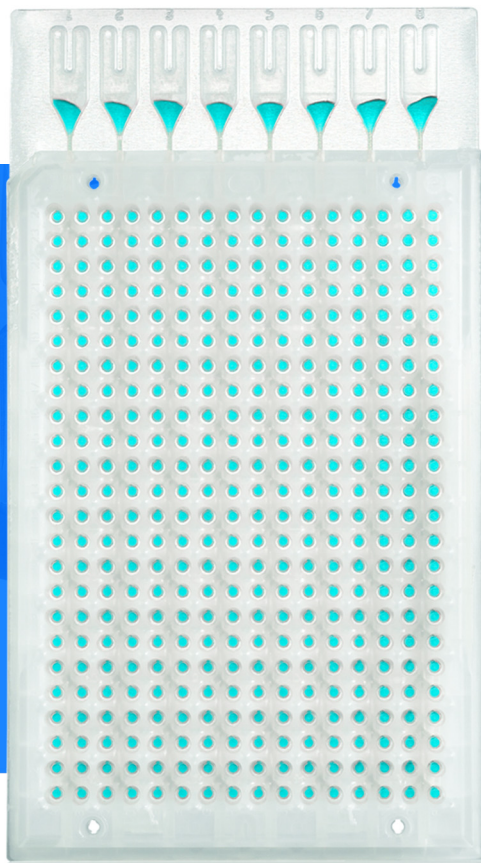


TaqMan[®] Array Micro Fluidic Cards



TaqMan[®] Array Micro Fluidic Cards

Introduction

1

Order the
TaqMan[®] Array
Micro Fluidic Card

2

Prepare Your
Samples

3

Perform the
Experiment

4

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

Information in this document is subject to change without notice. Applied Biosystems assumes no responsibility for any errors that may appear in this document.

APPLIED BIOSYSTEMS DISCLAIMS ALL WARRANTIES WITH RESPECT TO THIS DOCUMENT, EXPRESSED OR IMPLIED, INCLUDING BUT NOT LIMITED TO THOSE OF MERCHANTABILITY OR FITNESS FOR A PARTICULAR PURPOSE. IN NO EVENT SHALL APPLIED BIOSYSTEMS BE LIABLE, WHETHER IN CONTRACT, TORT, WARRANTY, OR UNDER ANY STATUTE OR ON ANY OTHER BASIS FOR SPECIAL, INCIDENTAL, INDIRECT, PUNITIVE, MULTIPLE OR CONSEQUENTIAL DAMAGES IN CONNECTION WITH OR ARISING FROM THIS DOCUMENT, INCLUDING BUT NOT LIMITED TO THE USE THEREOF.

NOTICE TO PURCHASER: LIMITED LICENSE

A license to perform the patented 5' Nuclease Process for research is obtained by the purchase of (i) both Licensed Probe and Authorized 5' Nuclease Core Kit, (ii) a Licensed 5' Nuclease Kit, or (iii) license rights from Applied Biosystems.

The TaqMan® Array Micro Fluidic Card contains Licensed Probe. Use of this product is covered by US patent claims and corresponding patent claims outside the US. The purchase of this product includes a limited, non-transferable immunity from suit under the foregoing patent claims for using only this amount of product for the purchaser's own internal research. The right to use this product in the 5' Nuclease Process under the applicable claims of US patents, and corresponding patent claims outside the United States, can be obtained through purchase of an Authorized 5' Nuclease Core Kit. Except under separate license rights available from Applied Biosystems, no right under any other patent claim, or to perform commercial services of any kind, including without limitation reporting the results of purchaser's activities for a fee or other commercial consideration, or to sublicense, repackage with other products, or resell in any form, is conveyed expressly, by implication, or by estoppel. This product is for research use only. Diagnostic uses under Roche patents require a separate license from Roche. Further information on purchasing licenses may be obtained from the Director of Licensing, Applied Biosystems, 850 Lincoln Centre Drive, Foster City, California 94404, USA.

TRADEMARKS:

© 2009, 2010 Life Technologies Corporation. All rights reserved. Trademarks of Life Technologies Corporation and its affiliated companies: AB (Design)®, ABI PRISM®, Applied Biosystems®, Cells-to-CT™, FAM™, ROX™.

AmpErase and TaqMan are registered trademarks of Roche Molecular Systems, Inc.

Excel and Microsoft are registered trademarks of Microsoft Corporation.

StatMiner is a trademark of Integromics.

All other trademarks are the sole property of their respective owners.

Contents

	Preface	v
	How to Use This Guide	v
	How to Obtain More Information	vi
	How to Obtain Support	vii
	Important Safety Information	ix
	Safety Alert Words	x
	Chemical Safety Guidelines	x
	About MSDSs	xi
	Chemical Waste Safety Guidelines	xii
	Waste Disposal	xii
	Biological Hazard Safety	xiii
Chapter 1	Introduction	1
	Product Overview	2
	Instrument Overview	5
	User Guide Overview	6
Chapter 2	Order the TaqMan® Array Micro Fluidic Card	9
	Order the TaqMan® Array Micro Fluidic Card	10
	Available Formats	22
	Array Information CD	26
Chapter 3	Prepare Your Samples	31
	Prepare Your Samples	32
	Store the cDNA Samples	34
Chapter 4	Perform the Experiment	35
	Prepare the TaqMan® Array Micro Fluidic Card	36
	Run the TaqMan® Array Micro Fluidic Card	46
	Analyze the Experiment	50

Appendix A	Troubleshooting	53
Appendix B	TaqMan® Endogenous Control Assays	57
Appendix C	Required Materials	59
	For Preparing Your Samples	60
	For Preparing the TaqMan® Array Micro Fluidic Card	61
	For Running and Analyzing the TaqMan® Array Micro Fluidic Card	62
	For General Use	63
Appendix D	Prevent Contamination	65
	Index	67

How to Use This Guide

Purpose of This Guide The *Applied Biosystems TaqMan® Array Micro Fluidic Cards User Guide* provides information for ordering TaqMan® Array Micro Fluidic Cards, preparing and running the TaqMan Array cards on an Applied Biosystems 7900HT Fast Real-Time PCR System, then analyzing the results.

Audience This guide is intended for novice and experienced 7900HT Fast System users who perform quantitation experiments with the TaqMan Array cards using the comparative C_T ($\Delta\Delta C_T$) method.

Text Conventions This guide uses the following conventions:

- **Bold** text indicates user action. For example:
Type **0**, then press **Enter** for each of the remaining fields.
- *Italic* text indicates new or important words and is also used for emphasis. For example:
Before running, *always* prepare fresh master mix.
- A right arrow symbol (▶) separates successive commands you select from a drop-down or shortcut menu. For example:
Select **File ▶ Open**.

User Attention Words Two user attention words appear in Applied Biosystems user documentation. Each word implies a particular level of observation or action as described below:

Note: – Provides information that may be of interest or help but is not critical to the use of the product.

IMPORTANT! – Provides information that is necessary for proper instrument operation, accurate chemistry kit use, or safe use of a chemical.

Examples of the user attention words appear below:

Note: There is a fill port on the left arm of each fill reservoir; it is the larger of the two holes.

IMPORTANT! When performing reverse transcription, do not exceed the amounts of total RNA recommended in the kit protocol.

Safety Alert Words Safety alert words also appear in user documentation. For more information, see “[Safety Alert Words](#)” on [page x](#).


How to Obtain More Information

Related Documentation In addition to this guide, the *TaqMan[®] Array Micro Fluidic Cards User Guide* (PN 4400263), the documents listed below are available from Applied Biosystems. To obtain this and additional documentation, see “[How to Obtain Support](#)” on [page vii](#).

Title	Part Number
<i>Amplification Efficiency of TaqMan[®] Gene Expression Assays</i>	127AP05
<i>Applied Biosystems 7900HT Fast Real-Time PCR System and SDS Enterprise Database User Guide</i>	4351684
<i>Applied Biosystems 7900HT Fast Real-Time PCR System Relative Quantitation Using Comparative C_T Getting Started Guide</i>	4364016
<i>Applied Biosystems 7900HT Fast Real-Time PCR System Site Preparation Guide</i>	4351923
<i>Applied Biosystems Real-Time PCR Systems Reagent Guide</i>	4387787
<i>High-Capacity cDNA Reverse Transcription Kits Protocol</i>	4375575
<i>High Capacity RNA-to-cDNA Kit Protocol</i>	4387951
<i>High Capacity RNA-to-cDNA Master Mix Protocol</i>	4377474
<i>TaqMan[®] Gene Expression Assays Protocol</i>	4333458
<i>TaqMan[®] Gene Expression Cells-to-C_T[™] Kit Protocol</i>	4385117
<i>TaqMan[®] Gene Expression Master Mix Protocol</i>	4371135
<i>TaqMan[®] PreAmp Master Mix Kit Protocol</i>	4384557
<i>TaqMan[®] Universal PCR Master Mix Protocol</i>	4304449
<i>User Bulletin #2: Relative Quantitation of Gene Expression</i>	4303859
<i>Using TaqMan[®] Endogenous Control Assays to Select an Endogenous Control for Experimental Studies (Application Note)</i>	127AP08

Obtaining Information from the Help System

The SDS software Help system describes how to use each feature of the user interface. To access the Help system, you can:

- Click  in the toolbar
- Select **Help** ▶ **SDS Online Help**
- Press **F1**

To find topics of interest in the Help system, you can:

- Review the table of contents
- Search for a specific topic
- Search an alphabetized index

Send Us Your Comments

Applied Biosystems welcomes your comments and suggestions for improving its user documents. You can e-mail your comments to:

techpubs@appliedbiosystems.com

IMPORTANT! The e-mail address above is only for submitting comments and suggestions relating to documentation. To order documents, download PDF files, or for help with a technical question, go to www.appliedbiosystems.com, then click the link for **Support**. (See “How to Obtain Support” below).

How to Obtain Support

For the latest services and support information for all locations, go to www.appliedbiosystems.com, then click the link for **Support**.

At the Support page, you can:

- Access worldwide telephone and fax numbers to contact Applied Biosystems Technical Support and Sales facilities
- Search through frequently asked questions (FAQs)
- Submit a question directly to Technical Support
- Order Applied Biosystems user documents, MSDSs, certificates of analysis, and other related documents
- Download PDF documents
- Obtain information about customer training
- Download software updates and patches

Important Safety Information


This section covers:


■ Safety Alert Words	x
■ Chemical Safety Guidelines	x
■ About MSDSs	xi
■ Chemical Waste Safety Guidelines	xii
■ Waste Disposal	xii
■ Biological Hazard Safety	xiii


Safety Alert Words

Four safety alert words appear in Applied Biosystems user documentation at points in the document where you need to be aware of relevant hazards. Each alert word—IMPORTANT, CAUTION, WARNING, DANGER—implies a particular level of observation or action, as defined below.


Definitions **IMPORTANT!** – Indicates information that is necessary for proper instrument operation, accurate chemistry kit use, or safe use of a chemical.

 **CAUTION** – Indicates a potentially hazardous situation that, if not avoided, may result in minor or moderate injury. It may also be used to alert against unsafe practices.

 **WARNING** – Indicates a potentially hazardous situation that, if not avoided, could result in death or serious injury.

 **DANGER** – Indicates an imminently hazardous situation that, if not avoided, will result in death or serious injury. This signal word is to be limited to the most extreme situations.

Chemical Hazard Warning

 **WARNING** **CHEMICAL HAZARD.** Some of the chemicals used with Applied Biosystems instruments and protocols are potentially hazardous and can cause injury, illness, or death.

Chemical Safety Guidelines

To minimize the hazards of chemicals:

- Read and understand the Material Safety Data Sheets (MSDSs) provided by the chemical manufacturer before you store, handle, or work with any chemicals or hazardous materials. (See [“About MSDSs” on page xi](#).)
- Minimize contact with chemicals. Wear appropriate personal protective equipment when handling chemicals (for example, safety glasses, gloves, or protective clothing). For additional safety guidelines, consult the MSDS.
- Minimize the inhalation of chemicals. Do not leave chemical containers open. Use only with adequate ventilation (for example, fume hood). For additional safety guidelines, consult the MSDS.
- Check regularly for chemical leaks or spills. If a leak or spill occurs, follow the manufacturer’s cleanup procedures as recommended in the MSDS.
- Comply with all local, state/provincial, or national laws and regulations related to chemical storage, handling, and disposal.

About MSDSs

Chemical manufacturers supply current Material Safety Data Sheets (MSDSs) with shipments of hazardous chemicals to new customers. They also provide MSDSs with the first shipment of a hazardous chemical to a customer after an MSDS has been updated. MSDSs provide the safety information you need to store, handle, transport, and dispose of the chemicals safely.

Each time you receive a new MSDS packaged with a hazardous chemical, be sure to replace the appropriate MSDS in your files.

Obtaining MSDSs

The MSDS for any chemical supplied by Applied Biosystems is available to you free 24 hours a day. To obtain MSDSs:

1. Go to www.appliedbiosystems.com, click **Support**, then click **MSDS Search**.
2. In the Keyword Search field, enter the chemical name, product name, MSDS part number, or other information that appears in the MSDS of interest. Select the language of your choice, then click **Search**.
3. Find the document of interest, right-click the document title, then select any of the following:
 - **Open** – To view the document
 - **Print Target** – To print the document
 - **Save Target As** – To download a PDF version of the document to a destination that you choose

Note: For the MSDSs of chemicals not distributed by Applied Biosystems, contact the chemical manufacturer.

Chemical Waste Safety Guidelines

To minimize the hazards of chemical waste:

- Read and understand the Material Safety Data Sheets (MSDSs) provided by the manufacturers of the chemicals in the waste container before you store, handle, or dispose of chemical waste.
- Provide primary and secondary waste containers. (A primary waste container holds the immediate waste. A secondary container contains spills or leaks from the primary container. Both containers must be compatible with the waste material and meet federal, state, and local requirements for container storage.)
- Minimize contact with chemicals. Wear appropriate personal protective equipment when handling chemicals (for example, safety glasses, gloves, or protective clothing). For additional safety guidelines, consult the MSDS.
- Minimize the inhalation of chemicals. Do not leave chemical containers open. Use only with adequate ventilation (for example, fume hood). For additional safety guidelines, consult the MSDS.
- Handle chemical wastes in a fume hood.
- After emptying the waste container, seal it with the cap provided.
- Dispose of the contents of the waste tray and waste bottle in accordance with good laboratory practices and local, state/provincial, or national environmental and health regulations.

Waste Disposal

If potentially hazardous waste is generated when you operate the instrument, you must:

- Characterize (by analysis if necessary) the waste generated by the particular applications, reagents, and substrates used in your laboratory.
- Ensure the health and safety of all personnel in your laboratory.
- Ensure that the instrument waste is stored, transferred, transported, and disposed of according to all local, state/provincial, and/or national regulations.

IMPORTANT! Radioactive or biohazardous materials may require special handling, and disposal limitations may apply.

Biological Hazard Safety



WARNING BIOHAZARD. Biological samples such as tissues, body fluids, infectious agents, and blood of humans and other animals have the potential to transmit infectious diseases. Follow all applicable local, state/provincial, and/or national regulations. Wear appropriate protective equipment, which includes but is not limited to: protective eyewear, face shield, clothing/lab coat, and gloves. All work should be conducted in properly equipped facilities using the appropriate safety equipment (for example, physical containment devices). Individuals should be trained according to applicable regulatory and company/institution requirements before working with potentially infectious materials. Read and follow the applicable guidelines and/or regulatory requirements in the following:

- U.S. Department of Health and Human Services guidelines published in Biosafety in Microbiological and Biomedical Laboratories (stock no. 017-040-00547-4; bmbi.od.nih.gov)
- Occupational Safety and Health Standards, Bloodborne Pathogens (29 CFR§1910.1030; www.access.gpo.gov/nara/cfr/waisidx_01/29cfr1910a_01.html).
- Your company's/institution's Biosafety Program protocols for working with/handling potentially infectious materials.

Additional information about biohazard guidelines is available at www.cdc.gov.



Introduction

This chapter covers:

- Product Overview 2
- Instrument Overview 5
- User Guide Overview 6

Product Overview

About TaqMan® Array Micro Fluidic Cards

TaqMan® Array Micro Fluidic Cards are 384-well cards preloaded with TaqMan® Gene Expression Assays. The TaqMan Array cards allow you to measure gene expression using the comparative C_T ($\Delta\Delta C_T$) method of relative quantitation. You can run 1 to 8 samples per card, against 12 to 384 TaqMan Gene Expression Assay targets (including controls). Three types of TaqMan Array cards are available from Applied Biosystems:

- **TaqMan® Array Custom Micro Fluidic Card** – Customizable card—you choose the assays to include in your card. Select TaqMan Gene Expression Assays from Applied Biosystems collection of Inventoried assays. The TaqMan Array Custom Micro Fluidic Cards are manufactured when ordered.
- **TaqMan® Gene Sets** – Customizable card—you choose the assays to include in your card. The TaqMan Gene Sets are a collection of TaqMan Gene Expression Assays that define specific target classes, pathways, or diseases (for example, the TaqMan® Array Human Apoptosis Micro Fluidic Card). Select assays from the TaqMan Gene Sets, then customize the card according to your research needs. TaqMan Array cards with TaqMan Gene Sets are manufactured when ordered.

Note: You can substitute assays within a TaqMan Gene Set with TaqMan Gene Expression Assays from Applied Biosystems collection of Inventoried assays.

- **TaqMan® Gene Signature Array** – Preconfigured card. The TaqMan Gene Signature Arrays contain preselected TaqMan Gene Expression Assays that target specific gene classes (for example, Human Stem Cell Pluripotency markers). The TaqMan Gene Signature Arrays are manufactured and placed in inventory.

A complete list of the TaqMan Gene Expression Assays that are available for each type of TaqMan Array card can be found on the Applied Biosystems web site. For ordering information, see [Chapter 2](#) on [page 9](#).

Key Features

- Small-volume design minimizes sample and reagent consumption.
- Streamlined reaction setup saves time and reduces labor-intensive steps.
- Provides access to high-throughput, 384-well format without liquid-handling robotics.
- Detects two-fold discrimination at the 99.7% confidence level.
- Provides standardization across multiple samples in multiple laboratories.

For More Information

For more information on relative quantitation, refer to *User Bulletin #2: Relative Quantitation of Gene Expression*.

Notes _____

About TaqMan® Gene Expression Assays

TaqMan Gene Expression Assays are a comprehensive collection of Inventoried and Made to Order Assays (probe and primer sets) for performing quantitation experiments on genes from several species.

Note: Only Inventoried Assays can be placed onto a TaqMan Array card. If you require a Made to Order Assay, please contact your local Applied Biosystems Sales Representative.

The TaqMan Gene Expression Assays:

- Use TaqMan® reagents (5' nuclease chemistry) to amplify and detect the target in cDNA samples.
- When possible, can amplify target cDNA without amplifying genomic DNA. The suffix of the assay ID indicates the assay placement (and thus, genomic DNA detection); see "[Detection of genomic DNA During Amplification](#)" on page 33.
- Consist of two unlabeled primers and one 6-FAM™ dye-labeled, TaqMan® MGB probe

The TaqMan Gene Expression Assays are:

- Designed with an automated design system.
- Designed and optimized to work with an Applied Biosystems TaqMan® master mix using universal thermal cycling conditions.
- Preformulated and ready to use.

Efficiency of TaqMan Gene Expression Assays

A statistically significant number of TaqMan Gene Expression Assays have been tested for PCR efficiency. When tested across a 6-log range, all assays approached 100% efficiency ($\pm 10\%$). Refer to the Application Note *Amplification Efficiency of TaqMan® Gene Expression Assays* for validation information.

Note: Applied Biosystems does not recommend that you test assay efficiency on the TaqMan Array cards. In order to calculate the efficiency correctly, a dilution series with a minimum of 5 orders of magnitude must be used. With cDNA samples, in most cases it is not possible to obtain results over such a large dynamic range, potentially leading to inaccurate results.

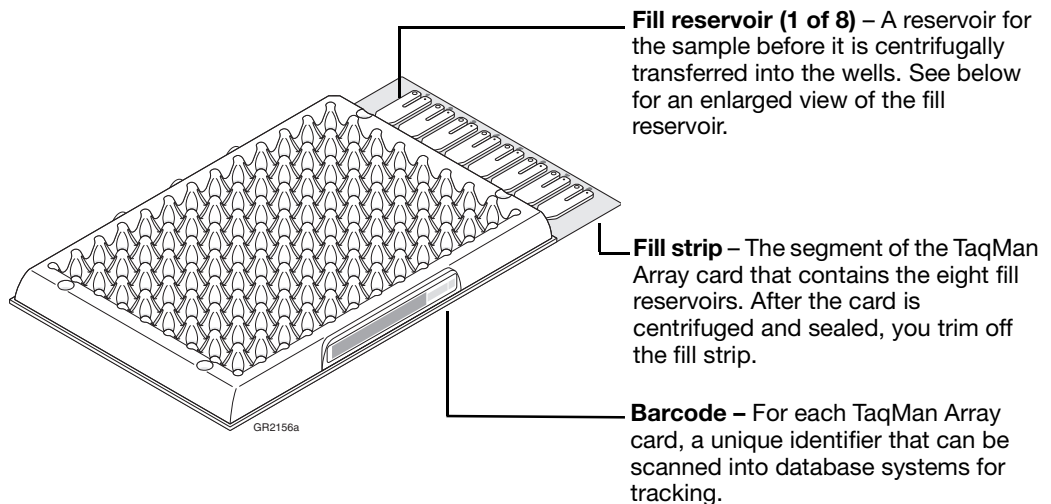
Notes _____

Applications The TaqMan Array cards are recommended for use:

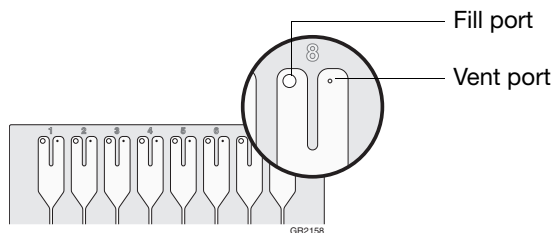
- In relative quantitation experiments using the comparative C_T ($\Delta\Delta C_T$) method.
- With singleplex PCR. A single primer/probe set is present in each well of the TaqMan Array card. Only one target can be amplified per well.
- In 2-step RT-PCR:
 - In the reverse-transcription (RT) step, you convert total RNA to cDNA. To perform reverse-transcription, Applied Biosystems recommends the High Capacity cDNA Reverse Transcription Kit or the High Capacity RNA-to-cDNA Kit.
 - In the PCR step, you combine your cDNA samples and a TaqMan[®] master mix, add this reaction mix to the TaqMan Array card, then run the card on a 7900HT Fast Real-Time PCR System. The instrument must have a TaqMan[®] Array Micro Fluidic Card Thermal Cycling Block installed.

During PCR, the 7900HT Fast System detects the real-time amplification of your targets, then determines relative levels of gene expression from the fluorescence data that are generated during PCR.

TaqMan[®] Array Micro Fluidic Card Diagram



The **fill reservoir** includes a **fill port** on the left, and a **vent port** on the right. Use the fill port to add reaction mix to the TaqMan Array card.



Notes _____

Instrument Overview

The TaqMan Array cards must be:

- Centrifuged with a Sorvall® or Heraeus centrifuge.
- Sealed with a TaqMan® Array Micro Fluidic Card Sealer, then trimmed.
- Run on an Applied Biosystems 7900HT Fast Real-Time PCR System. The instrument must have a TaqMan® Array Micro Fluidic Card Thermal Cycling Block installed.

Required Components

Instrument	Component
Sorvall® or Heraeus centrifuge	Sorvall/Heraeus Custom Buckets
	Card holders
Applied Biosystems 7900HT Fast Real-Time PCR System	Sequence Detection Systems (SDS) Software v2.1 or later Note: The SDS software includes a relative quantitation program. Depending on the SDS software version, it may be called RQ Manager or $\Delta\Delta C_T$ Study.
	7900HT TaqMan® Array Micro Fluidic Card Upgrade (hardware upgrade kit): <ul style="list-style-type: none"> • TaqMan® Array Micro Fluidic Card Thermal Cycling Block • TaqMan® Array Micro Fluidic Card Sealer • Four centrifuge buckets and card holders (specific to the Sorvall® or Heraeus centrifuge) • 7900HT TaqMan® Array Micro Fluidic Card Chemical Installation Kit: <ul style="list-style-type: none"> – Spectral Calibration Kit – TaqMan® Array Micro Fluidic Card Instrument Verification RNase P Kit – Calibration Cards (4 cards)

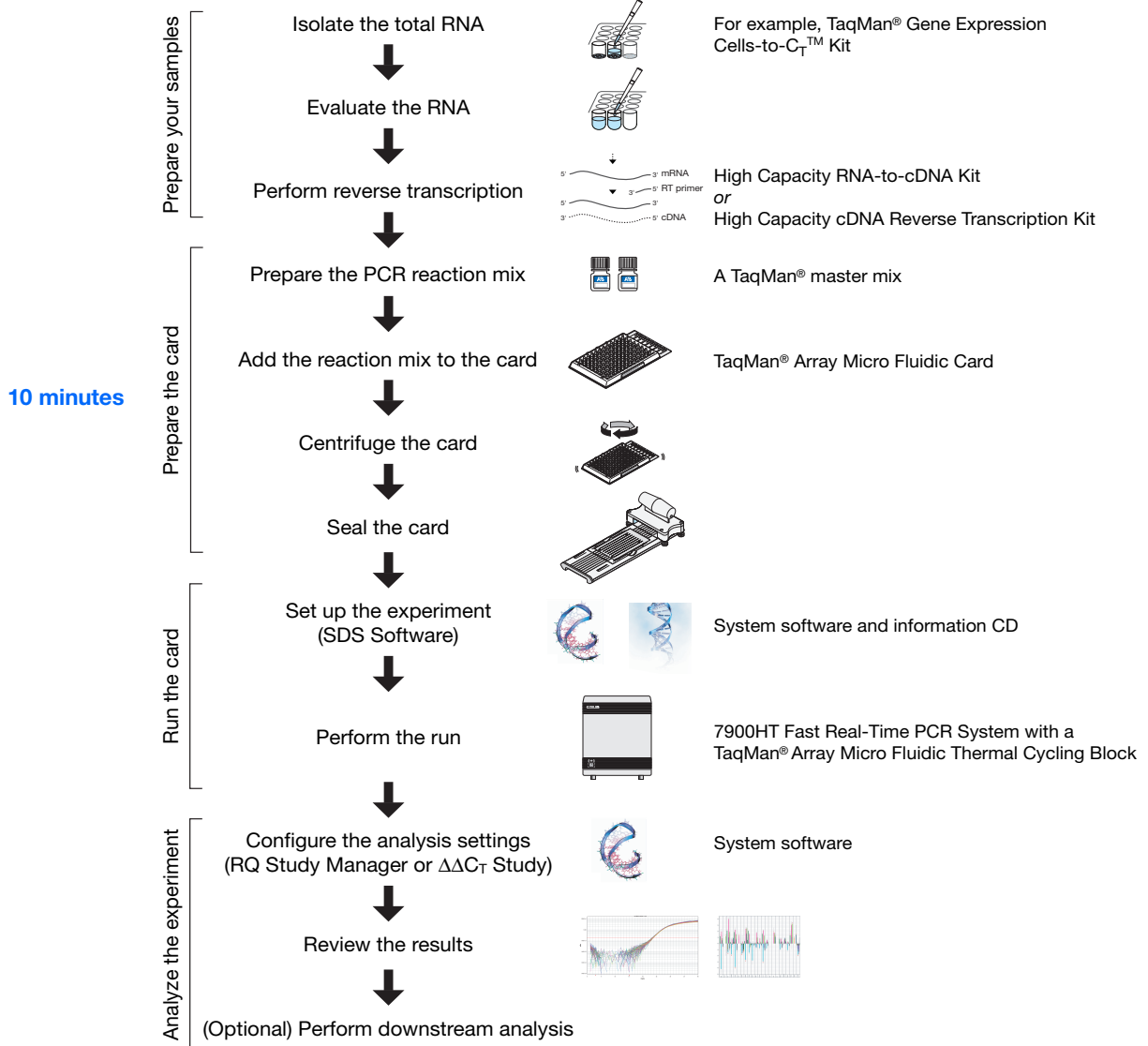
Before You Begin Before you perform your quantitation experiment, make sure that:

- Within the last 6 months, a background run, pure dye runs, and an instrument performance run (RNase P run) have been performed on the 7900HT Fast System with the TaqMan Array Micro Fluidic Card Thermal Cycling Block installed. For more information, refer to the *SDS Online Help* or *Applied Biosystems 7900HT Fast Real-Time PCR System and SDS Enterprise Database User Guide*.
- You are familiar with the safety guidelines in the “Safety and EMC Compliance Information” section of the *Applied Biosystems 7900HT Fast Real-Time PCR System Site Preparation Guide*.
- You are familiar with the safety guidelines related to use of your centrifuge, as provided by the centrifuge manufacturer.

Notes _____

User Guide Overview

Workflow



Notes

For More Information

Products	For product part numbers and sizes, see Appendix C on page 59 .
Documentation	For document titles and part numbers, see “How to Obtain More Information” on page vi .
Services and Support	For the latest services and support information, see “How to Obtain Support” on page vii .

Notes _____

Notes _____

2

Order the TaqMan[®] Array Micro Fluidic Card

This chapter covers:

- Order the TaqMan[®] Array Micro Fluidic Card 10
- Available Formats 22
- Array Information CD 26

Order the TaqMan® Array Micro Fluidic Card

Order TaqMan® Array Custom Micro Fluidic Cards or TaqMan® Gene Sets (this page).	▶ Order TaqMan® Gene Signature Arrays (page 16).	▶ Reorder TaqMan® Array Custom Micro Fluidic Cards or TaqMan® Gene Sets (page 19).
--	--	--

Order TaqMan® Array Custom Micro Fluidic Cards or TaqMan® Gene Sets

1. Go to www.appliedbiosystems.com.
2. In the I Want to Buy box, click **TaqMan® Gene Expression Assays, Plates & Arrays**.



3. Under Arrays, click **384-Well Arrays (Micro Fluidic Card)**.

Gene Expression Assays & Arrays

Which gene expression assay is right for you? Read our [TaqMan® Gene Expression Assays Product Guide \(PDF, 1.0 MB\)](#).

- **Arrays**
 - 96-Well Arrays (Microplate)
 - 384-Well Arrays (Micro Fluidic Card)
- **Individual Assays**
 - Custom TaqMan® Gene Expression Assays
 - TaqMan® Endogenous Controls
 - TaqMan® Gene Expression Assays
- **TaqMan® Custom Plating Service**

4. Click **TaqMan® Custom Array** or **TaqMan® Gene Sets**.



5. (Optional) On the product page, click the **Product Description** tab for more information about the assays and the card layout.

Notes _____

6. Click the **Ordering Information** tab, then click **Configure**.

Ordering Information

Product Description

Literature/Support



TaqMan® Gene Sets are genes grouped by pathway or disease target class which can be ordered separately, as a custom plate, or configured directly onto TaqMan® Arrays that enable you to perform hundreds of real-time PCR reactions simultaneously on the Applied Biosystems 7900HT Fast Real-Time PCR System. Simple to implement, TaqMan® Gene Sets are customizable, and when on a TaqMan Array require minimal amounts of sample, allow for 1 to 8 samples to be run in parallel against multiple TaqMan® Gene Expression Assay targets, and don't require liquid-handling robotics or complex pipetting.

How to Order
Open the [Ordering Guide](#) (4.8 MB) and follow the steps to add TaqMan® Gene Sets to your shopping basket and check out.

Please [Log In](#) to add products to your Shopping Basket/Favorites, **configure a product**, or to view products available for purchase in your country.

<input type="checkbox"/>	Product Name	Part Number	Quantity/ Package
<input type="checkbox"/>	TaqMan® Array	LDA	1 cards
Configure			

7. On the Store Log In page, enter your user name and password. If you are not a registered user, click **Register Now**, then follow the prompts.

Note: If you are already logged in, the Store Log In page does not appear. Go to the next step.

8. Select a format for your TaqMan Array card:

- a. Enter a name and description for your card. You cannot enter more than 24 characters for the card name.
- b. Select a format. For more information, see [“Available Formats” on page 22](#).
- c. Click **Next**.

Notes _____

1 Select a Format

Select a Format for your TaqMan® Array, and then click Next to proceed. To see a visual representation of a particular array format, click View Array Layout. To see a layout for all array formats in one document, please download the [All_Array_Maps.pdf\(57kb\)](#).

Name & Describe Your TaqMan Array

Name *

Description

* Required

Format	# of Targets	Pre-selected Mfg Controls	Maximum # of samples per array	Minimum # of ports per sample (8 per array)	Array Layout
<input type="radio"/> 12	11	1	8 (quadruplicates)	1	View Array Layout
<input type="radio"/> 16	15	1	8 (triplicates)	1	View Array Layout
<input type="radio"/> 24	23	1	8 (duplicates)	1	View Array Layout
<input type="radio"/> 32	31	1	4 (triplicates)	2	View Array Layout
<input type="radio"/> 48	47	1	8 (no replicates)	1	View Array Layout
<input type="radio"/> 64	63	1	2 (triplicates)	4	View Array Layout
<input type="radio"/> 96a	95	1	4 (no replicates)	2	View Array Layout
<input type="radio"/> 96b	95	1	2 (duplicates)	4	View Array Layout
<input type="radio"/> 192	191	1	1 (duplicates)	8	View Array Layout
<input type="radio"/> 384	380	4	1 (no replicates)	8	View Array Layout

Import Saved Design

If you have configured and saved a TaqMan Array before, you can copy, edit, and/or reorder an existing TaqMan Array design.

[Import Saved Design](#)

Compatible Instruments

The TaqMan® Array is compatible with the 7900HT Fast Real-Time PCR System with TaqMan® Array block.

Next

9. Choose your assays and controls:

a. Search for assays using one of the following options:

- Click **Search by Keyword** to display search options. Enter a keyword, select a category, (optional) select additional search criteria (for example, species), then click **Search**. When the search results are returned, select your assays, click **Add to Card**, then click **Return to Configurator**.
- Click **Search by Batch ID** to display search options. Enter or upload a batch of assay IDs, (optional) select additional search criteria (for example, species), then click **Search**. When the search results are returned, select your assays, click **Add to Card**, then click **Return to Configurator**.

Note: You can place assays from more than one species on the same TaqMan Array card.

- (Recommended for the TaqMan Gene Sets) Click **Select a Gene Panel** to display a suggested list of gene panels. Select your gene panels, click **Add panels to Card**, then click **Return to Configurator**.

Note: For more gene panels, go to:
www.appliedbiosystems.com/tools/workflow/.

b. Choose the endogenous controls for your experiment, using any of the search options described in [step a](#) above.

Note: Applied Biosystems recommends that you use the TaqMan® Endogenous Control Assays to select your endogenous controls. For more information, see [Appendix B on page 57](#) and refer to the Applied Biosystems Application Note *Using TaqMan® Endogenous Control Assays to Select an Endogenous Control for Experimental Studies*.

- c. Review the gene symbols added to your TaqMan Array card. If needed, you can:
 - Repeat [step a](#) above to add more assays/panels to the card.
 - Select a gene symbol, then click **Remove** to remove assays/panels from the card.
- d. In the Manufacturing Controls box, select a gene symbol from the dropdown menu.

Note: The well locations for the controls are predetermined, based on the TaqMan Array card format you selected in [step 8 on page 11](#).

- e. Click **Next**.

9c

9a

9c

9d

9e

2 Choose Assays & Controls

3 ways to search for and choose assays:

- **Search by Keyword**
Search by gene symbol, gene name, public accession number, biological process, molecular function, and more.
- **Search by Batch ID**
Search by uploading a file containing multiple assay IDs, RefSeq accession numbers, GenBank GI #s, LocusLink IDs, gene symbols, IMAGE Clone IDs, or species.
- **Select a Gene Panel**
Select from expertly pre-defined gene panels corresponding to a biological pathway or target class.

Gene Symbol	Assay ID
<input type="checkbox"/> BMP10	Hs00205566_m1
<input type="checkbox"/> BMPR2	Hs00176148_m1
<input type="checkbox"/> GDF10	Hs00192033_m1
<input type="checkbox"/> SMAD1	Hs00195432_m1
<input type="checkbox"/> SMAD9	Hs00195441_m1
<input type="checkbox"/> SP1	Hs00293689_s1
<input type="checkbox"/> TGFB2	Hs00559661_m1
<input type="checkbox"/> ACVR1	Hs00153836_m1
<input type="checkbox"/> LEFTY2	Hs00745761_s1
<input type="checkbox"/> TGFB1	Hs99999918_m1

Remove

Array Details

Name	Test
Format	Format 96a
Assigned Wells	95
Empty Wells	0
Unique Genes	94

Manufacturing Controls

Gene Symbol	Location
18s rRNA	...

Previous Next

10. (Optional) Customize the TaqMan Array card layout:

- a. To change the location of the assays in the card, use the up/down arrows or enter the desired well location.

Note: If you change the well location for one replicate, all other replicates are moved accordingly.

Note: The well locations for the controls are fixed, based on the TaqMan Array card format you selected in [step 8 on page 11](#).

Notes

b. Click **Update Array Layout**.

Note: To return to the previously saved layout, click **Reset Layout**.

c. Click **Next**.

10a

10b

10c

11. (Optional) Use one or more of the configuration tools:

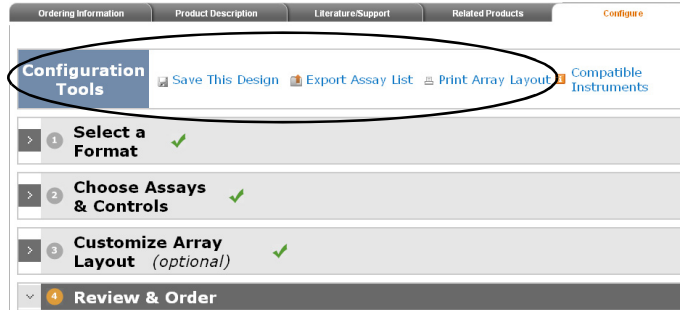
- Click **Save This Design** to save your current TaqMan Array card design to the Applied Biosystems store workspace. If your design is successfully saved, this message appears at the top of the page:

You have successfully added your design to [workspace](#).

Note: For more information on the Applied Biosystems store workspace, click the **workspace** link shown in the message.

- Click **Export Assay List**, then follow the prompts to export a list of your current assays to a simple text application (*.txt file).
- Click **Print Array Layout**, then select **File ▶ Print** to print your current TaqMan Array card layout.

Notes _____

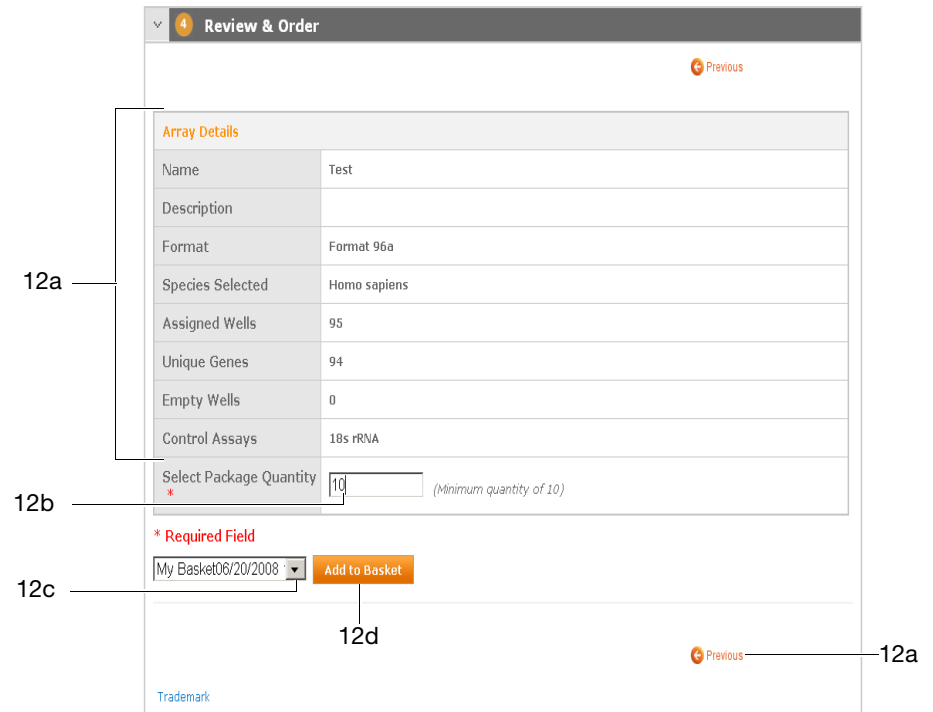


12. Review and order your TaqMan Array card:

- a. Review the card details. If needed, click **Previous** to change the information.
- b. Enter the quantity of cards to order. The minimum quantity you can order is 10 cards.

Note: After the minimum quantity has been fulfilled, you can order TaqMan Array cards in increments of one.

- c. Select your basket from the dropdown menu.



Notes _____

d. Click **Add to Basket**. You can:

- Repeat [step 8 on page 11](#) through [step 12 on page 15](#) to continue ordering TaqMan Array cards.
- Click **Shopping Basket** to check out.



Applied Biosystems ships the TaqMan Array cards at ambient temperature. Upon receipt, store the cards at 2 to 8 °C. The cards are stable for up to 2 years from the manufacturing date.

Order TaqMan® Gene Signature Arrays

1. Go to www.appliedbiosystems.com.
2. In the I Want to Buy box, click **TaqMan® Gene Expression Assays, Plates & Arrays**.



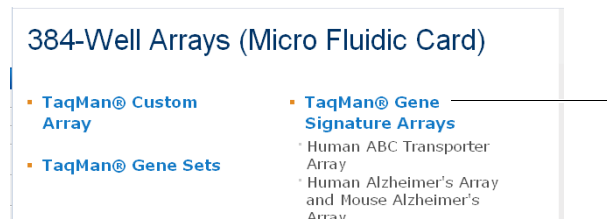
3. Under Arrays, click **384-Well Arrays (Micro Fluidic Card)**.

Gene Expression Assays & Arrays

Which gene expression assay is right for you? Read our [TaqMan® Gene Expression Assays Product Guide \(PDF, 1.0 MB\)](#).

- **Arrays**
 - 96-Well Arrays (Microplate)
 - 384-Well Arrays (Micro Fluidic Card)
- **Individual Assays**
 - Custom TaqMan® Gene Expression Assays
 - TaqMan® Endogenous Controls
 - TaqMan® Gene Expression Assays
- **TaqMan® Custom Plating Service**

4. Click **TaqMan® Gene Signature Arrays**.



5. On the TaqMan® Gene Signature Arrays page, select the appropriate Gene Signature Array.

Notes _____

6. (Optional) On the product page, click the **Product Description** tab for more information about the assays and the card layout.
7. Click the **Ordering Information** tab.
8. Log in:
 - a. Click **Log In**.

Note: If you are already logged in, the Log In prompt does not appear. Go to the next step.

- b. On the Store Log In page, enter your user name and password. If you are not a registered user, click **Register Now**, then follow the prompts.

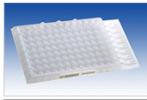
7

8a

Ordering Information

Product Description

Literature/Support



The TaqMan® Human ABC Transporter Array contains assays for 50 human genes in addition to 14 endogenous controls in a 384-well array.

Please [Log In](#) to add products to your Shopping Basket/Favorites, **configure a product**, or to view products available for purchase in your country.

<input type="checkbox"/>	Product Name	Part Number	Quantity/ Package
<input type="checkbox"/>	TaqMan® Human ABC Transporter Array	4378700	4 cards

Note: See user's manual or package insert for limited label license, and trademark information. For Research Use Only. Not for use in diagnostics procedures.

[Trademark](#)

9. Order your TaqMan Array card:
 - a. Select the card.
 - b. Select your basket from the dropdown menu.

Notes _____

Ordering Information Product Description Literature/Support

The TaqMan® Human ABC Transporter Array contains assays for 50 human genes in addition to 14 endogenous controls in a 384-well array.

You can view your contract pricing for products in your Shopping Basket or Favorites.

My Basket11/z **Add to Basket** My Favor **Add to Favorites**

<input type="checkbox"/>	Product Name	Part Number	Quantity/Package	List Price [View Your Price]
<input checked="" type="checkbox"/>	TaqMan® Human ABC Transporter Array	4378700	4 cards	

My Basket11/z **Add to Basket** My Favor **Add to Favorites**

Note: See user's manual or package insert for limited label license, and trademark information. For Research Use Only. Not for use in diagnostics procedures.

[Trademark](#)

c. Click **Add to Basket**. You can:

- Repeat [step 3 on page 16](#) through [step 9 on page 17](#) to continue ordering TaqMan Gene Signature Arrays.
- Click **Shopping Basket** to check out.



Applied Biosystems ships the TaqMan Array cards at ambient temperature. Upon receipt, store the cards at 2 to 8 °C. The cards are stable for up to 2 years from the manufacturing date.

Notes _____

**Reorder TaqMan®
Array Custom
Micro Fluidic
Cards or
TaqMan® Gene
Sets**

There are two ways to reorder the same TaqMan® Array Custom Micro Fluidic Cards or TaqMan® Gene Sets:

- Import a saved design from within the Configurator (this page) – To use this method, you must have previously saved a design (step 11 on page 14) or added an order to your shopping basket (step 12 on page 15).

Note: You can use this method if you have not yet submitted the order (that is, you added the order to your shopping basket, but did not check out).

- Reorder from your shopping basket (page 21) – To use this method, you must have previously submitted an order (step 12 on page 15).

Import a saved design

1. Go to www.appliedbiosystems.com.
2. In the I Want to Buy box, click **TaqMan® Gene Expression Assays, Plates & Arrays**.



3. Under Arrays, click **384-Well Arrays (Micro Fluidic Card)**.

Gene Expression Assays & Arrays

Which gene expression assay is right for you? Read our [TaqMan® Gene Expression Assays Product Guide \(PDF, 1.0 MB\)](#).

- **Arrays**
 - 96-Well Arrays (Microplate)
 - 384-Well Arrays (Micro Fluidic Card)
- **Individual Assays**
 - Custom TaqMan® Gene Expression Assays
 - TaqMan® Endogenous Controls
 - TaqMan® Gene Expression Assays
- **TaqMan® Custom Plating Service**

4. Click **TaqMan® Custom Array** or **TaqMan® Gene Sets**.



Notes

5. On the product page, click the **Ordering Information** tab, then click **Configure**.



Ordering Information | Product Description | Literature/Support

 TaqMan® Gene Sets are genes grouped by pathway or disease target class which can be ordered separately, as a custom plate, or configured directly onto TaqMan® Arrays that enable you to perform hundreds of real-time PCR reactions simultaneously on the Applied Biosystems 7900HT Fast Real-Time PCR System. Simple to implement, TaqMan® Gene Sets are customizable, and when on a TaqMan Array require minimal amounts of sample, allow for 1 to 8 samples to be run in parallel against multiple TaqMan® Gene Expression Assay targets, and don't require liquid-handling robotics or complex pipetting.

How to Order
Open the [Ordering Guide](#) (4.8 MB) and follow the steps to add TaqMan® Gene Sets to your shopping basket and check out.

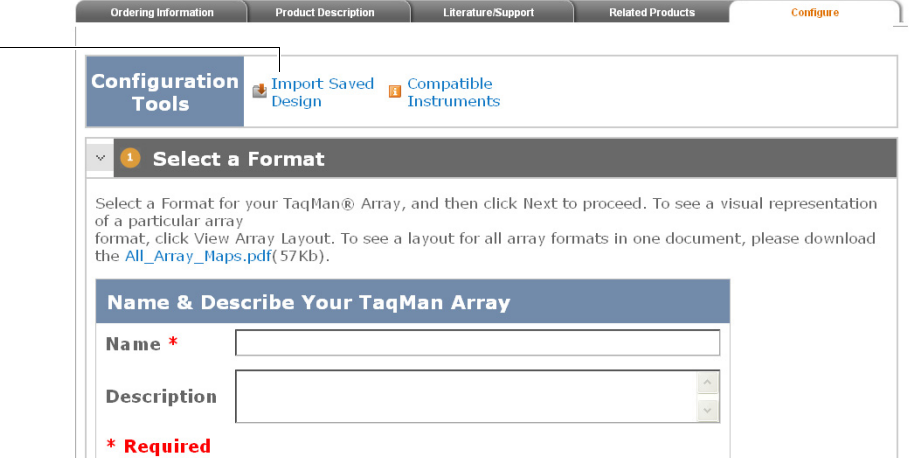
Please [Log In](#) to add products to your Shopping Basket/Favorites, **configure a product**, or to view products available for purchase in your country.

<input type="checkbox"/>	Product Name	Part Number	Quantity / Package
<input type="checkbox"/>	TaqMan® Array	LDA	1 cards
	Configure		

6. On the Store Log In page, enter your user name and password.

Note: If you are already logged in, the Store Log In page does not appear. Go to the next step.

7. In step 1 of the Configurator, click **Import Saved Design**.



Ordering Information | Product Description | Literature/Support | Related Products | **Configure**

Configuration Tools | [Import Saved Design](#) | [Compatible Instruments](#)

1 **Select a Format**

Select a Format for your TaqMan® Array, and then click Next to proceed. To see a visual representation of a particular array format, click View Array Layout. To see a layout for all array formats in one document, please download the [All_Array_Maps.pdf](#)(57Kb).

Name & Describe Your TaqMan Array

Name *

Description

*** Required**

Notes _____

- On the Designs page, click the name of the design you want to import. You are returned to step 4 of the Configurator (Review & Order).

Designs Import: [Upload File](#)

Design files for Taqman® Arrays and SNPlex™ are stored and summarized below. Your total workspace storage limit for both Designs and Saved Lists is 10000KB. Design files are automatically deleted if they have not been used after 12 months.

- Select filter criteria from Display pull-down lists to see results. Sort columns using header arrows.
- Open a design by clicking on the name, which returns you to the Configurator.
- To Edit, Copy or Export, click one design's corresponding box at the left, then use the button on the right of the row. **Edit** allows you to name, rename and describe your file. Exported files may only be uploaded if they are SNPlex encrypted files with the .enc file extension, using **File Upload** on the upper right.
- Organize your files by creating Projects using the **Project** column **Edit** link.
- To delete one or more designs, check the corresponding box(es), and then click **Delete**.

Indicates parent/child relationship: Parent | Child

Display: ALL in ALL Project: All Project Space Used: 0KB of 102.40KB

Name	Description	File Type	Status	Last Modified	Project (Edit)	Purchase
<input type="checkbox"/> Test_0 12609		Configuration	Pending	2009-01-26 11:48:51.0	Edit Copy	Order

[Delete](#) Previous | Next

- In the Configurator, review and order the TaqMan Array card according to [step 12 on page 15](#), or click **Previous** to make changes.

Reorder from your shopping basket

- Go to www.appliedbiosystems.com.
- At the top of the Home page, from the My Baskets/Orders dropdown menu, select **Order History/Reorder**.

- On the Store Log In page, enter your user name and password.

Note: If you are already logged in, the Store Log In page does not appear. Go to the next step.

- Select the TaqMan Array card to reorder, then click [Reorder](#) at the top-right of the page.

Notes

Available Formats

The table below provides a list of available TaqMan® Array Micro Fluidic Card formats for selected TaqMan® Gene Expression Assays. Illustrations of each format follow.

Format	Part No.	No. of Target Assays	Minimum Order No.‡	Mandatory Manufacturing Controls	Maximum No. of Samples per Card	Minimum No. of Ports per Sample (8 per card)
12	4342247	11	10	1	8 (quadruplicates)	1
16	4346798	15	10	1	8 (triplicates)	1
24	4342249	23	10	1	8 (duplicates)	1
32	4346799	31	10	1	4 (triplicates)	2
48	4342253	47	10	1	8 (no replicates)	1
64	4346800	63	10	1	2 (triplicates)	4
96a	4342259	95	10	1	4 (no replicates)	2
96b	4342261	95	10	1	2 (duplicates)	4
192	4346802	191	10	1	1 (duplicates)	8
384	4342265	380	10	1 (4 replicates)	1 (no replicates)	8

‡ After the minimum quantity has been fulfilled, you can order TaqMan Array cards in increments of one.

Format 12 11 target assays + 1 mandatory manufacturing control

8 unique samples

Replicates																									Port	
	1	1	2	2	3	3	4	4	5	5	CTL	CTL	6	6	7	7	8	8	9	9	10	10	11	11	A	B
1	1	1	2	2	3	3	4	4	5	5	CTL	CTL	6	6	7	7	8	8	9	9	10	10	11	11	A	B
2	1	1	2	2	3	3	4	4	5	5	CTL	CTL	6	6	7	7	8	8	9	9	10	10	11	11	C	D
3	1	1	2	2	3	3	4	4	5	5	CTL	CTL	6	6	7	7	8	8	9	9	10	10	11	11	E	F
4	1	1	2	2	3	3	4	4	5	5	CTL	CTL	6	6	7	7	8	8	9	9	10	10	11	11	G	H
5	1	1	2	2	3	3	4	4	5	5	CTL	CTL	6	6	7	7	8	8	9	9	10	10	11	11	I	J
6	1	1	2	2	3	3	4	4	5	5	CTL	CTL	6	6	7	7	8	8	9	9	10	10	11	11	K	L
7	1	1	2	2	3	3	4	4	5	5	CTL	CTL	6	6	7	7	8	8	9	9	10	10	11	11	M	N
8	1	1	2	2	3	3	4	4	5	5	CTL	CTL	6	6	7	7	8	8	9	9	10	10	11	11	O	P
	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24		

Notes

Format 16 15 target assays + 1 mandatory manufacturing control

8 unique samples

Replicates	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	Port
1	1	1	1	2	2	2	3	3	3	CTL	CTL	CTL	4	4	4	5	5	5	6	6	6	7	7	7	A
	8	8	8	9	9	9	10	10	10	11	11	11	12	12	12	13	13	13	14	14	14	15	15	15	B
2	1	1	1	2	2	2	3	3	3	CTL	CTL	CTL	4	4	4	5	5	5	6	6	6	7	7	7	C
	8	8	8	9	9	9	10	10	10	11	11	11	12	12	12	13	13	13	14	14	14	15	15	15	D
3	1	1	1	2	2	2	3	3	3	CTL	CTL	CTL	4	4	4	5	5	5	6	6	6	7	7	7	E
	8	8	8	9	9	9	10	10	10	11	11	11	12	12	12	13	13	13	14	14	14	15	15	15	F
4	1	1	1	2	2	2	3	3	3	CTL	CTL	CTL	4	4	4	5	5	5	6	6	6	7	7	7	G
	8	8	8	9	9	9	10	10	10	11	11	11	12	12	12	13	13	13	14	14	14	15	15	15	H
5	1	1	1	2	2	2	3	3	3	CTL	CTL	CTL	4	4	4	5	5	5	6	6	6	7	7	7	I
	8	8	8	9	9	9	10	10	10	11	11	11	12	12	12	13	13	13	14	14	14	15	15	15	J
6	1	1	1	2	2	2	3	3	3	CTL	CTL	CTL	4	4	4	5	5	5	6	6	6	7	7	7	K
	8	8	8	9	9	9	10	10	10	11	11	11	12	12	12	13	13	13	14	14	14	15	15	15	L
7	1	1	1	2	2	2	3	3	3	CTL	CTL	CTL	4	4	4	5	5	5	6	6	6	7	7	7	M
	8	8	8	9	9	9	10	10	10	11	11	11	12	12	12	13	13	13	14	14	14	15	15	15	N
8	1	1	1	2	2	2	3	3	3	CTL	CTL	CTL	4	4	4	5	5	5	6	6	6	7	7	7	O
	8	8	8	9	9	9	10	10	10	11	11	11	12	12	12	13	13	13	14	14	14	15	15	15	P

Format 24 23 target assays + 1 mandatory manufacturing control

8 unique samples

Replicates	1	2	3	4	5	6	7	8	9	10	CTL	11	12	13	14	15	16	17	18	19	20	21	22	23	Port
1	1	2	3	4	5	6	7	8	9	10	CTL	11	12	13	14	15	16	17	18	19	20	21	22	23	A
	1	2	3	4	5	6	7	8	9	10	CTL	11	12	13	14	15	16	17	18	19	20	21	22	23	B
2	1	2	3	4	5	6	7	8	9	10	CTL	11	12	13	14	15	16	17	18	19	20	21	22	23	C
	1	2	3	4	5	6	7	8	9	10	CTL	11	12	13	14	15	16	17	18	19	20	21	22	23	D
3	1	2	3	4	5	6	7	8	9	10	CTL	11	12	13	14	15	16	17	18	19	20	21	22	23	E
	1	2	3	4	5	6	7	8	9	10	CTL	11	12	13	14	15	16	17	18	19	20	21	22	23	F
4	1	2	3	4	5	6	7	8	9	10	CTL	11	12	13	14	15	16	17	18	19	20	21	22	23	G
	1	2	3	4	5	6	7	8	9	10	CTL	11	12	13	14	15	16	17	18	19	20	21	22	23	H
5	1	2	3	4	5	6	7	8	9	10	CTL	11	12	13	14	15	16	17	18	19	20	21	22	23	I
	1	2	3	4	5	6	7	8	9	10	CTL	11	12	13	14	15	16	17	18	19	20	21	22	23	J
6	1	2	3	4	5	6	7	8	9	10	CTL	11	12	13	14	15	16	17	18	19	20	21	22	23	K
	1	2	3	4	5	6	7	8	9	10	CTL	11	12	13	14	15	16	17	18	19	20	21	22	23	L
7	1	2	3	4	5	6	7	8	9	10	CTL	11	12	13	14	15	16	17	18	19	20	21	22	23	M
	1	2	3	4	5	6	7	8	9	10	CTL	11	12	13	14	15	16	17	18	19	20	21	22	23	N
8	1	2	3	4	5	6	7	8	9	10	CTL	11	12	13	14	15	16	17	18	19	20	21	22	23	O
	1	2	3	4	5	6	7	8	9	10	CTL	11	12	13	14	15	16	17	18	19	20	21	22	23	P

Format 32 31 target assays + 1 mandatory manufacturing control

4 unique samples

Replicates	1	2	3	4	5	6	7	8	9	10	11	12	13	14	15	16	17	18	19	20	21	22	23	24	Port
1	1	1	1	2	2	2	3	3	3	CTL	CTL	CTL	4	4	4	5	5	5	6	6	6	7	7	7	A
	8	8	8	9	9	9	10	10	10	11	11	11	12	12	12	13	13	13	14	14	14	15	15	15	B
	16	16	16	17	17	17	18	18	18	19	19	19	20	20	20	21	21	21	22	22	22	23	23	23	C
	24	24	24	25	25	25	26	26	26	27	27	27	28	28	28	29	29	29	30	30	30	31	31	31	D
2	1	1	1	2	2	2	3	3	3	CTL	CTL	CTL	4	4	4	5	5	5	6	6	6	7	7	7	E
	8	8	8	9	9	9	10	10	10	11	11	11	12	12	12	13	13	13	14	14	14	15	15	15	F
	16	16	16	17	17	17	18	18	18	19	19	19	20	20	20	21	21	21	22	22	22	23	23	23	G
	24	24	24	25	25	25	26	26	26	27	27	27	28	28	28	29	29	29	30	30	30	31	31	31	H
3	1	1	1	2	2	2	3	3	3	CTL	CTL	CTL	4	4	4	5	5	5	6	6	6	7	7	7	I
	8	8	8	9	9	9	10	10	10	11	11	11	12	12	12	13	13	13	14	14	14	15	15	15	J
	16	16	16	17	17	17	18	18	18	19	19	19	20	20	20	21	21	21	22	22	22	23	23	23	K
	24	24	24	25	25	25	26	26	26	27	27	27	28	28	28	29	29	29	30	30	30	31	31	31	L
4	1	1	1	2	2	2	3	3	3	CTL	CTL	CTL	4	4	4	5	5	5	6	6	6	7	7	7	M
	8	8	8	9	9	9	10	10	10	11	11	11	12	12	12	13	13	13	14	14	14	15	15	15	N
	16	16	16	17	17	17	18	18	18	19	19	19	20	20	20	21	21	21	22	22	22	23	23	23	O
	24	24	24	25	25	25	26	26	26	27	27	27	28	28	28	29	29	29	30	30	30	31	31	31	P

Notes

Array Information CD

The Array Information CD is shipped with your TaqMan Array card. It includes the following files:

- SDS Setup File (this page)
- Array Map File (page 27)
- Assay Information File (AIF) (page 27)
- *readme* text file
- PDF file of this guide, the *TaqMan® Array Micro Fluidic Cards User Guide*
- PDF file of the *Applied Biosystems 7900HT Fast Real-Time PCR System and SDS Enterprise Database User Guide*

SDS Setup File

The SDS Setup File is a text file (*.txt) included on the Array Information CD. The SDS Setup File contains information specific to your TaqMan Array card, such as detector/reporter and task information for each well.

When you set up the SDS plate document for your TaqMan Array card in the SDS software, Applied Biosystems recommends that you import the SDS Setup File (see [step 4](#) under “Set Up the SDS Plate Document” on page 46). The SDS software uses the information in the SDS Setup File to configure the plate grid and setup table in the SDS plate document. The figure below shows an SDS plate document after an SDS Setup File has been imported.

IMPORTANT! Modifying the contents of the SDS Setup File can corrupt the file, making the file unusable (that is, you will not be able to access information for the TaqMan Array card).

The SDS software displays well information if you leave the cursor over the well.

Posit.	Flag	Sample	Detector	Task	FOS	HMD	LME	EW	BF
A1		Sample01	ACTB-Hs9999903_m1	Target					
A2		Sample01	ACTC-Hs0003316_m1	Target					
A3		Sample01	AFR-Hs0173490_m1	Target					
A4		Sample01	BRX-Hs00217848_m1	Target					
A6		Sample01	CD34-Hs00156373_m1	Target					
A6		Sample01	CD9-Hs0023521_m1	Target					
A7		Sample01	CDH5-Hs00174344_m1	Target					
A8		Sample01	CD2-Hs00239919_m1	Target					
A8		Sample01	COB-Hs00361224_gH	Target					
A10		Sample01	COL1A1-Hs00164004_m1	Target					
A11		Sample01	18S-Hs9999901_s1	Endogeno...					
A12		Sample01	COL2A1-Hs00156988_m1	Target					
A13		Sample01	COMMD3-Hs00201360_m1	Target					
A14		Sample01	CRABP2-Hs00279536_m1	Target					
A15		Sample01	CTNNE1-Hs00170025_m1	Target					
A16		Sample01	CDX4-Hs00251859_m1	Target					
A17		Sample01	DES-Hs00157258_m1	Target					
A18		Sample01	DNMT3B-Hs00171876_m1	Target					
A19		Sample01	EBAF-Hs00745761_s1	Target					

Notes

Array Map File

Contents An Array Map File contains two color-coded maps that show the position of the assays on the TaqMan Array card. The top map shows the replicate distribution of assay gene symbols for each well. The bottom map shows the TaqMan Gene Expression Assay ID numbers.

Array Map Files also indicate the:

- TaqMan Array card configuration and part number.
- Production number of the TaqMan Array card. Each TaqMan Array card is assigned a unique production number. This number appears as part the AIF, Array Map File, and SDS Setup File names.

Formats Each Array Information CD contains two Array Map Files, one in HTML format, and the other in spreadsheet format.

To...	open...	using...
View a map	<prodNum>‡_cardmap.html	your web browser.
Print a map	<prodNum>‡_cardmap.xls	Microsoft® Excel® software.

‡ Where <prodNum> is the production number of the TaqMan Array card.

Assay Information File (AIF)

About the AIF The Assay Information File (AIF) is a text file that describes the TaqMan Array card:

AIF_ProdNum.txt

where *ProdNum* is the manufacturing production number

To view the AIF as a spreadsheet in Microsoft® Excel® Software:

1. Load the Array Information CD into the CD drive.
2. Navigate to the drive that contains the Array Information CD.
3. Click, then right-click **AIF_ProdNum.txt**, then select **Open with Excel**.

Notes _____

AIF columns The table below describes the columns of the AIF.

Note: In the table below, “N/A” appears in the Example column for fields that do not apply to TaqMan Array cards.

Field name	Description of content	Example
Customer Name	Your organization or institution	University XYZ
(Sales) Order Number	A unique number that identifies the Applied Biosystems sales order	1234567890
Ship Date	The date when the assay was packaged for shipment	N/A
Delivery Number (Shipment ID)	A unique bar code number that identifies the shipment Note: The shipment ID also appears in the plate ID.	N/A
Part Number	A number that identifies the product line	4331182
Product Type	The Applied Biosystems product line associated with the assay	TaqMan® Gene Expression Assays
Assay ID	An alphanumeric string that identifies the assay	Hs00154374_m1
Lot Number	A unique alphanumeric string that identifies the manufacturing batch to which the assay belongs	A3579
Shipping Rack or Plate Type	The type of container in which the assay is shipped (such as a 96-position or a 16-position tube rack)	384-well, 8-port Micro-Fluidic Card
Shipping Rack or Plate ID	A bar code number on the label of each shipped rack or plate that consists of the shipment ID plus a unique numeric suffix that identifies the rack or plate containing the assay.	N/A
Vial/Tube Type	The type of vial or tube that contains the assay	N/A
Vial/Tube ID	A unique, 10-digit bar code number on the bottom of each assay vial or tube that identifies it	N/A
Well Location on the Shipping Rack or Plate	The location of the assay on the associated shipping rack or plate	A1
Assay Mix Concentration	The concentration of the assay, including both primers and probe	2X
Forward Primer Name	The name of the forward primer, assigned by the design software, that consists of the assay ID plus an “F” suffix	N/A
Forward Primer Sequence	The nucleotide sequence of the forward primer	N/A
Forward Primer Concentration	The concentration of the forward primer (μM)	18
Reverse Primer Name	The name of the reverse primer, assigned by the design software, that consists of the assay ID plus an “R” suffix	N/A
Reverse Primer Sequence	The nucleotide sequence of the reverse primer	N/A
Reverse Primer Concentration	The concentration of the reverse primer (μM)	18

Notes

Field name	Description of content	Example
Reporter 1 Name	The name of the reporter 1 oligonucleotide probe, assigned by the design software, that consists of the assay ID and a suffix code (M1 or M2). The letter in the suffix code identifies the reporter dye that is covalently bound to the fluorogenic probe. The number identifies the DNA strand used to design the probe: <ul style="list-style-type: none"> • 1 – Forward strand design • 2 – Reverse strand design For example, in the name “KR14TD-A22TM1,” the letter “M” indicates that the probe is labeled with the FAM™ dye, and the number “1” indicates that the probe was designed to the forward strand.	N/A
Reporter 1 Dye	The reporter dye label for the reporter 1 probe	FAM™
Reporter 1 Sequence	The nucleotide sequence of the reporter 1 probe	N/A
Reporter 1 Concentration	The concentration of the reporter 1 probe (μM)	5
Reporter 1 Quencher	The quencher used for reporter 1 probe (for example, Minor Groove Binder-Non Fluorescing Quencher [MGB-NFQ])	NFQ
Reporter 2 Name	Not applicable to TaqMan® Gene Expression Assay.	N/A
Reporter 2 Dye		
Reporter 2 Sequence		
Reporter 2 Concentration		
Reporter 2 Quencher		
Context Sequence	The 25-nucleotide sequence surrounding the probe, including the targeted exon(s)	AGGAAACGTCTGGGCGAT GACAACC
Design Strand	Indicates the strand used to design the probe: <ul style="list-style-type: none"> • Forward – The probe binds to the same strand as the forward primer. • Reverse – The probe binds to the same strand as the reverse primer. 	N/A
Category	The Celera Panther Protein Classification (Level 1) for the gene	Nucleic acid binding
Category ID	A unique, 10-character alphanumeric abbreviation of the Panther category classification for the assay	NUC 1090000
Group	The Celera Panther Protein Classification (Level 2) for the gene	Replication origin binding protein
Group ID	A unique, 10-character alphanumeric abbreviation of the Panther group classification for the assay	1090300000
Gene Symbol	The Entrez Gene symbol for the gene	CDC6
Gene Name	The Entrez Gene name for the gene	Cell division cycle 6 homolog (<i>S. cerevisiae</i>)
Chromosome	The chromosome containing the gene	17
Species	The organism for which the assay was designed	Homo_sapiens
Target Exons	The public accession number(s) of the exon(s) that are spanned by the probe	2

Notes

Field name	Description of content	Example
NCBI Gene Reference	The NCBI transcript identification number that corresponds to the gene	NM_001254.3, U77949.1, AF022109.1, CR598029.1, BC025232.1
NCBI SNP Reference	Not applicable to TaqMan® Gene Expression Assays.	N/A
Medline Reference	PubMed references for the gene	N/A
Celera ID	The unique Celera Discovery System (CDS) assay identification number for the gene	hCT1643963.2, hCT2294847.0
Cytogenetic Band	The chromosomal band where the gene is located. If unavailable, then the chromosome number is provided.	17q21.3
SNP Type	Not applicable to TaqMan® Gene Expression Assay.	N/A
Minor Allele Frequency - Caucasian		
Minor Allele Frequency -African-American		
Minor Allele Frequency -Japanese		
Minor Allele Frequency -Chinese		
Celera Assembly Build Number		
Location on Celera Assembly		
NCBI Assembly Build Number		
Location on NCBI Assembly		

Notes _____

3

Prepare Your Samples

This chapter covers:

- Prepare Your Samples 32
- Store the cDNA Samples 34

Prepare Your Samples

Isolate total RNA from your samples (this page)	▶ Evaluate the RNA (page 33).	▶ Perform reverse transcription (RNA to cDNA) (page 34).
---	-------------------------------	--

Note: When preparing your samples, see the product part numbers and sizes under “For Preparing Your Samples” on page 60.

RNA Template Guidelines

For optimal performance, Applied Biosystems recommends using RNA with the following characteristics:

- Between 0.002 and 0.2 µg/µL in concentration of RNA
- Less than 0.005% of genomic DNA by weight
- Free of inhibitors of reverse transcription and PCR
- Dissolved in PCR-compatible buffer
- Free of RNase activity

Note: If you suspect that the RNA contains RNase activity, add RNase inhibitor to the reverse transcription reaction at a final concentration of 1.0 U/µL. It is not necessary to add RNase inhibitor to the reverse transcription reaction if the RNA was purified using the ABI PRISM® 6100 Nucleic Acid PrepStation and Applied Biosystems nucleic acid purification reagents.

- Nondenatured

Note: It is not necessary to denature the RNA. Denaturation of the RNA may reduce the yield of cDNA for some gene targets.

Isolate Total RNA

To isolate total RNA from cellular samples, Applied Biosystems recommends the TaqMan® Gene Expression Cells-to-C_T™ Kit. For procedures, refer to:

www.ambion.com.

Note: The Cells-to-C_T Kit includes the reverse transcription (RNA to cDNA) step. If you use this kit, it is not necessary to evaluate the RNA (page 33).

Ambion RNA Isolation Decision Tree

For other recommendations on isolating total RNA, refer to the Ambion RNA Isolation Decision Tree:

www.ambion.com/techlib/trees/RNA/index.html

Notes _____

Evaluate the RNA Use high-quality RNA that is free of contaminants (for example, proteins or detergents). You can:

- Measure the UV absorbance (A_{260}/A_{280}) to determine both quality and quantity.
- Run an agarose gel to control the quality of 18S and 28S RNA.
- Measure the RNA Integrity Number (RIN).

Detection of genomic DNA During Amplification

When you perform the experiment ([Chapter 4](#)), the TaqMan® Gene Expression Assay used in the TaqMan Array card may or may not detect genomic DNA. The suffix of the assay ID indicates the assay placement (and thus, potential genomic DNA interference), as described below.

Suffix	Description
<i>_m</i>	The assay's probe spans an exon junction. The assay does not detect genomic DNA.
<i>_s</i>	The assay's primers and probe are designed within a single exon. The assay detects genomic DNA. Note: For <i>_s</i> assays, Applied Biosystems recommends that you take precautions to exclude genomic DNA from your RNA samples. You can perform an RT-minus experiment with the TaqMan Gene Expression Assay to test for genomic DNA contaminants.
<i>_g</i>	The assay may detect genomic DNA. The assay's probe may span an exon junction or the assay's primers and probe may be within a single exon. Note: For <i>_g</i> assays, Applied Biosystems recommends that you take precautions to exclude genomic DNA from your RNA samples. You can perform an RT-minus experiment with the TaqMan Gene Expression Assay to test for genomic DNA contaminants.
<i>_mH</i>	The assay detects transcripts belonging to a gene family with high sequence homology. The assay provides between 10 C _T and 15 C _T difference between the target gene and the gene with the closest sequence homology. Therefore, the assay detects the target transcript with 1000- to 30,000-fold greater discrimination (sensitivity) than the closest homologous transcript, if both transcripts are present at the same copy number in a sample. <ul style="list-style-type: none">• The <i>_gH</i> assay may detect genomic DNA.• The <i>_mH</i> assay does not detect genomic DNA.• The <i>_sH</i> assay detects genomic DNA.
<i>_sH</i>	
<i>_gH</i>	
<i>_u</i>	The assay's amplicon spans an exon junction, and the probe sits completely in one of the spanned exons. The assay does not detect genomic DNA.
<i>_ft</i>	The assay detects fusion transcripts that result from chromosomal translocation. The probe and one primer are on one side of the fusion transcript breakpoint; the second primer is on the other side of the fusion transcript breakpoint. The assay does not detect genomic DNA.
<i>_at</i>	The assay is designed to detect a synthetic RNA transcript with a unique sequence that lacks homology to currently annotated biological sequences.

Notes _____

Perform Reverse Transcription

To perform reverse transcription (convert total RNA to cDNA), Applied Biosystems recommends one of the kits listed below. For information, refer to the applicable kit protocol.

Kit	Considerations	Protocol
High Capacity RNA-to-cDNA Kit	<ul style="list-style-type: none"> Reaction components are premixed (2 tubes), allowing for fewer pipetting steps: <ul style="list-style-type: none"> 20X Enzyme Mix, containing MuLV Reverse Transcriptase and RNase Inhibitor Protein 2X RT Buffer, containing dNTP Mix, oligo d(T) primers, and random primers Short reaction time (0.5 to 1 hour) 	<i>High Capacity RNA-to-cDNA Kit Protocol</i>
High Capacity RNA-to-cDNA Master Mix	<ul style="list-style-type: none"> A single tube of reagents streamlines the workflow and reduces experimental variability 5X master mix. The RNA can be up to 80% of the final reaction volume. 	<i>High Capacity RNA-to-cDNA Master Mix Protocol</i>
High Capacity cDNA Reverse Transcription Kit	Reaction components are individually available (4 tubes): <ul style="list-style-type: none"> 10X RT Buffer 25X dNTP Mix 10X RT Random Primers MuLV Reverse Transcriptase 	<i>High-Capacity cDNA Reverse Transcription Kits Protocol</i>

IMPORTANT! When performing reverse transcription:

- Do not exceed the amounts of total RNA recommended in the protocol.
- To avoid introducing a 3' bias and adversely affecting the TaqMan Array card results, do not use any RT kits that use oligo d(T) primers exclusively.

Store the cDNA Samples

If you will not be using the cDNA samples immediately, store the samples at -15 to -25 °C.

To minimize repeated freeze-thaw cycles of cDNA, Applied Biosystems recommends that you store your cDNA samples in aliquots.

Notes _____

4

Perform the Experiment

This chapter covers:

- Prepare the TaqMan[®] Array Micro Fluidic Card 36
- Run the TaqMan[®] Array Micro Fluidic Card 46
- Analyze the Experiment 50

Prepare the TaqMan® Array Micro Fluidic Card

Prepare the PCR reaction mix (cDNA + master mix) (this page).	▶	Fill the TaqMan Array card with the reaction mix (page 37).	▶	Centrifuge the TaqMan Array card (page 39).	▶	Seal the TaqMan Array card (page 42).
---	---	---	---	---	---	---------------------------------------

Note: When preparing the TaqMan Array card, see the product part numbers and sizes under “For Preparing the TaqMan® Array Micro Fluidic Card” on page 61.

Recommended Amounts of cDNA

For the amplification (PCR) reactions, Applied Biosystems recommends that you use:

- 30 to 1000 ng (0.3 to 10 ng/μL) of cDNA (converted from total RNA) per fill reservoir. The amount to use depends on the expression level of your target genes and the number of target copies per well that you need to detect. For example, you can use:
 - 1000 ng (10 ng/μL) per fill reservoir to detect genes with low expression. However, the cDNA concentration will be high (10 ng/μL); be sure to use high-quality cDNA without inhibitors.
 - 100 to 200 ng per fill reservoir to detect genes with moderate expression.
 - 30 to 50 ng per fill reservoir to detect genes with moderate to high expression.
- The same amount of cDNA sample for all reactions.

Prepare the PCR Reaction Mix



WARNING CHEMICAL HAZARD. TaqMan® Universal PCR Master Mix may cause eye and skin irritation. Exposure may cause discomfort if swallowed or inhaled. Read the MSDS, and follow the handling instructions. Wear appropriate protective eyewear, clothing, and gloves.



WARNING CHEMICAL HAZARD. TaqMan® Gene Expression Master Mix is harmful if swallowed. Causes eye, skin, and respiratory tract irritation. Read Material Safety Data Sheet and follow the handling instructions. Wear protective eyewear, clothing, and gloves and use with adequate ventilation.

1. For each sample, determine the total number of reservoirs to be filled, based on the format of your TaqMan Array card.

Notes _____

2. Per the table below, calculate the total volume required for each reaction component:
 volume for 1 fill reservoir × the total number of fill reservoirs per sample
 Include 12.5% excess volume in your calculations to compensate for the loss that occurs during pipetting.

Reaction Component	Volume (µL) for 1 Fill Reservoir
cDNA sample (30 to 1000 ng [‡]) + nuclease-free water	50.0
TaqMan® Gene Expression Master Mix or TaqMan® Universal PCR Master Mix (with or without AmpErase® UNG)	50.0
Total Volume	100.0

[‡] Each sample-specific PCR reaction mix should contain 30 to 1000 ng (0.3 to 10 ng/µL) of total RNA converted to cDNA. The amount of cDNA to add depends upon the abundance of the specific gene transcript.

3. If frozen, thaw the cDNA samples on ice. Resuspend the cDNA samples by inverting the tube, then gently vortexing.
4. Mix the master mix thoroughly by swirling the bottle.
5. For each sample, label a 1.5-mL microcentrifuge tube, then add the required components to the labeled tube.
6. Cap the microcentrifuge tubes, then gently vortex the tubes to thoroughly mix the solution.
7. Briefly centrifuge the tubes to spin down the contents and eliminate air bubbles.

Fill the TaqMan Array Card

Guidelines to ensure optimal PCR performance

- Do not remove a TaqMan Array card from its packaging until the packaging has reached room temperature and you are ready to fill it with sample-specific PCR mix. Prolonged exposure to indoor lighting can photo-degrade the fluorescent probes contained within the card. Do not expose the card to sunlight.
- Fill each fill reservoir with sample-specific PCR mix made from a single cDNA sample.
- Add 100 µL of the sample-specific PCR mix per fill reservoir to ensure adequate filling. Volumes smaller than 100 µL will result in insufficiently filled cards.
- Do not add sample after centrifuging the cards. When you centrifuge the card, the sample-specific PCR mix resuspends the dried TaqMan® probes and primers within the wells of the card. Adding sample after centrifuging disrupts the resuspended assay positions.
- To ensure a high degree of reproducibility, Applied Biosystems recommends scheduling your runs so that each card is run as soon as possible. After sealing, there is no measurable well-to-well contamination for up to 64 hours.
- Applied Biosystems recommends that you run replicate PCR reactions. Refer to the *TaqMan® Gene Expression Master Mix Protocol*, Appendix B.

Notes _____

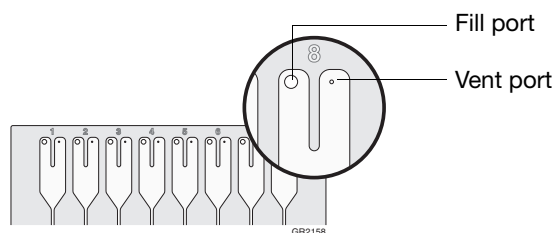
Fill the TaqMan Array card

1. Allow the TaqMan Array card to reach room temperature, then carefully remove it from its packaging.

Note: A minimum of 15 minutes at room temperature is required to equilibrate the card.

2. Place the TaqMan Array card on a lab bench, with the foil side down.
3. Load 100 μL of the desired sample-specific PCR reaction mix into a 100- μL micropipette.
4. Hold the micropipette in an angled position and place the tip in the fill port.

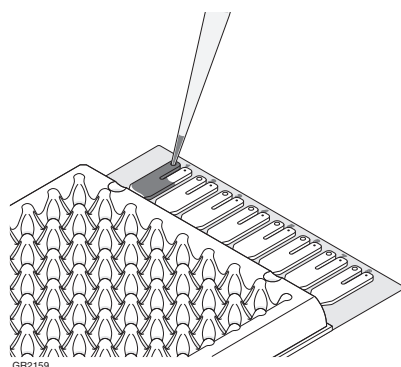
Note: There is a fill port on the left arm of each fill reservoir; it is the larger of the two holes.



IMPORTANT! Do not allow the tip to contact and possibly damage the coated foil beneath the fill port.

5. Dispense the sample-specific PCR reaction mix so that it sweeps in and around the fill reservoir toward the vent port.

IMPORTANT! Pipette the entire 100 μL into the fill reservoir. Be careful when pushing the micropipette plunger to its second stop position (to expel the sample-specific PCR reaction mix from the tip). If a large amount of air is released, it can push the reaction mix out of the fill reservoir via the vent port or introduce bubbles into the fill reservoir.



Notes _____

Centrifuge the TaqMan Array Card

After the fill reservoirs have been filled with the sample-specific PCR reaction mix, centrifuge the TaqMan Array card to distribute the reaction mix to the reaction wells.

IMPORTANT! You must use a Sorvall® or Heraeus centrifuge with the Sorvall/Heraeus Custom Buckets and card holders. The Custom Buckets and card holders are custom-made for the TaqMan Array cards. Do not use any other centrifuge or bucket/card holder system for this procedure. For more information, refer to the user manual for your centrifuge.

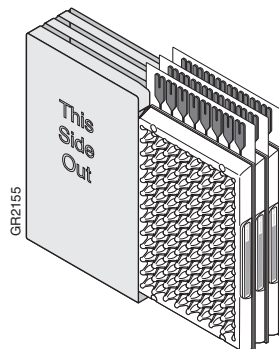
Note: The Sorvall and Heraeus centrifuges have either a touchpad control (EASYSet models) or knob-operated control panel (QUIKSet models). Both centrifuges use the same bucket type and card holder.

1. Place TaqMan Array cards into the Sorvall/Heraeus buckets:
 - a. Obtain an empty Sorvall/Heraeus Custom Bucket and card holder.

Note: The centrifuge holds four Sorvall/Heraeus buckets. Each bucket holds up to three TaqMan Array cards (loaded and/or blank balance cards) in the card holder. The card holder supports the TaqMan Array card during centrifugation.

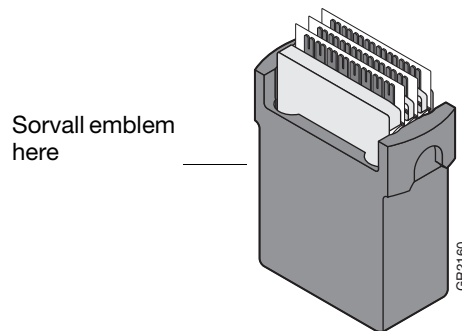
- b. Place the bucket on a lab bench, with the label facing you.
- c. Insert TaqMan Array cards into the card holder, making sure that:
 - The fill reservoirs project upwards out of the card holder.
 - The reaction wells face the same direction as the “This Side Out” label.
 - You use blank balance cards to fill any open positions in the card holder. Use the blank balance cards provided with the installation kits.

IMPORTANT! Be sure to use the blank balance cards to fill any open positions. The blank balance cards will balance the centrifuge and prevent damage to the card holder. If the card holder is not completely filled, the TaqMan Array card may become displaced during centrifugation, resulting in uneven filling.



Notes

- d. Place a filled card holder in the bucket so that the “This Side Out” label faces the front of the bucket.



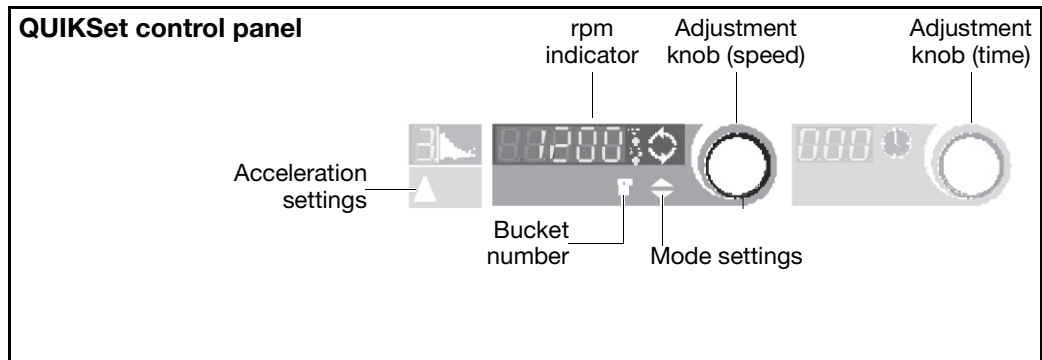
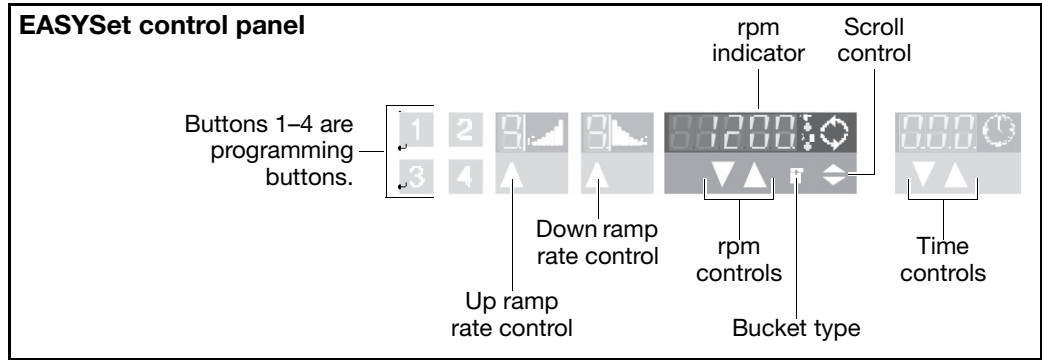
2. Set the centrifuge:
- Power on the centrifuge.
 - Use the front panel controls to set the bucket type to **15679**.

IMPORTANT! To ensure that the maximum rotational speed stays within the manufacturer’s specified limits, be sure to set the correct bucket type.

- c. Use the front panel controls to set the following operations parameters:

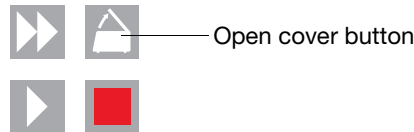
Parameter	EASySet (touchpad)	QUIKSet (knob-operated)
Up ramp rate	9	3
Down ramp rate	9	N/A
Rotational speed	1200 rpm (331 × g)	1200 rpm
Centrifugation time	2 × 1 min	2 × 1 min

Notes _____



3. Place the buckets into the centrifuge:

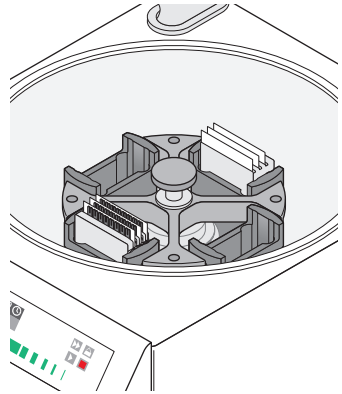
- a. Press the **Open** button on the centrifuge to open the centrifuge cover.



- b. Place each loaded bucket onto an open rotor arm of the centrifuge. Make sure each bucket can swing easily within its slotted position on the rotor arm.

IMPORTANT! The manufacturer recommends running the centrifuge with all four buckets. If the buckets are not fully loaded with TaqMan Array cards containing the sample-specific PCR reaction mix, place blank balance cards and card holders into the buckets. Make sure the buckets and their contents are balanced; opposing buckets should have matching weights.

Notes _____



- c. Close the centrifuge cover.
4. Run the centrifuge:
- a. Press the **Start** button. The centrifuge starts, then automatically stops after 1 min, per the programmed sequence.



START button



- b. Repeat [step a](#) so that the TaqMan Array cards are centrifuged for a total of two consecutive, 1-minute spins.

IMPORTANT! To ensure complete distribution of the PCR reaction mix, you must centrifuge the TaqMan Array cards for a total of two consecutive, 1-minute spins.

5. Remove the TaqMan Array cards:
 - a. Press the **Open** button.
 - b. When the cover has fully opened, remove the buckets from the centrifuge, then remove the card holders from the buckets.
 - c. Remove all TaqMan Array cards from the buckets by gently lifting them by their carrier sides.
6. Examine the TaqMan Array cards to be sure filling is complete. The amount of PCR reaction mix remaining in the fill reservoirs should be consistent from reservoir to reservoir.

Seal the TaqMan Array Card

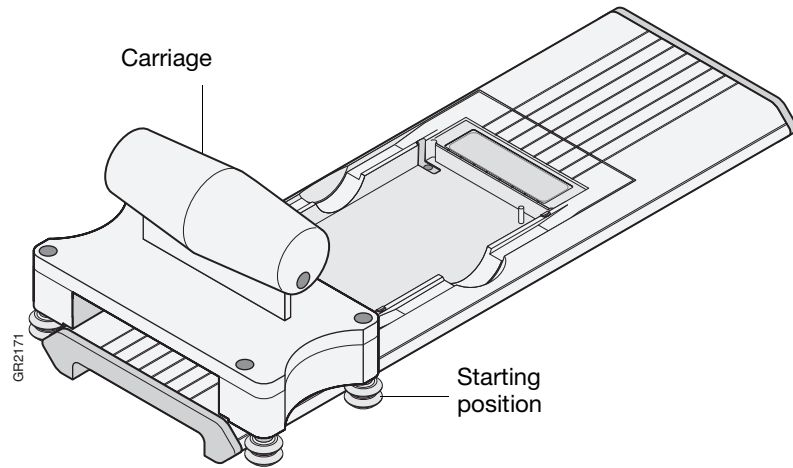
The TaqMan® Array Micro Fluidic Card Sealer isolates the wells of a TaqMan Array card after it is loaded with PCR reaction mix. The sealer uses a precision stylus assembly (carriage) to seal the main fluid distribution channels of the TaqMan Array card.

IMPORTANT! Proper operation of the sealer using a slow, steady, and deliberate motion is critical to the successful use of the TaqMan Array card.

Notes _____

1. Position the sealer:

- a. Place the sealer on a sturdy lab bench, approximately waist high so that it can be easily used.
- b. Turn the sealer so that the front end (the “starting position” shown below) is closest to you and the back end is farthest from you. In the correct position, the arrows on the sealer are pointing away from you.

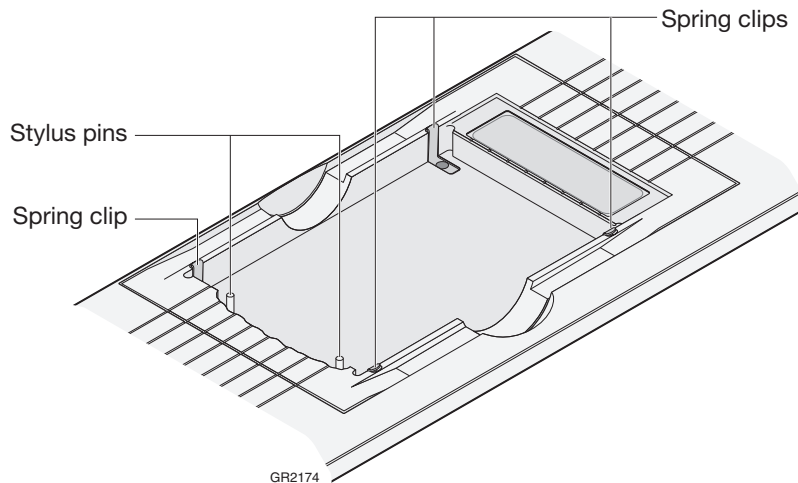


- c. Place the sealer’s carriage in its starting position.

IMPORTANT! Never insert a TaqMan Array card into the sealer if the carriage is not in its starting position. The TaqMan Array card will be irreparably damaged if the carriage is moved across it toward its starting position.

2. Insert a TaqMan Array card into the sealer:

- a. Orient the TaqMan Array card in the proper direction over the sealer’s insert plate. The card’s fill reservoir end should be the end closest to the arrows etched in the base of the sealer.
- b. Line up the card’s rear pin grooves, foil side up, to the stylus pins on the sealer.



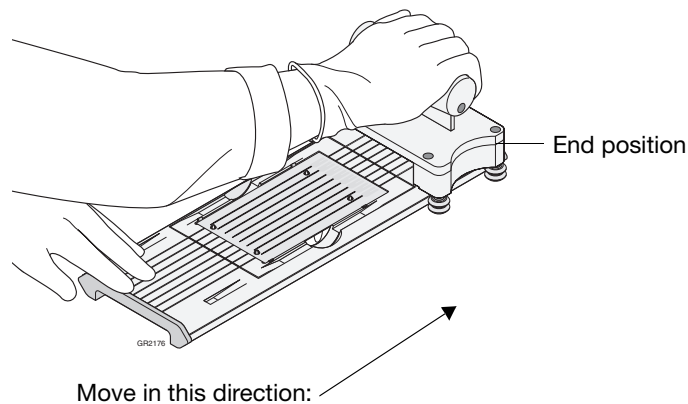
Notes _____

- c. Gently place the card on top of the insert plate and ensure that the front end of the card is held securely in place by the spring clips.
- d. Gently push the card until it is seated securely in the insert plate.

Note: When properly seated, the TaqMan Array card's foil surface should be level with the base of the sealer. The four spring clips ensure that the card is held in the proper position.

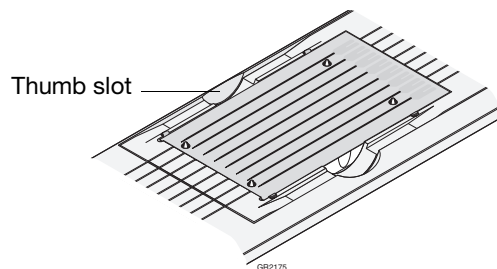
3. Push the carriage across the base of the sealer in the direction of the arrows. Use a slow, steady, and deliberate motion to push the carriage across the entire length of the TaqMan Array card until the carriage reaches the mechanical stops. It is important to avoid moving the carriage rapidly across the card.

CAUTION The sealer has mechanical stops at both ends to prevent the carriage from coming off. Therefore, do not use excessive force or speed when pushing the carriage.




IMPORTANT! Do not move the carriage back before removing the TaqMan Array card.

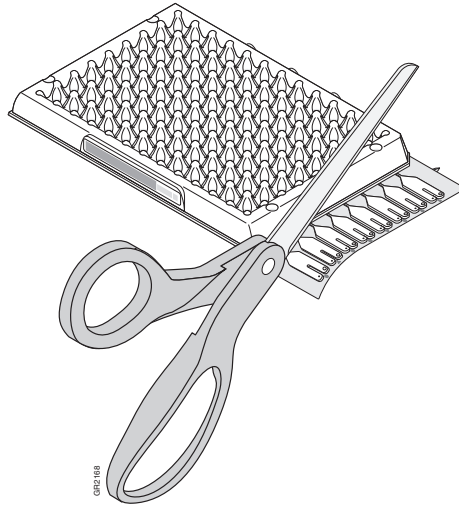
4. Remove the sealed TaqMan Array card by grasping its sides and lifting it off the sealer's insert plate. In the middle of the sealer's insert plate, there is a thumb slot to help you easily access one side of the card.



Notes _____

5. Inspect the TaqMan Array card for proper sealing. The indentations from the stylus assembly should match up with the card's main channels. If the indentations do not match up or if the foil is in any way damaged, do not use the TaqMan Array card.
6. Using scissors, trim the fill strip from the TaqMan Array card. Use the edge of the card's carrier as a guide.

 **CAUTION** PHYSICAL INJURY HAZARD. Take care when trimming off the fill strip. Use scissors rather than razor blades or other unprotected cutting devices.



Notes _____

Run the TaqMan® Array Micro Fluidic Card

In the SDS software, set up the experiment (SDS plate document), using the SDS Setup File included on the Array Information CD (this page).

▶ Perform the run on a 7900HT Fast System (page 48).

Note: When running the TaqMan Array card, see the product part numbers under “For Running and Analyzing the TaqMan® Array Micro Fluidic Card” on page 62.

About Running Multiple Cards

After the TaqMan Array cards have been loaded and sealed, they are stable for at least 64 hours. Therefore, for high-throughput TaqMan Array card processing, you can use the Automation Accessory. For information on the Automation Accessory, refer to the *Applied Biosystems 7900HT Fast Real-Time PCR System and SDS Enterprise Database User Guide*.

Set Up the SDS Plate Document

1. Start SDS Software v2.1 or later.
2. Select **File ▶ New**.
3. Complete the New Document dialog box:
 - a. From the Assay dropdown menu, select $\Delta\Delta C_T$ (RQ) or **Relative Quantification**.
 - b. From the Container dropdown menu, select **384 Wells TaqMan Low Density Array**.
 - c. Complete the remaining fields as shown, then click **OK**.

The Assay field selections vary, depending on your software version.

(Recommended) Click the Barcode field, then scan or type the barcode.

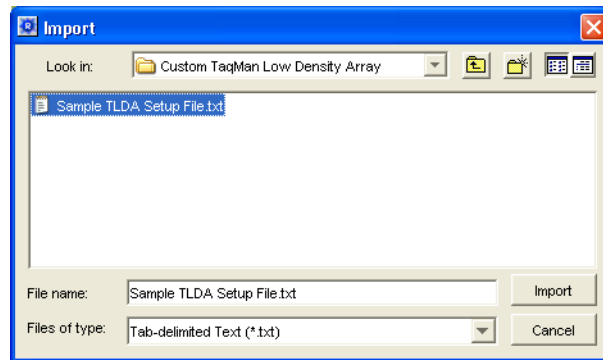
4. Import the SDS Setup File (*.txt) into the new SDS plate document:
 - a. In the CD drive, insert the Array Information CD that shipped with your TaqMan Array card.
 - b. In the SDS software, select **File ▶ Import**.

Notes _____

- c. In the Import dialog box, navigate to the SDS Setup File for your TaqMan Array card, then click **Import**. The SDS software imports information from the SDS Setup File into the SDS plate document.

Note: The SDS software uses the information from the SDS Setup File to automatically configure the plate grid and setup table with detector, detector task, marker, and sample data. For details on the SDS Setup File, see [page 26](#).

IMPORTANT! Modifying the contents of the SDS Setup File can corrupt the file, making the file unusable (that is, you will not be able to access information for the TaqMan Array card).



5. Save the SDS plate document:
 - a. Select **File ▶ Save As**.
 - b. Navigate to a save location.
 - c. Enter a name for the SDS plate document.
 - d. For Files of Type, select **SDS 7900HT Document (*.sds)** or **SDS 7900HT Template Document (*.sdt)**.

Note: You can save the plate document as an SDS plate document (*.sds) or SDS template (*.sdt). Saving the plate document as an SDS template is recommended when you want to create duplicate plate documents for a series of TaqMan Array cards with identical assay configurations. For more information on SDS templates, refer to the *SDS Online Help*.

- e. Click **Save**.

Notes _____


Perform the Run A TaqMan® Array Micro Fluidic Card Thermal Cycling Block must be installed on the instrument. For more information, see “[Instrument Overview](#)” on page 5.

**CAUTION**

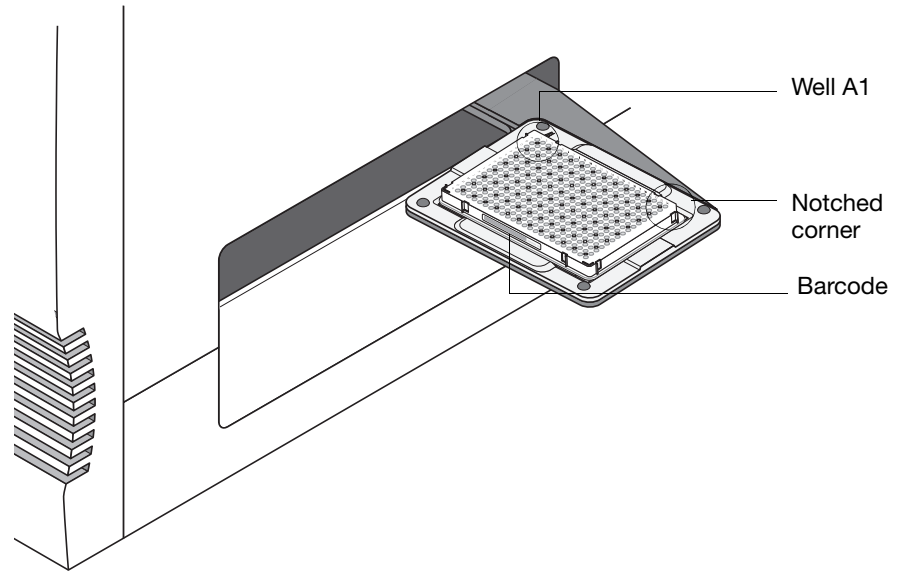
Surface may be hot.

1. Open the SDS plate document in the SDS software.
2. Select the **Instrument** tab.
3. Use the default thermal cycling conditions, as shown in the Thermal Cycler tab.

Note: When you selected 384 Well TaqMan Low Density Array ([step 3 on page 46](#)), the SDS software automatically set the appropriate thermal cycling conditions for the TaqMan Array cards.

4. Select the **Real-Time** tab, then verify that  is displayed in the status bar. If the software is not connected to the instrument, click **Connect to Instrument**.
5. If the instrument tray is inside the instrument, click **Open/Close** to rotate the instrument tray to the OUT position.
6. Verify that the TaqMan Array Micro Fluidic Card Thermal Cycling Block is installed in the instrument tray. If the block is not installed, you must:
 - Remove the existing block.
 - Install the TaqMan Array Micro Fluidic Card Thermal Cycling Block.
 - Change the plate adapter.
For detailed information on changing the instrument blocks, refer to the *Applied Biosystems 7900HT Fast Real-Time PCR System Maintenance and Troubleshooting Guide*.
7. Place the prepared TaqMan Array card in the instrument tray with:
 - Well A1 at the top left corner of the tray and the notched corner at the top right.
 - The barcode toward the front of the instrument.

Notes



8. Click **Start Run**. The instrument tray rotates to the IN position. During the run, the instrument displays real-time status information in the Instrument ► Real-Time tabs and records the fluorescence emissions. During the run, you can view the data (as the data are generated in real-time).
9. When the Run Complete dialog box appears, click **OK** to close the dialog box, click **Open/Close**, then remove the TaqMan Array card from the instrument tray.

Notes _____

Analyze the Experiment

Review the results (this page).

▶ (Optional) Perform downstream analysis ([page 51](#)).

Note: When analyzing the experiment, see the product part numbers under “[For Running and Analyzing the TaqMan® Array Micro Fluidic Card](#)” on [page 62](#).

The comparative C_T ($\Delta\Delta C_T$) method uses arithmetic formulas to determine change in expression of a target in an experimental sample relative to the same target in a reference sample. The $\Delta\Delta C_T$ method is used for high-throughput measurements of relative gene expression when there are many genes in many samples.

For details on how to analyze $\Delta\Delta C_T$ experiments and set up an RQ Study, refer to the *7900HT Fast Real-Time PCR System Relative Quantitation Using Comparative C_T Getting Started Guide*. Review the chapter on analyzing and viewing RQ Study data in the RQ Manager. Brief procedures are provided below.

Review the Results

1. Transfer the SDS plate document file (*.sds) into an RQ Study, then analyze the study. For optimal results, Applied Biosystems recommends the following:
 - For Applied Biosystems TaqMan master mixes, analyze the study with Automatic Baseline and Manual C_T set to **0.2**.
 - View the amplification plot, then review the baseline and threshold settings. If needed, adjust the baseline and threshold settings for individual assays.

IMPORTANT! The same threshold setting must be used for an assay across all samples or TaqMan Array cards within a study.

Note: You can use either TaqMan Universal PCR Master Mix or TaqMan Gene Expression Master Mix in your experiment. However, Applied Biosystems strongly recommends that you use only one type of master mix per study.

2. In the well table or results table, review the C_T values for each well and for each replicate group. If needed, omit outliers.

Notes _____

3. Review the gene expression plot (for SDS Software v2.3, view the amplification plots in the Plate, Detector, or Sample view).

Note: Relative gene expression measurements within and across manufacturing lots of TaqMan Array cards are reproducible. You can compare normalized data (ΔC_T values), but not raw C_T values.

IMPORTANT! If you are using different lots of TaqMan Array cards with the same set of assays, be sure to use the correct SDS Setup File. Different lots with the same set of assays may ship with different SDS Setup Files.

**(Optional)
Perform
Downstream
Analysis**

For further data analysis, the raw C_T and the ΔC_T values can be exported. If you are using SDS Software v2.3, you can export the values from the Plate Centric view.

For detailed downstream analysis, Applied Biosystems recommends the Real-Time StatMiner™ Software. For information, refer to:

www.integromics.com/StatMiner.php

Notes _____

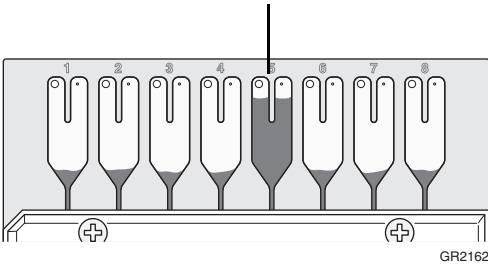
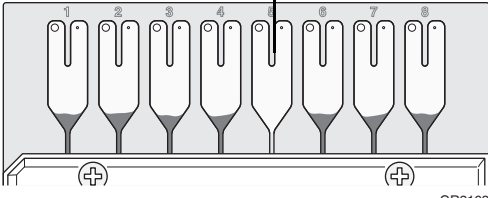
Notes _____



Troubleshooting

The following table lists some possible errors, possible causes, and recommended actions.

Observation	Possible Cause	Recommended Action
After removing the TaqMan® Array Micro Fluidic Card from its packaging...		
Water condenses on the reaction wells (optical side of the TaqMan Array card).	The TaqMan Array card may not have come to room temperature before being removed from its packaging.	Remove condensation by lightly blowing on the reaction wells. You can use room temperature pressurized nitrogen or an air blower. IMPORTANT! Be sure to remove all water condensation. The exterior surface of the reaction wells (optical side of the TaqMan Array card) must be free of water condensation.
After pipetting...		
Too little PCR reaction mixture has gone into the fill reservoir.	The PCR mixture was not correctly pipetted into the fill reservoir.	Take care to correctly pipette the entire PCR reaction mixture (100 µL) into the fill reservoir. Add more sample.
Some of the PCR reaction mixture leaks out of the vent port in the fill reservoir.		
Bubbles introduced into fill ports.	Air was introduced from pushing the pipette plunger in to its second stop position.	Inspect the affected wells after centrifuging and sealing the TaqMan Array card. Note wells that contain bubbles, and delete these wells from analysis.

Observation	Possible Cause	Recommended Action
After centrifuging...		
(Rare) Reaction mix remains in a fill reservoir.	The fill port is blocked (the fill reservoir is defective).	Inspect the TaqMan Array card for a blocked fill port or a pinched channel. If the fill reservoir is defective, contact Applied Biosystems Technical Support.
	Filling is incomplete or not consistent.	Centrifuge the TaqMan Array card again for 1 minute. If the reservoir filling is still not complete after the additional centrifuge cycle, and you choose to process the TaqMan Array card further, you should void the results for the affected fill reservoir (sample).
<p>Excess reaction mix in a fill reservoir</p>  <p style="text-align: right; font-size: small;">GR2162</p>		<p>IMPORTANT! Do not exceed 1200 rpm or accumulated centrifugation times of more than 3 minutes. Excessive centrifugation speeds and times may deform the TaqMan Array card.</p>
(Rare) A fill reservoir is completely drained.	Some wells were not filled properly.	If you choose to process the TaqMan Array card further, you should void the results for the affected fill reservoir (sample).
<p>Fill reservoir is completely drained</p>  <p style="text-align: right; font-size: small;">GR2163</p>		
After Run/Analysis...		
Amplification Plots are noisy across portions of the TaqMan Array card. In the Multicomponent Plot, the FAM™ and ROX™ dye signals are below the background for the affected wells.	The TaqMan Array card is misaligned in the TaqMan® Array Micro Fluidic Card Thermal Cycling Block.	Check the TaqMan Array card for crushed or distorted feet. If there are crushed feet, contact Applied Biosystems Technical Support or contact your Applied Biosystems Field Applications Specialist (FAS).
No amplification across large portions of the TaqMan Array card. In the Multicomponent Plot, the FAM™ and ROX™ dye signals are below the background.		
No amplification. The Multicomponent Plot shows a rapid drop in ROX™ dye signal.	Empty wells due to improper staking.	Use a steady, even motion when using the staker.

Notes

Observation	Possible Cause	Recommended Action
No amplification within or across one or more rows within a single fill reservoir. The Multicomponent Plot shows a rapid drop in ROX™ dye signal.	Empty wells due to improper staking.	Use a steady, even motion when using the staker.
	Empty wells due to misalignment of the staker stylus.	If the staker stylus is misaligned, contact your Applied Biosystems FAS.
	No master mix loaded in the fill reservoir.	Add master mix.
No amplification or poor amplification for a specific assay.	Low-abundance gene.	<ul style="list-style-type: none"> • Use more cDNA. • Preamplify the cDNA.
The SDS v2.3 QC Flag is <i>BPR</i> (Bad Passive Reference). The Multicomponent Plot may show a gradual drop in ROX™ dye fluorescence.	Minor leaking from the wells due to inadequate sealing.	Use a steady, even motion when using the staker.
	Bubbles in well(s).	<p>Use proper pipetting techniques to avoid introducing bubbles when loading the fill reservoirs.</p> <p>Note: To determine if the data are usable:</p> <ul style="list-style-type: none"> • Inspect the Multicomponent Plot. The FAM™ and ROX™ dye signals should be parallel. • Inspect the Amplification Plot. There should not be any spikes or bumps in the exponential phase where the plot crosses the threshold. Compare the C_T values to replicate wells. If the values are comparable, then the data are usable; if the values are not comparable, remove the well(s) as an outlier.

Notes

Observation	Possible Cause	Recommended Action
Replicates have poor precision (the standard deviation value is > 0.5 for assays with a C _T value that is < 30).	Individual assay performance (rising baseline or weak amplification).	Use the manual baseline setting. Adjust the baseline and threshold settings, then reanalyze.
	Bubbles in well(s).	<ul style="list-style-type: none"> • Use proper pipetting techniques to avoid introducing bubbles when loading the fill reservoirs. • Adjust the baseline and threshold settings, then reanalyze. • Remove the replicate well(s) as an outlier.
	Leaky well(s) due to improper staking. The QC Flag is <i>BPR</i> .	<ul style="list-style-type: none"> • Omit the leaky well(s) from analysis, then reanalyze the data. • Use a steady, even motion when using the staker.
	Not all of the card holder positions were filled before centrifuging.	Be sure to fill all of the card holder positions with blank TaqMan Array cards before centrifuging.
	Non-validated centrifuge.	Use a Sorvall® or Heraeus centrifuge.
	Non-AB master mix.	Use AB master mix.
No amplification or poor precision across many assays.	Non-AB master mix.	Check the protocol; be sure to add the correct amount and the correct type of sample and master mix.
	No reagent (master mix).	
	No sample.	
	Inhibitor in the sample.	

Notes _____



TaqMan[®] Endogenous Control Assays

To help with normalization, you can select a human, mouse, or rat endogenous control assay from the list of inventoried endogenous controls in Table 1 below.

Assays for normalization

A valid normalization or endogenous control is needed to correct for differences in RNA sampling and sample variation. The ideal control is expressed consistently under experimental conditions and is sufficiently abundant across all tissues and cell types studied.

Note: Applied Biosystems recommends that you experimentally validate all candidate genes to be used as endogenous controls.

Table 1 Candidate endogenous control assays for normalization (PN 4331182)

Gene symbol	Gene name	Human assay ID	Mouse assay ID	Rat assay ID
18S	Eukaryotic 18S rRNA	Hs99999901_s1	Hs99999901_s1	Hs99999901_s1
ACTB	Actin, Beta, cytoplasmic	Hs99999903_m1	Mm00607939_s1	Rn00667896_m1
B2M	Beta-2-microglobulin	Hs99999907_m1	Mm00437762_m1	Rn00560865_m1
GAPDH	Glyceradehyde-3-phosphate dehydrogenase	Hs99999905_m1	Mm99999915_g1	Rn99999916_s1
GUSB	Beta glucuronidase	Hs99999908_m1	Mm00446953_m1	Rn00566655_m1
HMBS	Hydromethylbilane synthase	Hs00609297_m1	Mm00660262_g1	Rn00565886_m1
HPRT1	Hypoxanthine guanine phosphoribosyl transferase 1	Hs99999909_m1	Mm00446968_m1	Rn01527840_m1
IP08	Importin 8	Hs00183533_m1	Mm01255158_m1	Not Available
PGK1	Phosphoglycerate kinase 1	Hs99999906_m1	Mm00435617_m1	Rn00821429_g1
POLR2A	Polymerase (RNA) II (DNA directed) polypeptide A, 220 kDa	Hs00172187_m1	Mm00839493_m1	Rn01752026_m1
PPIA	Peptidylprolyl isomerase A	Hs99999904_m1	Mm02342430_g1	Rn00690933_m1
RPLP0	Ribosomal protein, large, P0	Hs99999902_m1	Mm00782638_s1	Rn01479927_g1
TBP	TATA box binding protein	Hs99999910_m1	Mm00446973_m1	Rn01455648_m1
TFRC	Transferrin receptor	Hs99999911_m1	Mm00441941_m1	Rn01474695_m1
UBC	Ubiquitin C	Hs00824723_m1	Mm01201237_m1	Rn01789812_g1
YWHAZ	Tyrosine 3-monooxygenase, or tryptophan 5-monooxygenase activation protein, zeta polypeptide	Hs00237047_m1	Mm01158417_g1	Rn00755072_m1



Notes _____



Required Materials

This appendix covers:

- For Preparing Your Samples 60
- For Preparing the TaqMan[®] Array Micro Fluidic Card 61
- For Running and Analyzing the TaqMan[®] Array Micro Fluidic Card 62
- For General Use 63



For Preparing Your Samples

Reagents

Item	Size	Part Number
TaqMan® Gene Expression Cells-to-CT™ Kit	100 lysis reactions/500 PCR	AM1728
	400 lysis reactions/2000 PCR	AM1729
High Capacity cDNA Reverse Transcription Kit	200 reactions	4368814
	200 reactions with RNase Inhibitor	4374966
	1000 reactions	4368813
	1000 reactions with RNase Inhibitor	4374967
High Capacity RNA-to-cDNA Master Mix	200 reactions	4390778
High Capacity RNA-to-cDNA Kit	50 reactions	4387406

Notes _____



For Preparing the TaqMan® Array Micro Fluidic Card

Reagents

Item	Size; Description	Part Number
TaqMan® Gene Expression Master Mix (2X)	Mini-Pack; One 1-mL tube	4370048
	1-Pack; One 5-mL bottle	4369016
	2-Pack; Two 5-mL bottles	4369514
	5-Pack; Five 5-mL bottles	4369510
	10-Pack; Ten 5-mL bottles	4369542
	Bulk-Pack; One 50-mL bottle	4370074
TaqMan® Universal PCR Master Mix with AmpErase® UNG (2X)	1-Pack; One 5-mL bottle	4304437
	2-Pack; Two 5-mL bottles	4364338
	5-Pack; Five 5-mL bottles	4364340
	10-Pack; Ten 5-mL bottles	4305719
	Bulk-Pack; One 50-mL bottle	4326708
TaqMan® Universal PCR Master Mix, No AmpErase® UNG	1-Pack; One 5-mL bottle	4324018
	2-Pack; Two 5-mL bottles	4364341
	5-Pack; Five 5-mL bottles	4364343
	10-Pack; Ten 5-mL bottles	4324020
	Bulk-Pack; One 50-mL bottle	4326614
TaqMan® Array Custom Micro Fluidic Card	One TaqMan Array card; 384 wells per card	See Chapter 2 on page 9 for ordering information.
TaqMan® Gene Set	One TaqMan Array card; 384 wells per card	
TaqMan® Gene Signature Array	The endogenous control Gene Signature Arrays come in sets of two cards; the remaining Gene Signature Arrays come in sets of four cards. 384 wells per card.	

Equipment

Item	Part Number
Micropipettes, 100-µL	Major laboratory supplier (MLS)
Sorvall® or Heraeus centrifuge	Contact your local Applied Biosystems Sales Representative.
Rotor	

Notes



Item	Part Number
Sorvall/Heraeus Custom Buckets	Included in the 7900HT TaqMan® Array Micro Fluidic Card Upgrade (hardware upgrade kit) .
Sorvall/Heraeus card holders	
TaqMan® Array Micro Fluidic Card Sealer	

For Running and Analyzing the TaqMan® Array Micro Fluidic Card

Instrument and Accessories

Item	Part Number
Applied Biosystems 7900HT Fast Real-Time PCR System	Contact your local Applied Biosystems Sales Representative.
7900HT TaqMan® Array Micro Fluidic Card Upgrade (hardware upgrade kit) This kit includes: <ul style="list-style-type: none"> • TaqMan® Array Micro Fluidic Card Thermal Cycling Block • TaqMan® Array Micro Fluidic Card Sealer • Four centrifuge buckets and card holders (specific to the Sorvall® or Heraeus centrifuge) • 7900HT TaqMan® Array Micro Fluidic Card Chemical Installation Kit: <ul style="list-style-type: none"> – Spectral Calibration Kit – TaqMan® Array Micro Fluidic Card Instrument Verification RNase P Kit – Calibration Cards (4 cards) 	4329012

Software

Item	Part Number
SDS Software v2.1 or later Note: SDS Software v2.1 through v2.2.2 include the $\Delta\Delta C_T$ Study program. SDS Software v2.3 includes the RQ Manager program. Both programs are provided for relative quantitation analysis.	Contact your local Applied Biosystems Sales Representative.
Real-Time StatMiner™ Software	Go to www.integromics.com/StatMiner.php .

Notes _____



For General Use

For more product recommendations, visit the real-time PCR decision tree:

www.appliedbiosystems.com/qpcrtree

Item	Source
Disposable gloves	MLS
Microcentrifuge	MLS
Microcentrifuge tubes, 1.5-mL	MLS
Nuclease-free Water (not DEPC-treated)	Applied Biosystems PN AM9930
Pipette tips, with filter plugs	MLS
Pipettes, positive-displacement or air-displacement	MLS
Polypropylene tubes	MLS
Tris-EDTA (TE) buffer, pH 8.0	MLS
Vortexer	MLS

Notes _____



Notes _____



Prevent Contamination

PCR assays require special laboratory practices to avoid false positive amplifications. The high throughput and repetition of these assays can lead to amplification of one DNA molecule.

Good Laboratory Practices for PCR

When preparing samples for PCR amplification:

- Wear a clean lab coat (not previously worn while handling amplified PCR products or used during sample preparation) and clean gloves.
- Change gloves whenever you suspect that they are contaminated.
- Maintain separate areas and dedicated equipment and supplies for:
 - Sample preparation
 - PCR setup
 - PCR amplification
 - Analysis of PCR products
- Never bring amplified PCR products into the PCR setup area.
- Open and close all sample tubes carefully. Try not to splash or spray PCR samples.
- Keep reactions and components capped as much as possible.
- Use a positive-displacement pipette or aerosol-resistant pipette tips.
- Clean lab benches and equipment periodically with 10% bleach solution.



Notes _____

Numerics

7900HT Fast Real-Time PCR System 5

A

AIF. See Assay Information File

amplification

no/poor amplification 55, 56

noisy amplification plot 54

analyze the TaqMan Array card 50–51

Applied Biosystems

contacting vii

Technical Support vii

Array Information CD 26

Array Map File

description 27

formats 27

Assay Information File

description 27

B

balance cards 39, 41

biohazardous waste, handling xii

bubbles 53

C

CAUTION, description x, 48

cDNA

convert from RNA 34

recommended amounts 36

centrifuge system

balance cards 39, 41

bucket requirements 39

centrifuge a TaqMan Array card 39

components 5

EASYset control panel 40

QUIKset control panel 40

TaqMan Array card, placing in bucket 39

chemical safety x

chemical waste safety xii

condensation 53

contamination. See prevent contamination 65

conventions

for describing menu commands v

IMPORTANT! v

Notes v

text v

user attention words v

D

DANGER, description x

downstream analysis 51

E

EASYset control panel 40

efficiency, TaqMan Gene Expression Assay 3

excess reaction mix 54

experiment

analyze 50–51

before you begin 5

review results 50

F

filling a TaqMan Array card

guidelines 37

procedure 38

formats

Array Map File 27

TaqMan Array card 22–25

G

genomic DNA detection 33

guidelines

chemical safety x

chemical waste safety xii

filling a TaqMan Array card 37

prevent contamination 65

RNA template 32

H

Help system, accessing vii

I

import the SDS Setup File 46

IMPORTANT, description x

instruments

- required components 5
 - required to run TaqMan Array card 5
- L**
- laboratory practices 65
- M**
- materials. *See* required materials 59–63
 - MSDSs
 - description xi
 - obtaining vii, xi
 - multiple cards 46
- O**
- online Help. *See* Help system
 - ordering
 - TaqMan Array Custom Micro Fluidic Card 10, 19, 21
 - TaqMan Gene Sets 10, 19, 21
 - TaqMan Gene Signature Array 16
- P**
- PCR step
 - TaqMan Array card, placing in bucket 39
 - poor precision 55
 - prevent contamination
 - good laboratory practices for PCR 65
 - guidelines 65
 - product overview
 - TaqMan Array card 2
 - TaqMan Array Custom Micro Fluidic Card 2
 - TaqMan Gene Expression Assay 3
 - TaqMan Gene Sets 2
 - TaqMan Gene Signature Array 2
- Q**
- QUIKset control panel 40
- R**
- radioactive waste, handling xii
 - reaction mix
 - prepare 36
 - troubleshooting 53, 54
 - Real-Time StatMiner Software 51
 - required materials 59–63
 - general use 63
 - running and analyzing 62
 - sample preparation 60
 - TaqMan Array card preparation 61
 - reverse transcription, performing on samples 34
 - RNA
 - convert to cDNA 34
 - detect genomic DNA 33
 - evaluate 33
 - isolate total 32
 - template guidelines 32
 - run the TaqMan Array card 48
 - running multiple TaqMan Array cards 46
- S**
- safety
 - biological hazards xiii
 - guidelines x, xii
 - samples
 - detect genomic DNA 33
 - evaluate RNA 33
 - isolate total RNA 32
 - perform reverse transcription 34
 - prepare 32–34
 - RNA template guidelines 32
 - store 34
 - SDS Plate Document setup 46
 - SDS Setup File
 - description 26
 - import 46
 - using 46
 - seal the TaqMan Array card 42
 - StatMiner Software 51
 - store samples 34
- T**
- TaqMan Array card
 - analyze the experiment 50–51
 - applications 4
 - centrifuge 39
 - diagram 4
 - downstream analysis 51
 - fill 38
 - filling guidelines 37
 - formats 22–25
 - instruments required to run 5
 - multiple cards 46
 - placing in bucket 39
 - product overview 2
 - reaction mix 36
 - recommended amounts of cDNA 36
 - review experiment results 50
 - run 48
 - seal 42
 - set up the SDS Plate Document 46
 - troubleshooting 53–56

- workflow for performing experiments with [6](#)
- TaqMan Array Custom Micro Fluidic Card
 - ordering [10](#), [19](#), [21](#)
 - product overview [2](#)
- TaqMan Array Micro Fluidic Card Sealer [5](#), [42](#)
 - diagram [43](#)
- TaqMan Array Micro Fluidic Card Thermal Cycling Block [5](#)
- TaqMan Gene Expression Assay
 - efficiency [3](#)
 - product overview [3](#)
- TaqMan Gene Sets
 - ordering [10](#), [19](#), [21](#)
 - product overview [2](#)
- TaqMan Gene Signature Array
 - ordering [16](#)
 - product overview [2](#)
- Technical Support, contacting [vii](#)
- training, information on [vii](#)
- troubleshooting [54](#)
 - bubbles [53](#)
 - condensation [53](#)
 - drained fill reservoir [54](#)
 - no/poor amplification [55](#), [56](#)
 - noisy amplification plot [54](#)
 - poor precision [55](#)
 - reaction mix leaks [53](#)
 - too little reaction mix [53](#)

U

- user attention words, described [v](#)

W

- WARNING, description [x](#)
- waste disposal, guidelines [xii](#)
- workflow [6](#)

Worldwide Sales and Support

Applied Biosystems vast distribution and service network, composed of highly trained support and applications personnel, reaches 150 countries on six continents. For sales office locations and technical support, please call our local office or refer to our Web site at www.appliedbiosystems.com.

Headquarters

850 Lincoln Centre Drive
Foster City, CA 94404 USA
Phone: +1 650.638.5800
Toll Free (In North America): +1 800.345.5224
Fax: +1 650.638.5884

07/2010