

# StepOne™

Real-Time PCR System

Remarkably Simple System. Simply Remarkable Results.





AB Applied Biosystems

Edit Experiment: cdc\_japan\_01d

Step 1	Step 2
1	45
55.0	55.0
56.0	56.0
10.00	0.15
2.00	1.00
Step 1	Step 2

Step 1 Step 2

Add  
Touch a stage or step to insert a stage/step. Touch a line or  
temperature to edit it. Touch Options to create a multi-  
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temperature to edit it.

StepOne Plus  
PCR System

AB Applied Biosystems

# The new StepOne™ System makes it easy to get high-quality real-time PCR results

## Simply Remarkable System

Applied Biosystems, a leader in technology solutions for life science laboratories, introduces its latest innovation in real-time PCR—the StepOne™ Real-Time PCR System. This remarkably simple real-time PCR system is specifically designed with a user-friendly, yet powerful interface for researchers new to real-time PCR.

## The Simply Remarkable StepOne System™ Features

The StepOne™ system brings advanced real-time PCR technology to a new level of accessibility—even for first-time users. The system measures amplification as it occurs, cycle by cycle, allowing for precise and quantitative measurements during the exponential phase of PCR. Beginning at the StepOne system homepage (Figure 1), you can seamlessly navigate through all aspects of the real-time PCR method including sample and reaction set-up, thermal cycling, and fluorescent detection. Focused application software analyzes and interprets experimental results. Depending on the experimental design, the system can even help you select and order real-time PCR reagents online by means of convenient links in the Design Wizard.

## StepOne System's Remarkably Easy-to-Use Experimental Design Wizard

The StepOne system's experimental Design Wizard assists you in setting up your first real-time PCR experiment. Just click on the Design Wizard and start answering questions about the real-time PCR experiment you wish to perform. The Wizard walks you through quantitation methods, detection chemistry, ramp speeds, and nucleic acid template types. From standards to plate layout, the StepOne system's Design Wizard guides the entire process including reaction mix and standard dilution calculations. You are now ready to explore the simply remarkable features of the StepOne system.

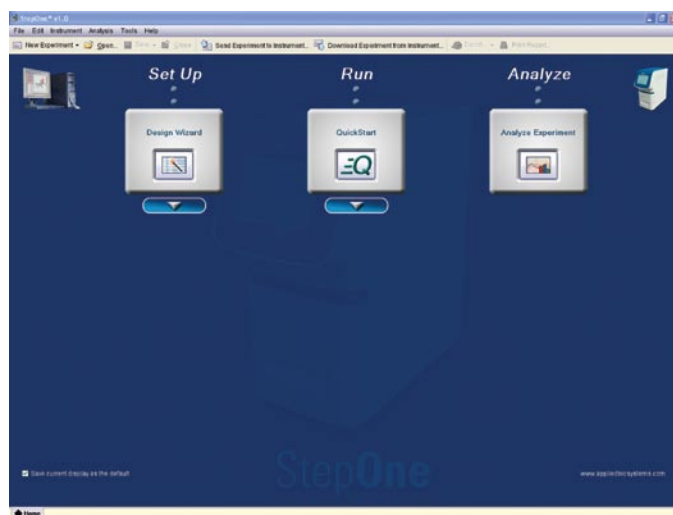


Figure 1. StepOne System software homepage

## StepOne Highlights

- Intuitive, flexible software and wizards guide new users through their real-time PCR experiments in three easy-to-follow steps
- Cost-effective, 3-color/48-well format delivers precise, quantitative real-time PCR results
- Long-life LED-based optical system records fluorescence from FAM™/SYBR® Green, VIC®/JOE™, and ROX™ dyes for gene expression analysis, pathogen quantitation, SNP genotyping, and presence/absence assays
- One block performs standard and fast PCR reactions in less than 40 minutes
- Ultra-compact footprint fits any laboratory setting
- LCD touchscreen and USB drive provide configuration flexibility and enable PC-free operation
- Remote monitoring and email notification for convenience and time-savings

# Simply Remarkable Interface

## Simply Remarkable Interface

The StepOne™ system adapts to almost any workflow requirement with flexible instrument control and data management. From the touchscreen control panel, you can quick-start your experimental run without PC connectivity. You can also create a new protocol, view the history of your last run, or see protocol details. When the run is complete, the data can be easily downloaded onto a USB flash stick or saved to a PC. The system can be added directly to a Local Area Network (LAN), and you can monitor the progress of the experiment, send new instructions to the system, download data, and edit the instrument profile. The software for the StepOne system also contains a convenient email feature that notifies you when your experiment is complete and ready for analysis.

## Remarkable Flexibility

The StepOne system can be installed in five distinct configurations, providing unmatched flexibility and convenience. The unique standalone (PC-free) configuration provides an ultra-compact footprint that will fit into any laboratory. Its ability to connect directly to a LAN enables remote monitoring of experimental progress and downloading of the completed run file to the PC at your desk.

1. Co-located configuration (PC control)
2. Standalone (PC-free) configuration
3. Networked configuration
4. Co-located configuration (PC control) with PC on LAN
5. Networked instrument with co-located PC (PC control) configuration

Figure 2. Browse Experiment Page On Touchscreen

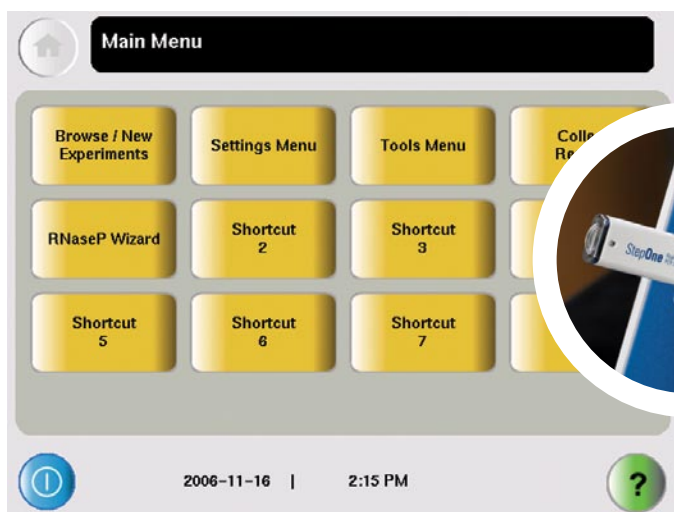
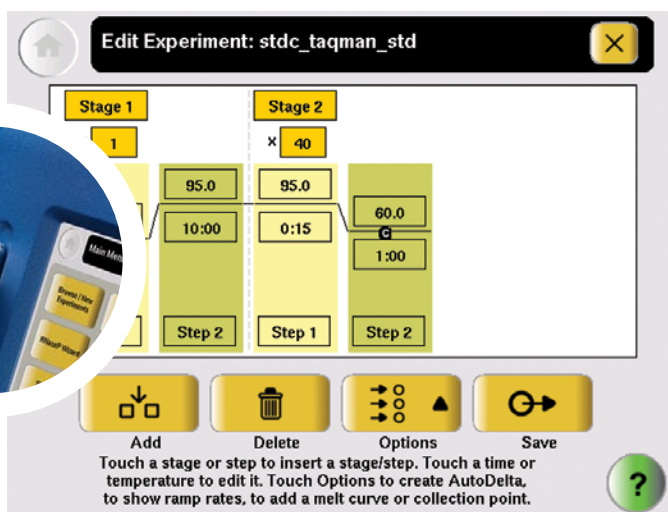
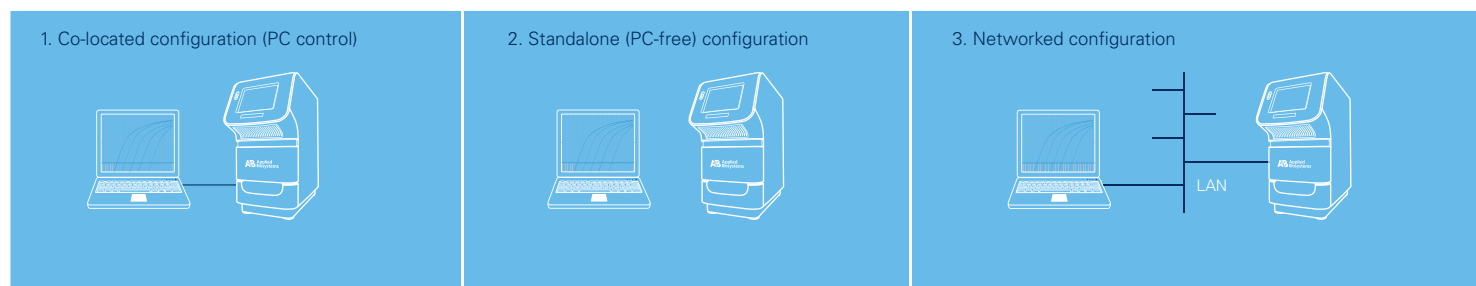


Figure 3. Run Monitor Screen On Touchscreen



The StepOne system can be installed in five distinct configurations



## Simply Remarkable Software

StepOne™ system software contains unique features not available in other real-time PCR instruments. For example, data can be easily analyzed from multiple perspectives in the Multiple Plots view (See Figure 4). The software constructs four-plot, side-by-side views of all data aspects including the amplification plot, standard curve, multi-component data plots, and raw data. It also displays this data next to the plate layout for easier analysis.

Another novel feature is the software's ability to automatically identify wells that might compromise the success of an experiment. During data analysis, the software generates a quality-control report table that flags wells based on quality criteria such as amplification in a negative-control well, the absence of a signal in a well, or a high  $C_T$  standard deviation in a replicate group. This feature reduces analysis time and allows even researchers new to real-time PCR to have confidence in their results. Furthermore, you can customize this feature by disabling or modifying quality flag settings to suit your experimental needs.

## StepOne Software Highlights

- Experimental Design Wizards to help you design and set up experiments
- Pipetting protocols and recipes to set up experiments quickly
- Advanced set-up for expert users who require flexibility for more complex applications, such as multiplexing
- Quick-start set-up so you can begin a run immediately and enter plate information later
- Real-time monitoring of amplification growth curves enables you to view run progress (can be viewed from a remote PC)
- Auto-baseline and auto-threshold for simplified data analysis
- Multiple Plots view for simultaneously assessing data from four perspectives
- Automated SNP genotype-calling with intuitive graphical output and quality-value assignment
- Troubleshooting flags to help you diagnose and solve problematic experiments

- Tool tips for easy identification of sample wells when viewing amplification curves or SNP genotyping plots
- Email notifications to alert you when a run has started or ended
- Easy cut-and-paste functionality
- Export easily to PowerPoint®, Excel®, or directly as a jpeg file

Figure 4. StepOne System Multiple Plots View

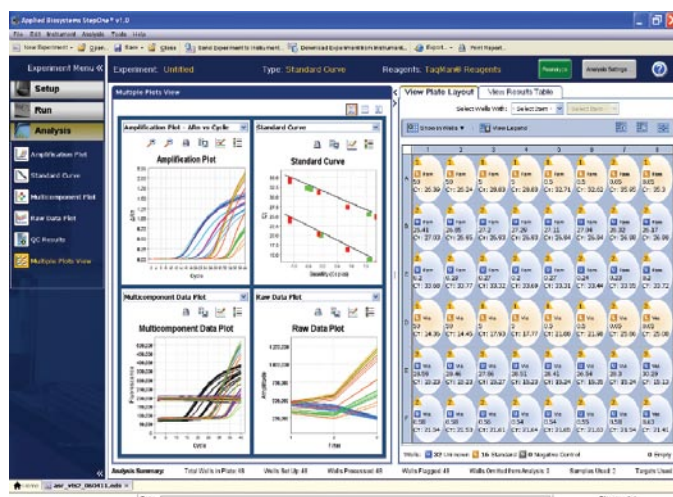
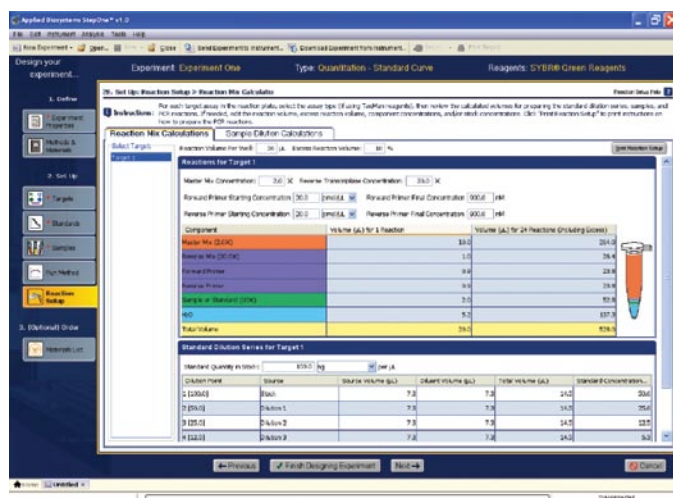


Figure 5. StepOne System Reaction Set-up View



For each target in the reaction plate, StepOne system software lets you review and edit calculated volumes for preparing standards and PCR reactions.

### 4. Co-located configuration (PC control) with PC on LAN



### 5. Networked instrument with co-located PC (PC-control) configuration



# Simply Remarkable Results

## StepOne Chemistries

The system's fluorophore detection chemistries include FAM™ and VIC® dye-labeled TaqMan® probe-based assays, and SYBR® Green I dye chemistry. TaqMan probe-based assays provide outstanding specificity and sensitivity and SYBR Green I dye chemistry is an economical alternative for target identification, initial screening assays, or assays that require only a few reactions.

## StepOne Applications

The StepOne system software supports a variety of applications, including:

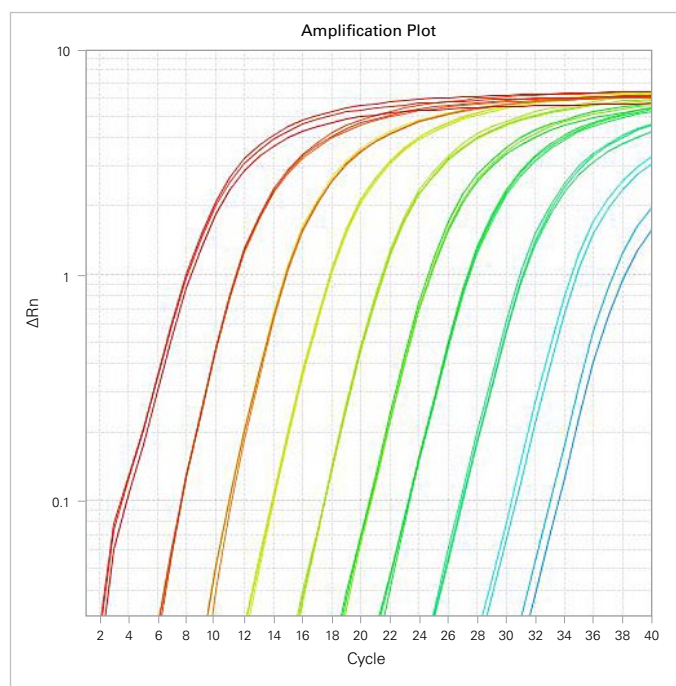
- Standard curve (Absolute quantitation)
- Relative quantitation
  - Relative standard curve (New!)
  - Comparative  $C_T$  ( $\Delta\Delta C_T$ )

- Genotyping (including real-time amplification)
- Presence/absence (plus/minus) assays with an internal positive control
- Melt curve analysis

## Simply Remarkable Speed

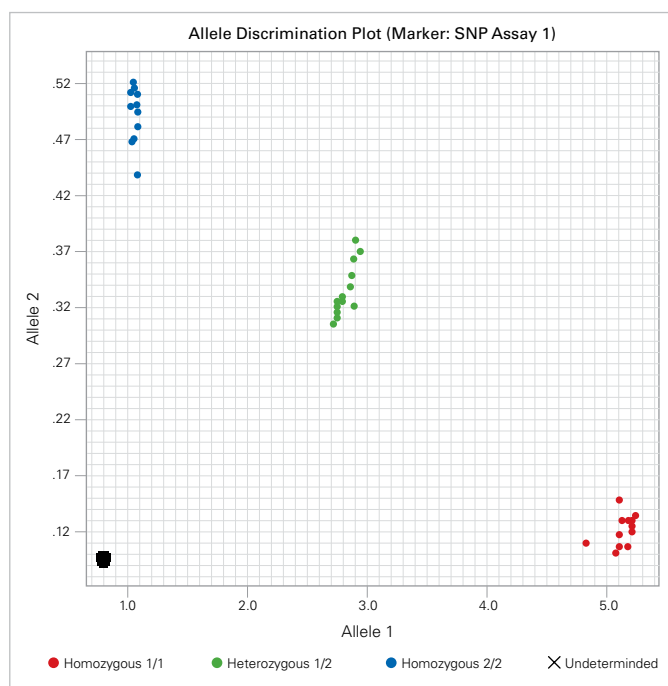
The StepOne system performs both standard and fast thermal cycling on the same block with no modification. Standard thermal cycling requires less than two hours, and fast thermal cycling significantly reduces the run times of quantitative real-time PCR applications by delivering results in 40 minutes. Fast cycling is ideal for maximizing the number of runs on an instrument in any given work day.

Figure 6. Broad Dynamic Range



Amplification plot shows log of change in normalized reporter fluorescence plotted vs. PCR cycle number. This plot from the StepOne™ System illustrates 9 logs of linear dynamic range for a TaqMan® assay of cDNA containing the 18S target sequence in tenfold serial dilutions.

Figure 7. Genotyping Analysis



SNP auto caller software automatically determines genotypes and generates an intuitive graphic representation of results in a cluster plot report that helps you view data across populations or samples. Results are from human CYP2C19\*2 TaqMan® SNP genotyping assay (using the StepOne System).

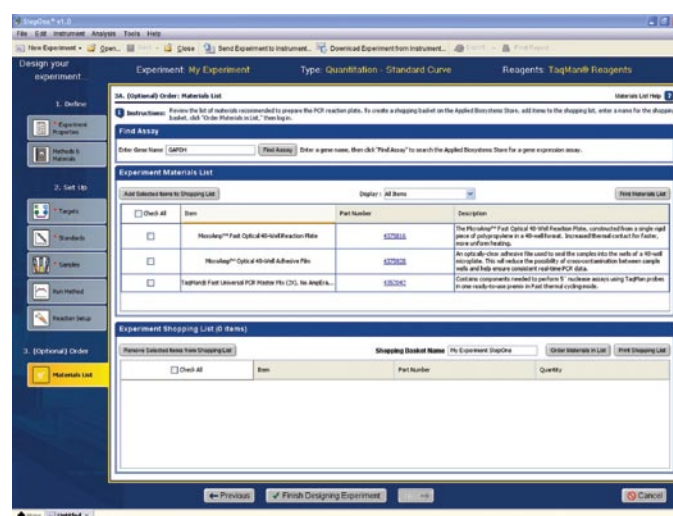
## Simply Remarkable Results

Because the StepOne system is factory-calibrated for optical and thermal accuracy, simply remarkable real-time PCR results are available right out of the box. It can discriminate between 2 populations of 5,000 and 10,000 template copies of a TaqMan® assay with 99.7% confidence. The StepOne system also demonstrates a linear dynamic range of 9 log units or more, as shown by the system's amplification plot (See Figure 6).

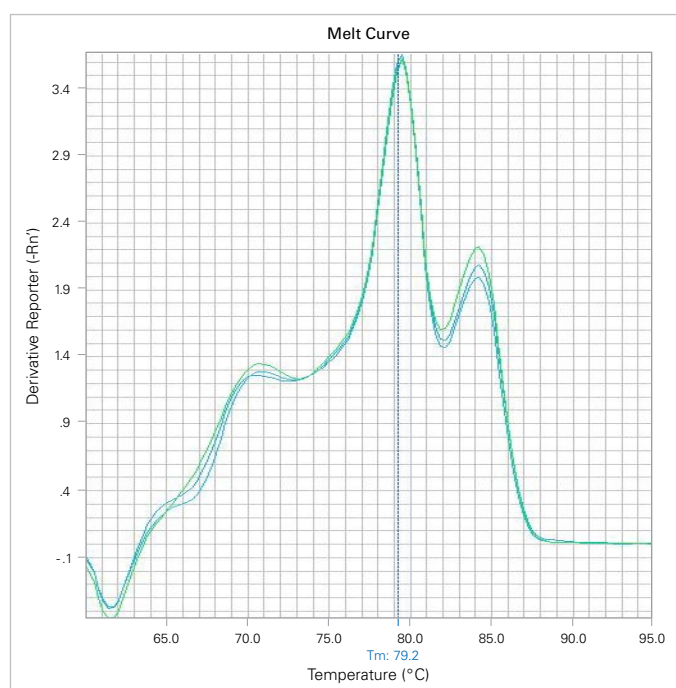
## Reagents and Disposables

A complete line of reagents, including TaqMan® Fast Universal PCR Master Mix, TaqMan® Universal PCR Master Mix, Power SYBR® Green PCR Master Mix, and disposables, including 48-well plates, is available for use with the StepOne™ Real-Time PCR System. These products can be easily added to a shopping list for future reference or for ordering through the "Materials List" link in the experimental Design Wizard (See Figure 10).

**Figure 10.** Page from the reagents ordering page in the experimental Design Wizard

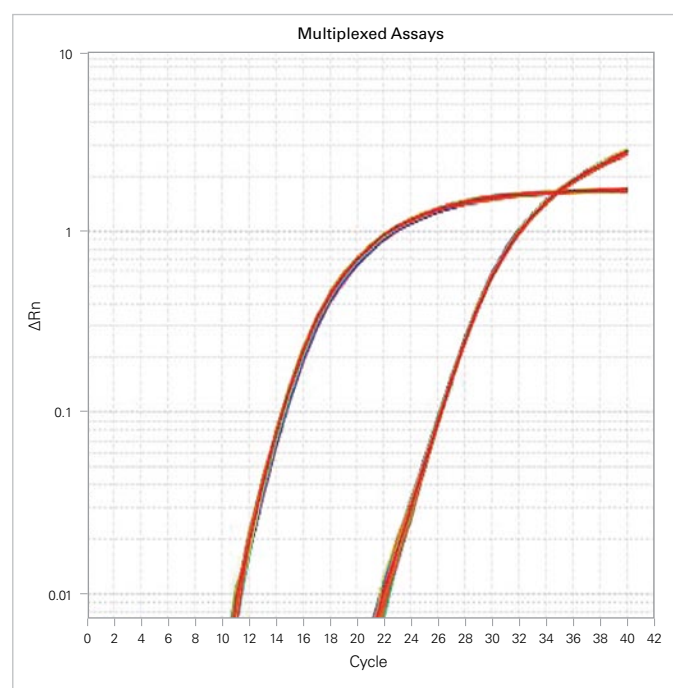


**Figure 8.** Melt Curve Analysis



Melt curve analysis of two amplicons (representing sequences from GAPDH, β-actin) in one well.

**Figure 9.** Multiplexed Assay



Multiplexed TaqMan® assays on the StepOne™ System showing amplification of cDNA (48 samples) using probes labeled with VIC® and FAM™ reporters for 18S and tgf-β target sequences respectively.

# The Remarkable Applied Biosystems Solution

## The Remarkable Applied Biosystems Solution

Applied Biosystems offers a complete range of real-time PCR reagents and design/analysis software to assist both experienced and novice users of the StepOne™ Real-Time PCR System. During experimental set-up, the StepOne system's Design Wizard automatically creates a material list that links directly to the Applied Biosystems Store for convenient ordering of real-time PCR master mixes and consumable plasticware (optional).

## StepOne System Service and Support

Purchase of the StepOne™ Real-Time PCR System includes a one-year limited warranty on parts and labor. Technical support and service are provided worldwide.

## TaqMan® Genomic and SNP Genotyping Assays

Applied Biosystems also offers a comprehensive collection of more than 700,000 TaqMan Gene Expression Assays for quantitative gene expression analysis of human, mouse, rat,

*Arabidopsis*, *Drosophila*, *C. Elegans* and Rhesus Macaque genes. To complement this offering, custom TaqMan assay services are also available. Learn more about TaqMan Gene Expression Assays at [www.allgenes.com](http://www.allgenes.com). Information about TaqMan SNP Genotyping Assays is available at [www.allsnps.com](http://www.allsnps.com).

## TaqMan® MicroRNA Assays

Applied Biosystems offers TaqMan MicroRNA assays to quantify microRNAs with the sensitivity and specificity of TaqMan assay chemistry. Assays are available for human, mouse, rat, *Drosophila*, *Arabidopsis*, and *C. Elegans*. For more information, please visit [mrna.appliedbiosystems.com](http://mrna.appliedbiosystems.com).

## Primer Express® Software

Applied Biosystems Primer Express Software v3.0 facilitates primer design with TaqMan probes for real-time PCR or endpoint PCR analyses. It is also ideal for primer design using SYBR® Green I dye chemistries.

## ORDERING INFORMATION

Description	Part Number
StepOne™ Real-Time PCR System	4376357
StepOne™ Real-Time PCR System with Laptop Computer	4376373
StepOne™ Real-Time PCR System with Tower Computer	4376374

To learn more about the new Applied Biosystems StepOne Real-Time PCR System, call **1.650.638.5800** or **1.800.345.5224**, or visit us on the Web at [info.appliedbiosystems.com/stepone](http://info.appliedbiosystems.com/stepone)

For Research Use Only. Not for use in diagnostic procedures.

SYBR is a registered trademark of Molecular Probes, Inc. TaqMan is a registered trademark of Roche Molecular Systems, Inc.

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