

Power SYBR Green RNA-to-C_T 1-Step Kit

Benefits

- Minimizes hands-on time with a one-step protocol
- Reduces error and contamination caused by multiple pipetting steps
- Accuracy across a wide dynamic range, for dependable performance
- Highly specific and consistent results, even with low quantities of target RNA

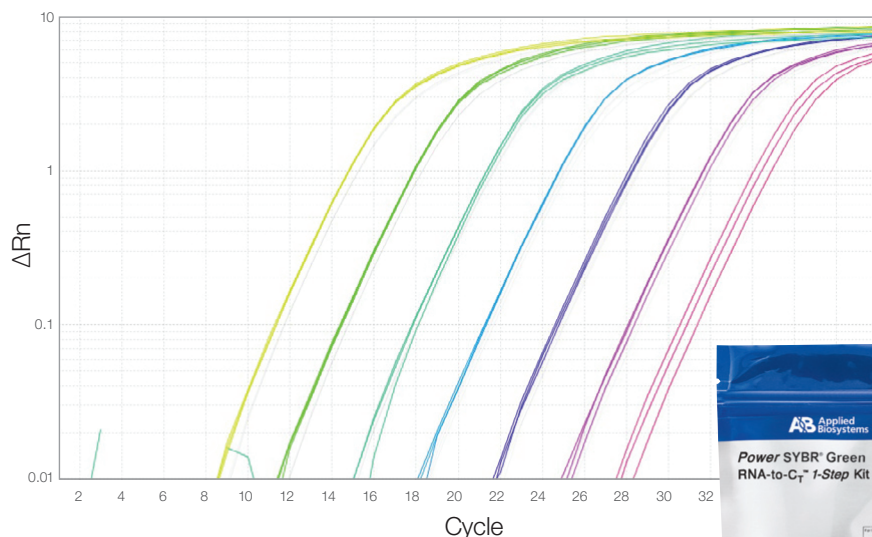
Introduction

The Applied Biosystems™ *Power SYBR™ Green RNA-to-C_T™ 1-Step Kit* provides sensitivity and specificity in an easy-to-use, one-step qRT-PCR kit. A novel formulation helps prevent false-positive results caused by primer-dimers that are common in SYBR™ green dye-based reaction assays. This significantly improves data accuracy and enables the reliable detection of targets present at low amounts.

Formulation

With the *Power SYBR Green RNA-to-C_T 1-Step Kit* you can perform reverse transcription and PCR all in one reaction tube. It includes:

- Applied Biosystems™ *AmpliTaq Gold™ DNA Polymerase UP (Ultra Pure)* for hot-start PCR to prevent amplification during reaction setup



- Invitrogen™ *ArrayScript™ UP Reverse Transcriptase* for highly efficient reverse transcription across a wide range of targets
- A dNTP blend including dUTP, which allows resulting amplicons to be degraded by uracil-DNA glycosylase (UDG) in order to minimize carryover PCR contamination in subsequent reactions
- An RNase inhibitor to prevent degradation of RNA template
- An additive that reduces primer-dimer formation, enhancing specificity
- A passive internal reference based on proprietary ROX™ dye, for increased data precision

Wide range of input RNA amounts

To have maximum flexibility in the input quantity of RNA, optimal efficiency is required across a broad range of template quantities. As shown in Figure 1, the *Power SYBR Green RNA-to-C_T 1-Step Kit* gives excellent PCR efficiency (>99%) and precise quantification over a 6-log range of template quantities (100 fg to 100 ng).

Discrimination between similar abundance levels

Precise quantification of RNA allows researchers to distinguish small differences in gene expression levels. Figure 2 demonstrates that the *Power SYBR Green RNA-to-C_T 1-Step Kit* is able to discriminate small RNA copy number differences between samples.

Minimal nonspecific amplification

Primer-dimer formation is a major issue with SYBR green dye-based assays. The nonspecific binding of SYBR green dye to primer-dimers can give significant background and confusing results. The *Power SYBR Green RNA-to-C_T 1-Step Kit* is specially formulated to reduce primer-dimer formation and nonspecific amplification. Figure 3 shows low background signals from no-template control (NTC) samples amplified with the *Power SYBR Green RNA-to-C_T 1-Step Kit*.

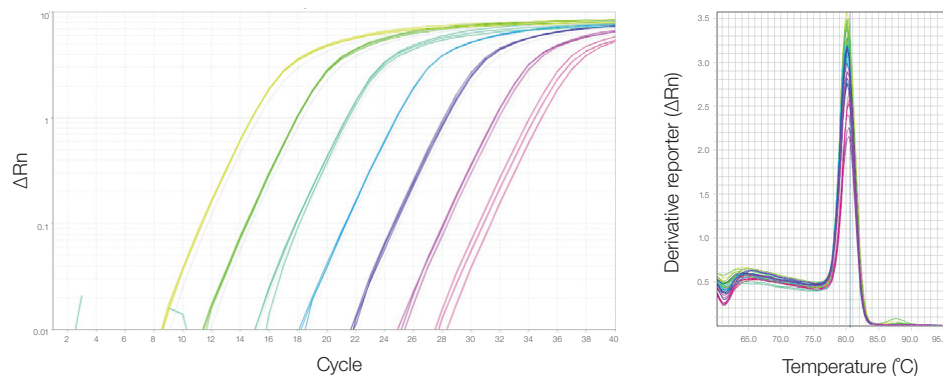


Figure 1. Comparison of GAPDH amplification plots and dissociation curves for the *Power SYBR Green RNA-to-C_T 1-Step Kit*. RNA was isolated from BOSC23 cultured cells and amplified in 3 replicates on the Applied Biosystems™ StepOnePlus™ Real-Time PCR System.

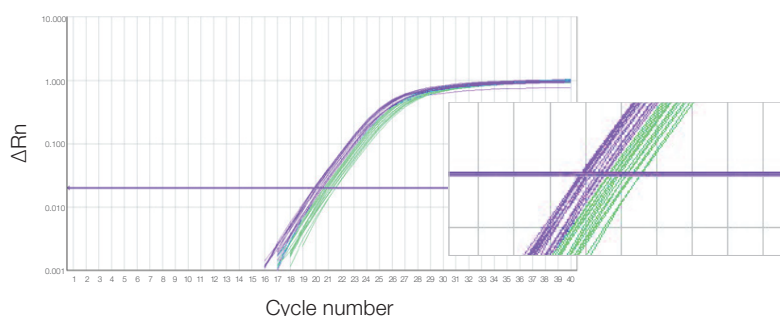


Figure 2. Discrimination between targets having similar abundance levels. The *Power SYBR Green RNA-to-C_T 1-Step Kit* is able to detect a 1.5-fold difference. A GAPDH target was amplified from 3,750 pg and 2,500 pg of Invitrogen™ FirstChoice™ Human Total RNA Survey Panel in 16 replicate reactions using the Applied Biosystems™ 7500 Fast Real-Time PCR System.

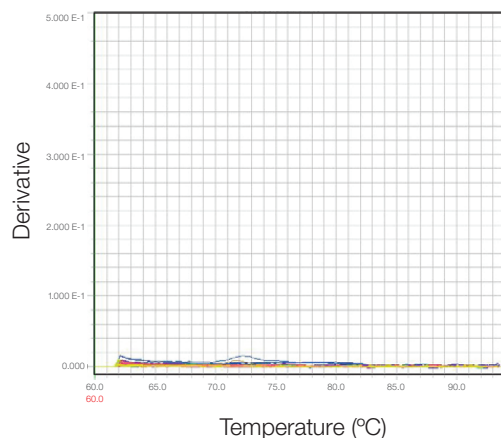


Figure 3. Dissociation curves of the NTC from a 91-assay panel using the *Power SYBR Green RNA-to-C_T 1-Step Kit*.

High sensitivity and confidence

The *Power SYBR Green RNA-to-C_T 1-Step* Kit's formulation helps to enhance sensitivity while reducing nonspecific signals. The kit can amplify a target gene from 0.1 pg of total human RNA (Figure 4). Coupled with the minimal nonspecific amplification, the *Power SYBR Green RNA-to-C_T 1-Step* Kit's sensitivity gives you confidence in data quality.

Conclusion

The *Power SYBR Green RNA-to-C_T 1-Step* Kit offers leading sensitivity, specificity, and dynamic range for SYBR green dye-based real-time PCR. It uses a simple, single-tube reaction for reverse transcription and real-time PCR detection. The streamlined process reduces hands-on time and the potential for contamination.

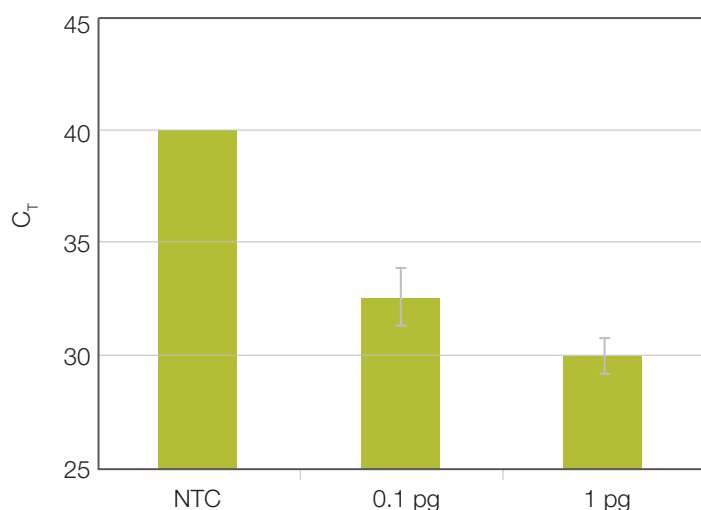


Figure 4. The *Power SYBR Green RNA-to-C_T 1-Step* Kit delivers high sensitivity. A GAPDH target was amplified from 0.1 pg and 1 pg of FirstChoice Human Total RNA Survey Panel in 18 replicate reactions using the 7500 Fast Real-Time PCR System. NTC = no-template control.

Ordering information

Description		Quantity	Cat. No.
<i>Power SYBR Green RNA-to-C_T 1-Step</i> Kit	Mini-pack	1 mL tube (40 rxns)*	4391178
	1-pack	5 mL bottle (200 rxns)*	4389986
Quick reference card		1	4391112
Protocol		1	4391003

* Assumes 50 µL reaction volume.

Find out more at thermofisher.com/qpcrmm

ThermoFisher
SCIENTIFIC