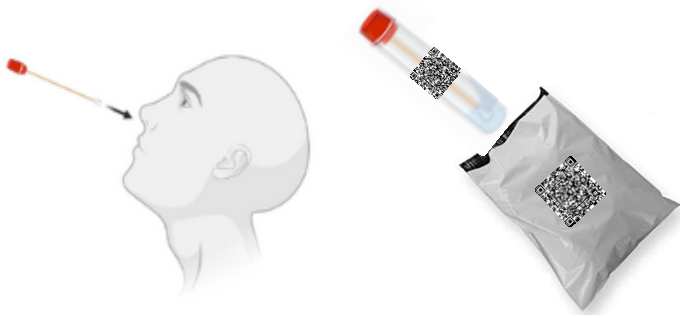
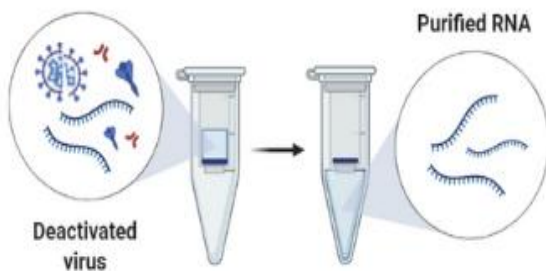


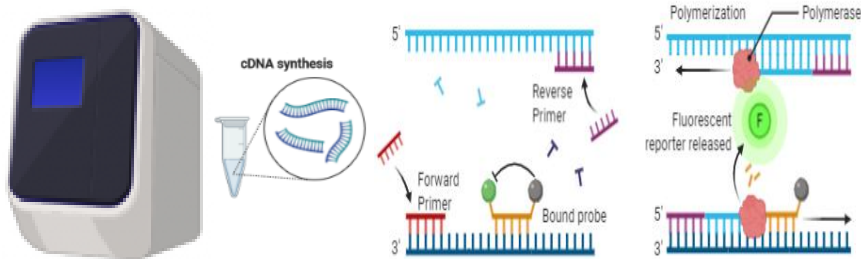
# Understanding the SARS-CoV-2 PCR journey



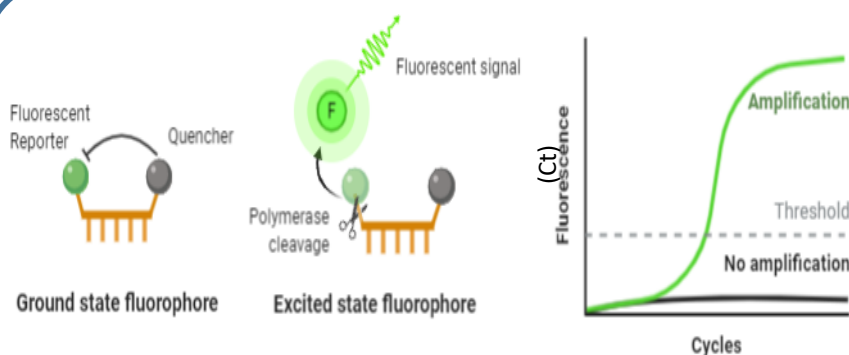
**1. Sample collection:** Cotton swab is used to adsorb nasal secretions. Sample barcoded with patient identifiers and transported to the virology laboratory.



**2. RNA extraction:** The sample is received in the lab with some put into a test tube. Lysis buffer added to the sample to deactivate the virus. Next viral RNA (genetic material) is extracted and purified.



**3. cDNA synthesis and RT-PCR amplification:** Purified RNA is reverse transcribed to cDNA. cDNA amplification using DNA polymerase, nucleotides, SARS-CoV-2 primers and probes



**4. Mechanism of RT-PCR amplification:** Real time fluorescence (flashes of light) measured from 5'-3' exonuclease cleavage of the SARS-CoV-2 probe to give Ct value. Ct is a semi-quantitative value that measures the concentration of viral genetic material in a sample. Low Ct = High concentration viral material  
High Ct = Low concentration viral material  
No Ct = viral genetic material absent

## Further reading

England, P.H., 2020. Understanding cycle threshold (Ct) in SARS-CoV-2 RT-PCR. A guide for health protection teams. *Public Health England*, Available at: [https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment\\_data/file/926410/Understanding\\_Cycle\\_Threshold\\_Ct\\_in\\_SARS-CoV-2\\_RT-PCR\\_.pdf](https://assets.publishing.service.gov.uk/government/uploads/system/uploads/attachment_data/file/926410/Understanding_Cycle_Threshold_Ct_in_SARS-CoV-2_RT-PCR_.pdf).

## Image Credits

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BioRender (2021). Fluorescent Probe-Based Real Time PCR.