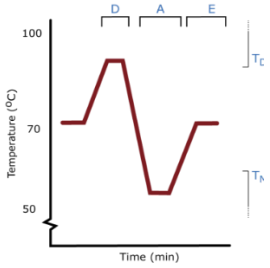
May 09, 2019 Version 2

Influenza A H3 virus TaqMan assay V.2



DOI
dx.doi.org/10.17504/protocols.io.2qwgdxe

Ian M Mackay[1], Judy A Northill[2]

[1]Public Health Virology, Forensic and Scientific Services, Queensland Health;
[2]Public Health Virology, Forensic and Scientific Services

Ian M Mackay
Public Health Virology, Forensic and Scientific Services

OPEN ACCESS

DOI: dx.doi.org/10.17504/protocols.io.2qwgdxe

Protocol Citation: Ian M Mackay, Judy A Northill 2019. Influenza A H3 virus TaqMan assay. **protocols.io https://dx.doi.org/10.17504/protocols.io.2qwgdxe**

Protocol status: Working
We use this protocol and it's working

Created: May 09, 2019

Last Modified: May 09, 2019

Protocol Integer ID: 23030

Keywords: World Health Organization,

Abstract

This assay is a modification to the World Health Organization's influenza A H3 TaqMan documented in 'WHO information for molecular diagnosis of influenza virus - update 1' (see file below). New primers were added and the WHO primers discarded.

Attachments

Influenza_WHO_update..

1.1MB

Materials

STEP MATERIALS

SuperScript™ III Platinum™ One-Step qRT-PCR Kit **Life Technologies** **Catalog #**11732088

Protocol materials

SuperScript™ III Platinum™ One-Step qRT-PCR Kit **Life Technologies** **Catalog #**11732088

SuperScript™ III Platinum™ One-Step qRT-PCR Kit **Life Technologies** **Catalog #**11732088

Before start

- If using a different brand or model of real-time thermocycler, check that the concentration of ROX is adequate.
- Method assumes the user is familar with the thermocycler and software used to run the protocol.

Oligonucleotides

1

	Name	5'-3' SEQUENCE
	H3hFor1	GGTACGG**Y**TTCAGGCAT
	H3hRev1	TCAATCTGATGGAATTTCTCGTTG
	H3h-1144dProbe	6FAM-CTGCTGCTTGTCCTCTTCCCT-BHQ1

- The oligoprobe is from the World Health Orgnization protocol linked below.
- New primers were designed to improve assay performance._ **http://www.who.int/entity/influenza/gisrs_laboratory/molecular_diagnosis_influenza_virus_humans_update_201403rev201505.pdf?ua=1**

2

SuperScript™ III Platinum™ One-Step qRT-PCR Kit **Life Technologies Catalog #**11732088

Reaction Set-up

3 The assay has been used on both a Rotor-Gene 6000 and a Rotor-Gene Q real-time thermocycler

- Prepare sufficient mix for the number of reactions.
- Include a suitable 'dead volume' as necessary if using a robotic dispenser.

	Reagent	Vol (µL) X1	Final reaction concentration
	Nuclease-free water	4.43	
	H3hFor1 (200pmol/µL)	0.05	500nM
	H3hRev1 (200pmol/µL)	0.05	500nM
	H3h-1144dProbe (100pmol/µL)	0.03	150nM
	2X Reaction Mix[1]	10.0	1X
	ROX reference Dye (25µM)[1,2]	0.04	50nM
	SuperScript™ III/Platinum™ Taq Mix[1]	0.4	
	TOTAL	**15**	

1-Superscript™III Platinum™ One-step qRT-PCR kit; 2-See Guidelines

- Dispense 15µL to each reaction well.
- Add 5µL of template (extracted RNA, controls or NTC [nuclease-free water]).
- Total reaction volume is 20µL

Amplification

4 RT-PCR

	50°C	5min	
	95°C	2min	
	95°C	3s	40X
	60°C	30s*	

*Florescence acquisition step

Result analysis

5 The definition used for a satisfactory positive result from a real-time fluorogenic PCR should include each of the following:

1. A **sigmoidal curve** – the trace travels horizontally, curves upward, continues in an exponential rise and followed by a curve towards a horizontal plateau phase
2. A **suitable level of fluorescence** intensity as measured in comparison to a positive control (y-axis)
3. A defined threshold (C_T) value which the fluorescent curve has clearly exceeded (Fig.1 arrow) and which sits early in the log-linear phase and is <40 cycles
4. A flat or non-sigmoidal curve or a curve that crosses the threshold with a C_T value >40 cycles is considered a negative result
5. NTCs should not produce a curve

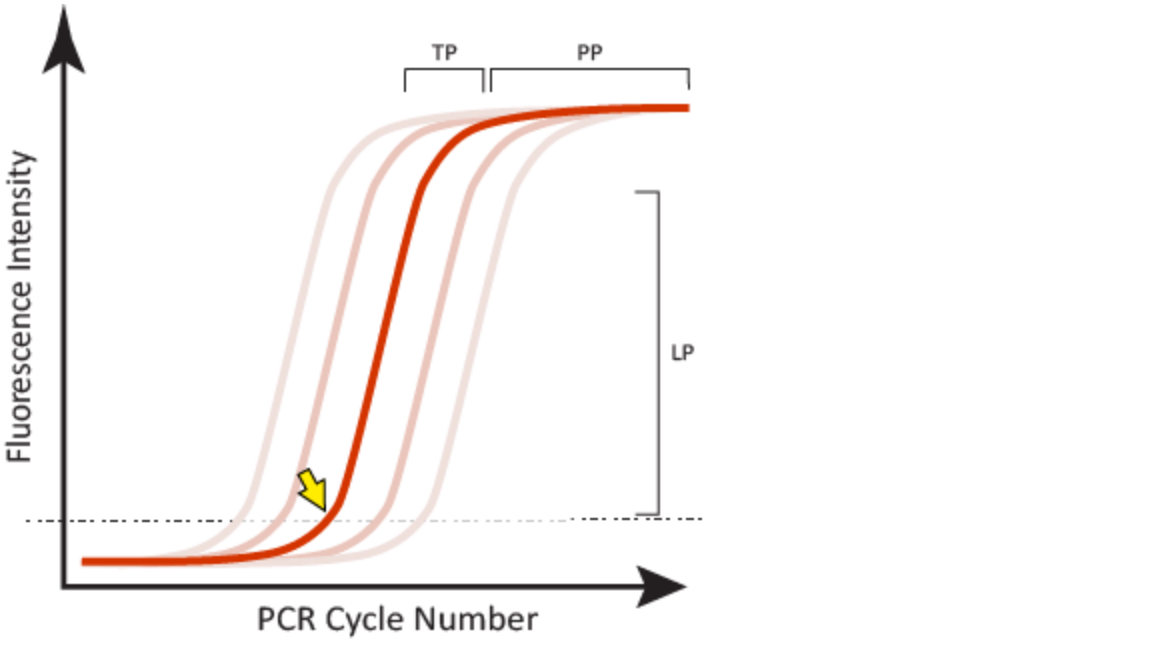


Figure 1. Examples of satisfactory sigmoidal amplification curve shape when considering an assay's fluorescent signal output. The crossing point or threshold cycle (C_T) is

indicated (yellow arrow); it is the value at which fluorescence levels surpass a predefined (usually set during validation, or arbitrary) threshold level as shown in this normalized linear scale depiction. LP-log-linear phase of signal generated during the exponential part of the PCR amplification; TP-a slowing of the amplification and accompanying fluorescence signal marks the transition phase; PP-the plateau phase is reached when there is little or no increase in fluorescent signal despite continued cycling.