# TOYOBO

# POLYMERASE

## SELECTION GUIDE

# for Probe qPCR
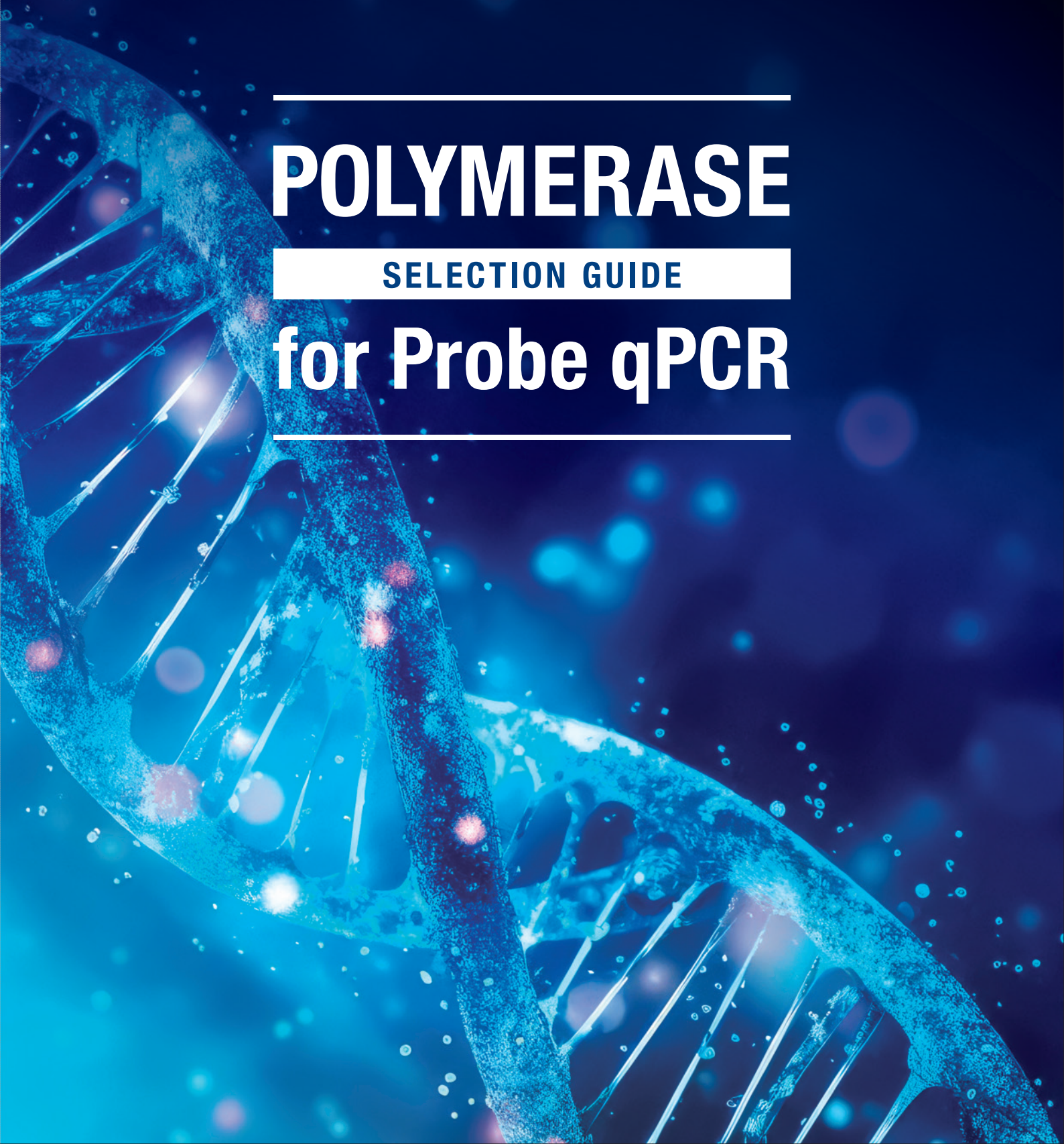
# TOYOBO Polymerase

| | TTx | Tth | Taq |
|---|:---:|:---:|:---:|
| Fast Extension | + + + | + + | + |
| Inhibitor resistance | + + + | + + | + |
| Detection sensitivity | + + + | + + | + |
| Multiplex PCR Performance | + + | + + | + |
| Specificity | + | + + | + |
| Reverse transcription activity* | + | + | − |

\* In the presence of $Mn^{2+}$

**What is TTx?**

# New Generation Polymerase

developed with our advanced technology.
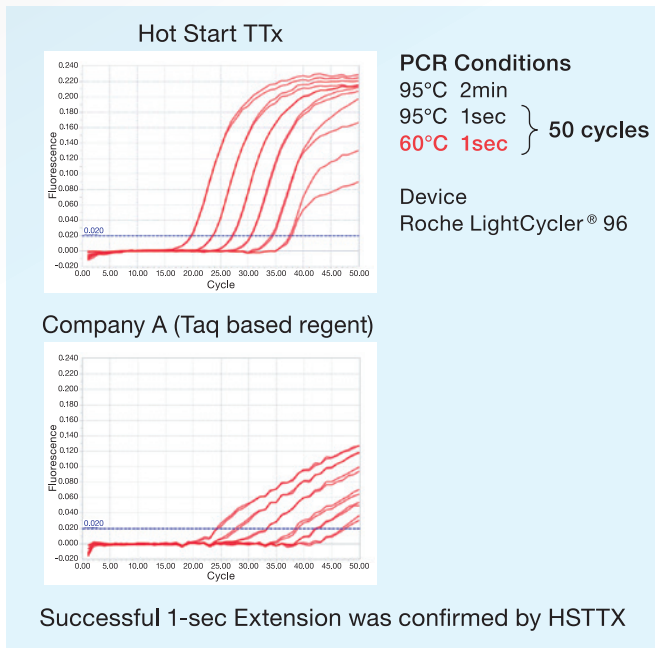
TTx performs much better than Taq.

## TOYOBO TTx Products

| | | Code |
|---|---|:---:|
| **Enzyme** | TTx DNA Polymerase | TTX-119 |
| | TTx DNA Polymerase <Glycerol Free> | TTX-219 |
| | Hot Start TTx DNA Polymerase | HSTTX-129 |
| | Hot Start TTx DNA Polymerase <Glycerol Free> | HSTTX-219 |
| **Kit** | Hot Start TTx (DNA) Kit | HSTTX-101 |
| | Hot Start TTx (RNA) Kit | HSTTX-111 |
| **Master Mix** | THUNDERBIRD™ Next Probe One-step qRT-PCR4×Mix | QRX-101 |

# TOYOBO TTx Polymerase Application

## Hot Start TTx

### Ultra-Fast Extension

Amplification of African Swine Fever virus DNA was performed qPCR using TaqMan ® Probe.
Number of DNA copies (10-1,000,000)

**Hot Start TTx**



**PCR Conditions**
95°C  2min
95°C  1sec
60°C  1sec  } 50 cycles

Device
Roche LightCycler ® 96

**Company A (Taq based regent)**



Successful 1-sec Extension was confirmed by HSTTX

The data represents measured values and not guaranteed values.

### Ultra-Low Copy

Amplification of pertussis DNA by qPCR using TaqMan ® Probe.
Number of DNA copies (1-15,000)

**Hot Start TTx**



**Taq based reagent**



Efficient amplification was confirmed by HSTTX
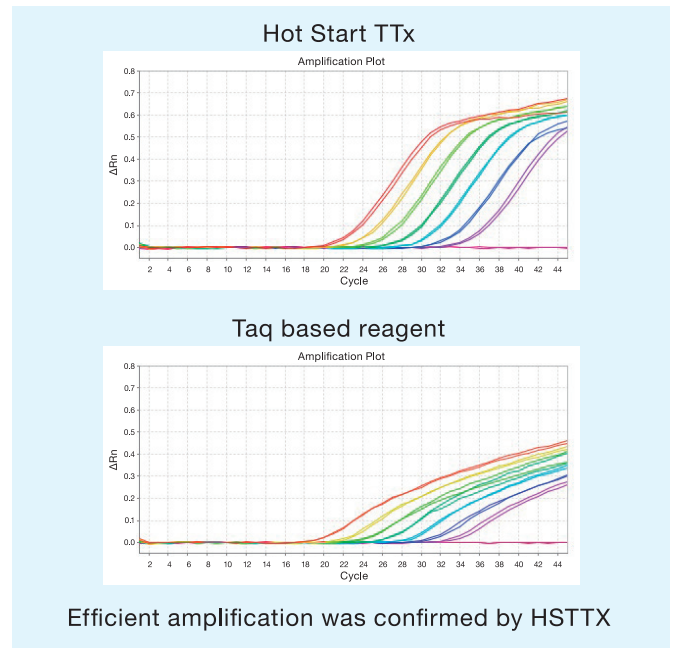
The data represents measured values and not guaranteed values.

## Hot Start TTx DNA Polymerase <Glycerol Free>

### Comparison before and after Lyophilization

SARS-CoV-2 RNA (24 - 6250 copies) was detected.

**Before Lyophilization**



**After Lyophilization**



No effect of Lyophilization was observed
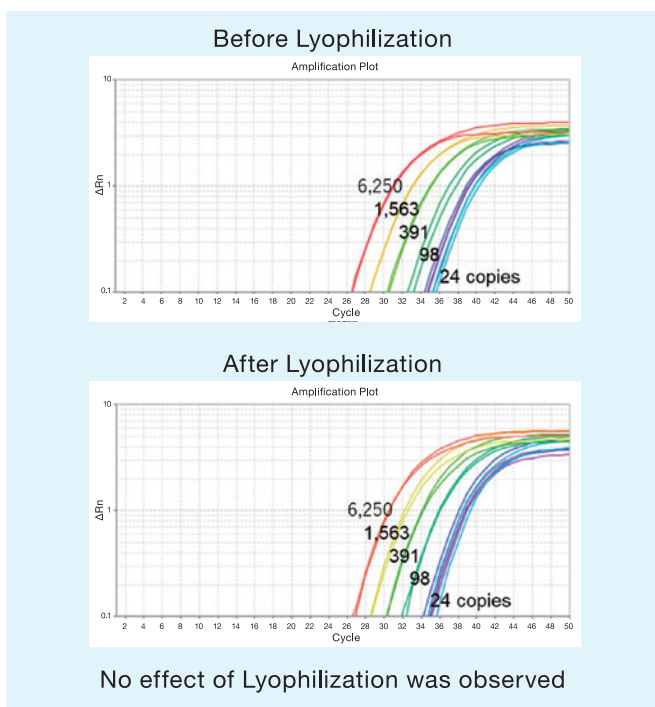
The data represents measured values and not guaranteed values.

### Tolerance to plasma in HSTTX <Glycerol Free> vs Taq

2.5 µL of plasma was added to 20 µL of reaction solution.
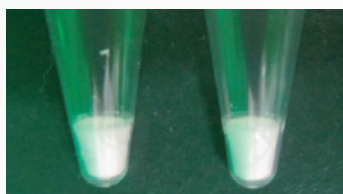Sample : African Swine Fever virus DNA

**Hot Start TTx**



**Taq based reagent**



Hot Start TTx could amplify DNA despite plasma presence
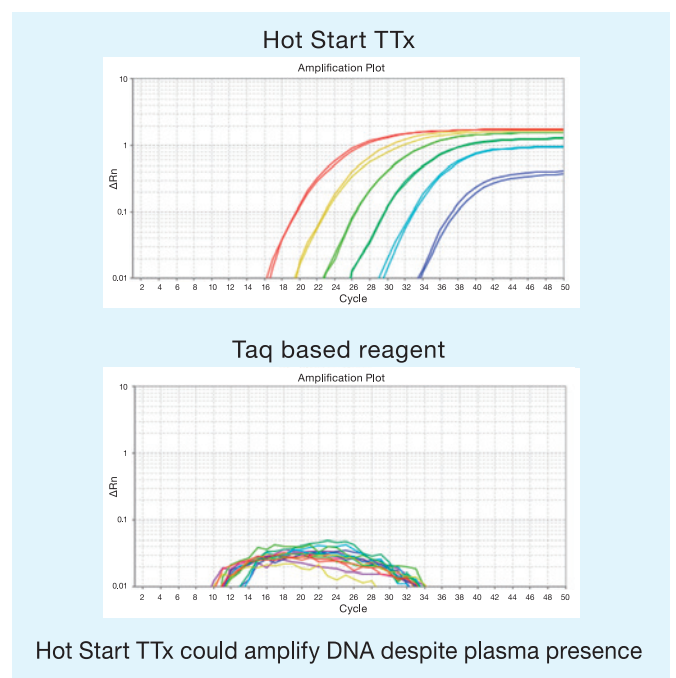
The data represents measured values and not guaranteed values.

# TOYOBO TTx Master Mix Application

## THUNDERBIRD™ Next Probe One-step qRT-PCR 4×Mix

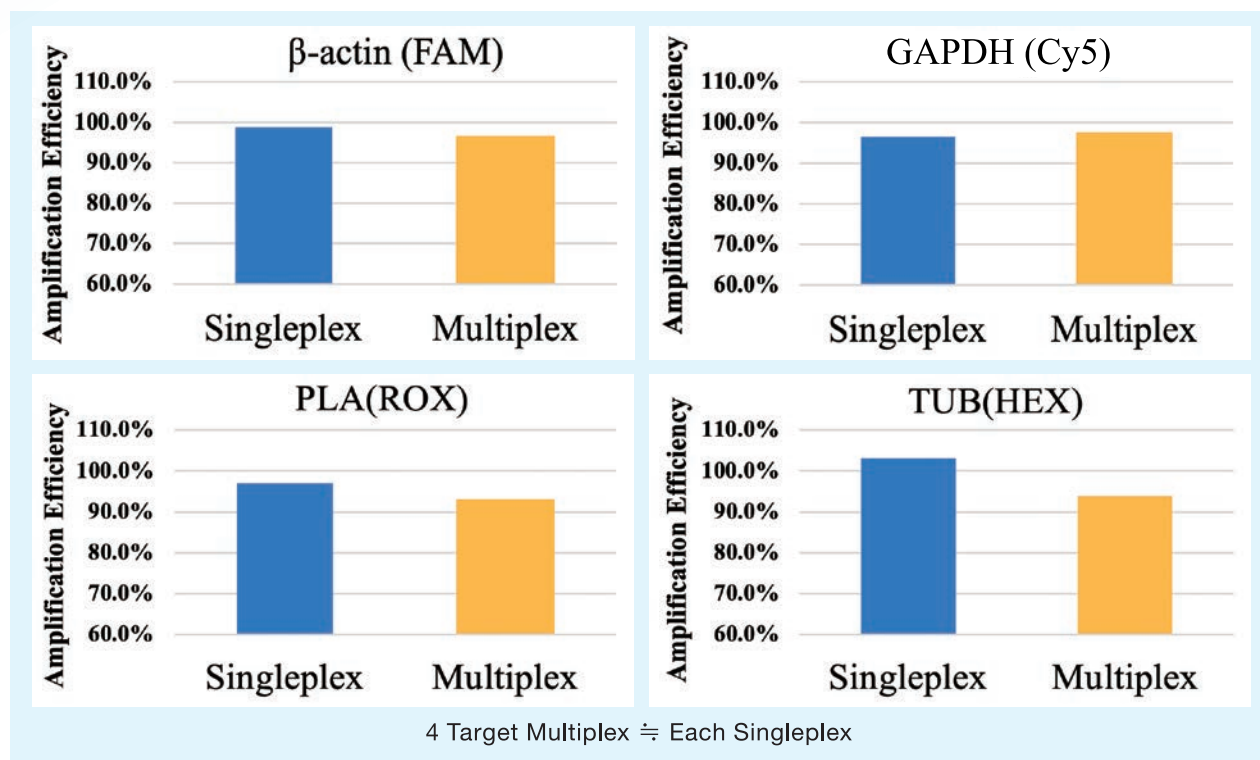### Lyophilisable Master Mix for One-step qRT-PCR



## It's the ALL in ONE
### from Reverse Transcription to qPCR.
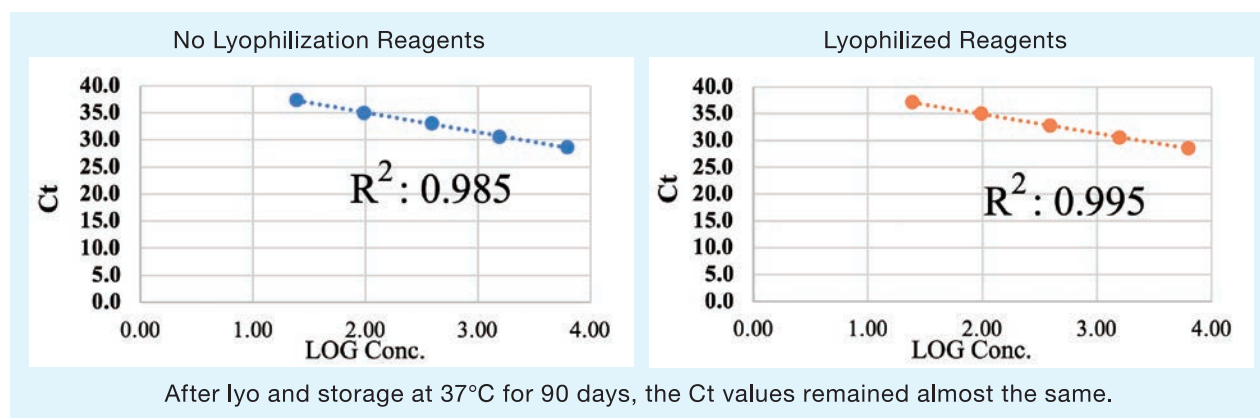Just prepare primer, probes and template!

### Four-color mulitiplex
Sample : RNA derived from HeLa



4 Target Multiplex ≒ Each Singleplex

The data represents measured values and not guaranteed values.

### Stability at 37°C for 90 days, after lyophilization
Sample : RNA of Influenza A



After lyo and storage at 37°C for 90 days, the Ct values remained almost the same.

The data represents measured values and not guaranteed values.

# TOYOBO TTx Achievement

## Fast Extension

Ultra High-Speed qPCR / qRT-PCR

Shorten PCR run time

(Example : Hot Start TTx)

## High Sensitivity

It is also suitable for low copy samples.

Able to detect minute quantities

(Example : Hot Start TTx)

## High Tolerance from inhibitors

There is a possibility that nucleic acid purification is not required

Saving time!  qPCR / qRT-PCR become Easy Task!

(Example : Hot Start TTx DNA Polymerase <Glycerol Free>)

## Four Target Multiplex

High specificity!

Reduce the number of qPCR / qRT-PCR tests

(Example : THUNDERBIRD™ Next Probe One-step qRT-PCR 4×Mix)

## Master Mix for One Step qRT-PCR

Just prepare probes and template!

Accelerating your Research & Development

(Example : THUNDERBIRD™  Next Probe One-step qRT-PCR 4×Mix)

## Lyo-Ready Master Mix

Easy storage and transport!

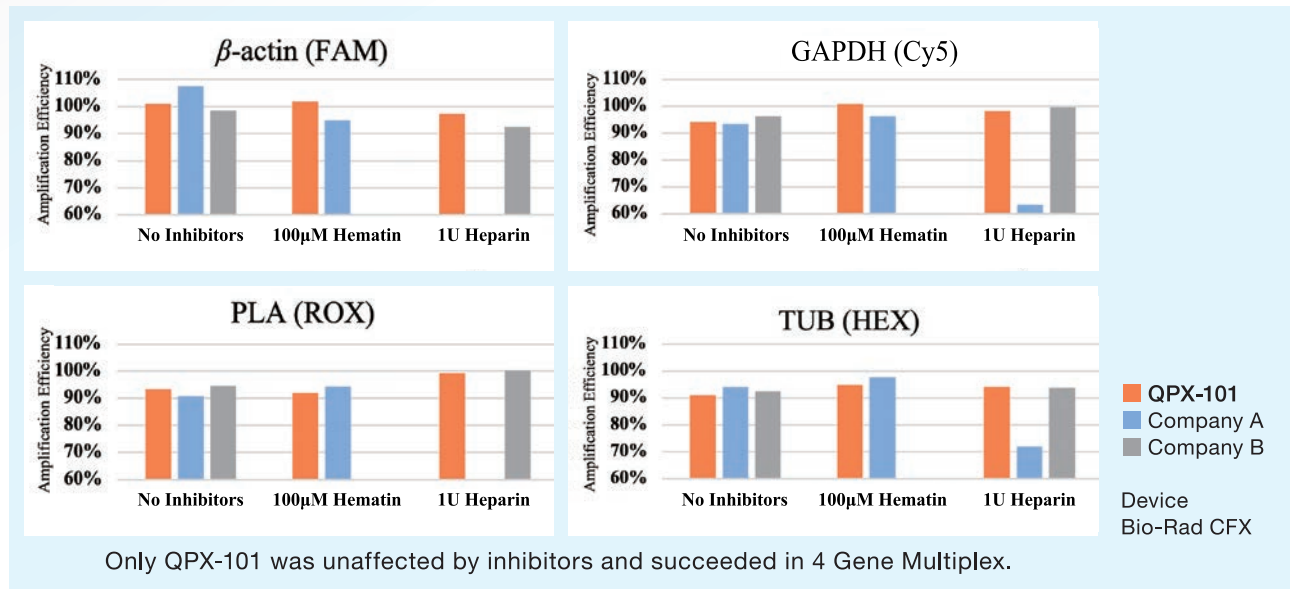(Example : THUNDERBIRD™  Next Probe One-step qRT-PCR 4×Mix)

# TOYOBO Tth Application

## Ideal for experiments requiring specificity

### THUNDERBIRD™ Next Probe qPCR Mix ( `Code` QPX-101)

**Tolerant from inhibitors & Four-color mulitiplex for qPCR**

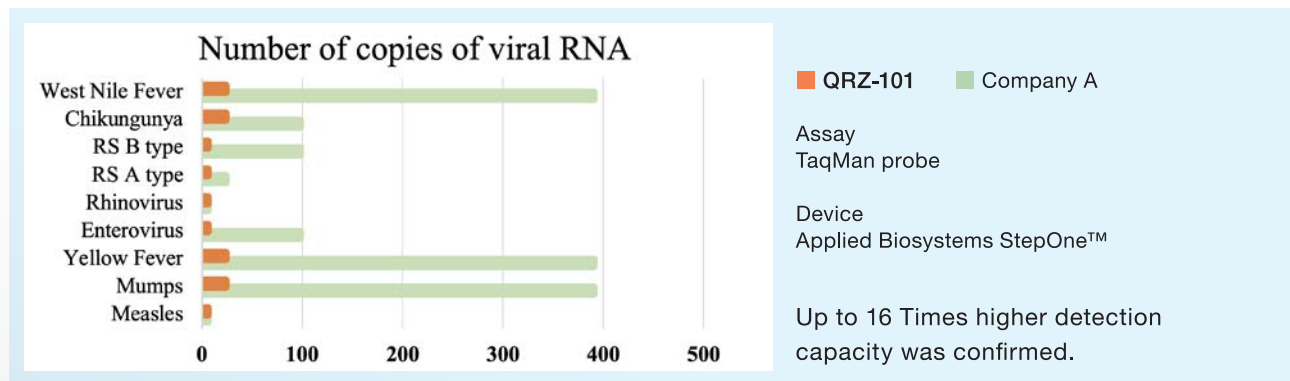Multiplexing with 4 Target in the presence of hematin or heparin inhibiting qRT-PCR.
Hematin is the main component of blood and heparin is the anticoagulant.



*β*-actin (FAM)

GAPDH (Cy5)

PLA (ROX)

TUB (HEX)

■ QPX-101
■ Company A
■ Company B

Device
Bio-Rad CFX

Only QPX-101 was unaffected by inhibitors and succeeded in 4 Gene Multiplex.

The data represents measured values and not guaranteed values.

### THUNDERBIRD™ Probe One-step qRT-PCR Kit ( `Code` QRZ-101)

One-step qRT-PCR using a two-enzyme system with ReverTra Ace (TOYOBO product) as a reverse transcriptase and Tth DNA Polymerase as a PCR enzyme.

**Comparison of detection sensitivity capability of 11 viral RNAs with competitor.**



Number of copies of viral RNA

■ QRZ-101     ■ Company A

Assay
TaqMan probe

Device
Applied Biosystems StepOne™

Up to 16 Times higher detection capacity was confirmed.

The data represents measured values and not guaranteed values.