Leakage

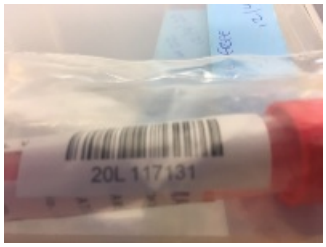
24

It is important that the samples are clinical nasal or throat swab samples

- Incorrect samples will need to be returned (see case '*Incorrect Sample*' **go to step #22** above)

Check that the sample is a clinical nasal or throat swab sample.

25 Check that sample has a barcode label. Note the barcode should start with a two digit number followed by a letter, commonly known as an EDTA number.



26 Tell the barocder that it is a correct sample.

Processing of ***"correct"*** clinical nasal or throat swab samples: **Barcoding** (*Barcode Operator's tasks*)

27 **The barcode operator will:**

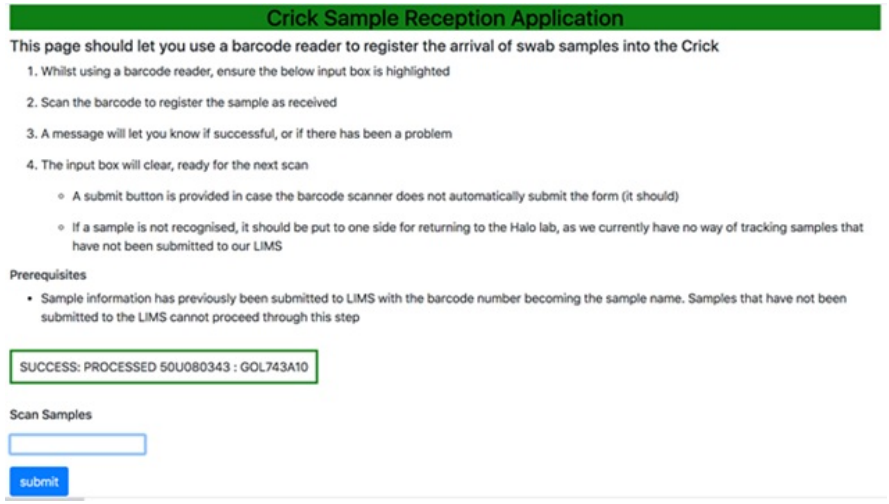
Scan the barcode though the sample bag twice,

- On barcode reader 1 to register sample on Clarity software
- On barcode reader 2 to allow the printing of 2 labels

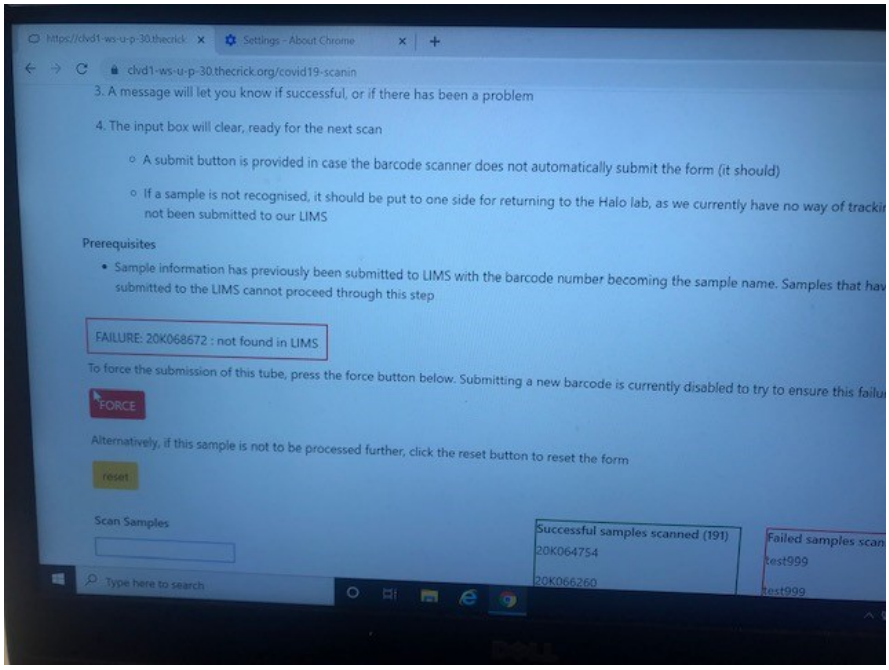
28 **Barcode reader 1 scan check**

- If the barcode has been scanned successfully, the following notification should be received:

Citation: Leigh Jones, Philip Walker, Robert Goldstone, Simon Caidan (05/16/2020). Sample reception, unpacking and barcoding. https://dx.doi.org/10.17504/protocols.io.bfe5jjg6



- If the barcode scanning has failed, the following notification should be received:



- Double check correct barcode has been scanned if an EDTA number matching sample 'force' the sample through for processing
- If non EDTA number entered check sample for an EDTA number anywhere on sample pack, if there is one scan if successful send sample through for processing. If failure 'force' sample through for processing
- If no EDTA number do not force but 'reset' and send sample through process for '*Incorrect Sample*'

  go to step #22 .

29 **Barcode reader 2 scan check**

Ensure that x2 barcodes (x3 barcodes if sample container has no barcode) have been produced.

Citation: Leigh Jones, Philip Walker, Robert Goldstone, Simon Caidan (05/16/2020). Sample reception, unpacking and barcoding. https://dx.doi.org/10.17504/protocols.io.bfe5jjg6

30 Pass the sample to a barcode lable operator.

Processing of "***correct***" clinical nasal or throat swab samples: **Labelling the Sample Bags** (*Barcode Label Operator's tasks*)

31 **The barcode label operator will:**

Advance the printer one label and cut using a scissors.

32 Staple through the unbarcoded label onto the sample bag above the zip lock as shown here.

Do not staple through the main compartment of the sample bag.

Risk of exposure through damaging the sample bag integrity!

Citation: Leigh Jones, Philip Walker, Robert Goldstone, Simon Caidan (05/16/2020). Sample reception, unpacking and barcoding. https://dx.doi.org/10.17504/protocols.io.bfe5jjg6

Processing of "***correct***" clinical nasal or throat swab samples: **Sample Sorting** *(Sample Sorter's tasks)*

33 **The sample sorter will:**

Sample & the printed barcodes must match to prevent misdiagnosis.
- The sample sorter must check the printed barcodes match with the original one in the sample bag

Place all correct samples that have been correctly labelled in a really useful box

34 Fix the lid of the really useful box once full or all samples accounted for.

The samples are now ready for transport into the CL2/3 suite for viral inactivation and a runner will transfer full incoming sample transfer boxes.

Citation: Leigh Jones, Philip Walker, Robert Goldstone, Simon Caidan (05/16/2020). Sample reception, unpacking and barcoding. https://dx.doi.org/10.17504/protocols.io.bfe5jjg6