appliedbiosystems

TaqMan™ SCID/SMA Plus Assay

USER GUIDE

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Revision	Date	Description
B.0	11 August 2021	• Updated the TREC Construct ID. • Added Cat. No. A52275 for 100 reactions. • Added recommendations regarding plasmid orders. • Updated real-time PCR reactions preparation to include information about NTC.
A.0	12 January 2021	New document.

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1 Product information

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IMPORTANT! Before using this product, read and understand the information in the "Safety" appendix in this document.

Product description

The Applied Biosystems™ TaqMan™ SCID/SMA Plus Assay is a multiplexed real-time PCR assay that detects, with high specificity, TREC, KREC, and SMN1. The assay is designed to be used on dried blood spot (DBS) punches and extracts DNA directly from the punches without the need for a DNA purification step. It is compatible with QuantStudio™ instruments that have been calibrated for FAM™ dye, VIC™ dye, JUN™ dye, ABY™ dye, and MUSTANG PURPLE™ dye. A 96-well plate and a 384-well plate workflow are available.

The assay includes the following key features:

- A simple workflow to extract DNA directly from a DBS punch.
- An optimized SMN2 blocker to increase the specificity to SMN1.

The assay has been optimized for high specificity to *SMN1* because it can be difficult to accurately detect the presence of just *SMN1*, which has high homology with *SMN2*. In a sample with a homozygous deletion of *SMN1* and in the presence of a high number of *SMN2* copies (greater than what would be biologically expected), the assay still detects the presence of a homozygous *SMN1* deletion.

Contents and storage

Cat. No.[1]	Number of reactions	Storage
A52275	100	Follow the recommended storage conditions listed on each component label. **Note:** Components A48609 and A48610 can be stored at 2–8°C for up to 3 months.
A48566	1,000	
A48567	4,000	
A48568	8,000	
A48569	20,000	

[1] Catalog numbers that appear as links open the web pages for those products.

Required materials not supplied

Unless otherwise indicated, all materials are available through **thermofisher.com**. "MLS" indicates that the material is available from **fisherscientific.com** or another major laboratory supplier.

Catalog numbers that appear as links open the web pages for those products.

Item	Source
One of the following Applied Biosystems™ instruments:	
• QuantStudio™ 6 / QuantStudio™ 7 Flex Real-Time PCR System • QuantStudio™ 12K Flex Real–Time PCR System • QuantStudio™ 5 Real-Time PCR System • QuantStudio™ Dx Real-Time PCR Instrument (RUO mode) Or use a compatible real-time PCR instrument from another supplier.	Contact your local sales office.
Equipment	
Centrifuge with adapter for 96- or 384-well plates	MLS
Laboratory mixer (Vortex or equivalent)	MLS
Microplate shaker	MLS
Microcentrifuge	MLS
Pipettors	MLS
Cooling block	MLS
Plastics and other consumables	
Plates and seals for your instrument	thermofisher.com/plastics
Disposable gloves	MLS
Pipette tips with filters	MLS
Polypropylene tubes	MLS
Reagents and kits	
Tween®-20 Surfact-Amps™ Detergent Solution	28320
TE Buffer	12090015
PBS (1X), pH 7.4	10010049
Thesit™ reagent	MLS
Nuclease-free Water (not DEPC-Treated)	AM9938

Item	Source
Plasmids	
TREC plasmid (GeneArt™ Construct ID 18ACJFZP)	See “Plasmid ordering instructions”
KREC plasmid (GeneArt™ Construct ID 18ACJFTP)	

Plasmid ordering instructions

To reorder the TREC plasmid or KREC plasmid, complete the steps as follows:

1. Email Geneartsupport@thermofisher.com.
2. Request a plasmid "reorder" using the TREC and KREC construct ID.
3. Request 5 µg, lyophilized.

2 Calibration information

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Dye spectral calibration plates for the QuantStudio™ 6 / QuantStudio™ 7 Flex Real-Time PCR System

See your instrument user guide for recommended calibration schedules and detailed calibration instructions.

Table 1 QuantStudio™ Real-Time PCR Software v1.6.1 or later

Plate[1]	Cat. No.[2]
96-well 0.2 mL	
QuantStudio™ 3/5 Spectral Calibration Plate 1 (FAM™, VIC™, ROX™, and SYBR™ dyes), 96-Well 0.2-mL	A26331
QuantStudio™ 3/5 Spectral Calibration Plate 2, 96-Well 0.2-mL (ABY™, JUN™, and MUSTANG PURPLE™ dyes)	A26332
96-well 0.1 mL	
QuantStudio™ 3/5 Spectral Calibration Plate 1, (FAM™, VIC™, ROX™, and SYBR™ dyes), 96-well, 0.1 mL	A26336
QuantStudio™ 3/5 Spectral Calibration Plate 2 (ABY™, JUN™, MUSTANG PURPLE™ dyes), 96-well Fast (0.1-mL) Plate	A26337
384-well	
QuantStudio™ 5 Spectral Calibration Plate 1, (FAM™, VIC™, ROX™ TAMRA™, and SYBR™ dyes), 384-well	A26334
QuantStudio™ 5 Spectral Calibration Plate 2 (ABY™, JUN™, MUSTANG PURPLE™, NED™, and Cy®5 dyes), 384-well	A26335

[1] Dye spectral calibration plates for the QuantStudio™ 3 and 5 Instruments are used for the calibration procedure with the QuantStudio™ Real-Time PCR Software v1.6.1 or later.

[2] Catalog numbers that appear as links open the web pages for those products.

Table 2 QuantStudio™ Real-Time PCR Software v1.3

Plate	Cat. No.[1]
96-well 0.2 mL	
ABY™ Dye Spectral Calibration Plate for Multiplex qPCR, 96-well	A24738
FAM™ Dye Spectral Calibration Plate, 96-well	4432327
JUN™ Dye Spectral Calibration Plate for Multiplex qPCR, 96-well	A24737
MUSTANG PURPLE™ Dye Spectral Calibration Plate for Multiplex qPCR, 96-well	4461599
VIC™ Dye Spectral Calibration Plate, 96-well	4432334
96-well 0.1 mL	
ABY™ Dye Spectral Calibration Plate for Multiplex qPCR, Fast 96-well	A24734
FAM™ Dye Spectral Calibration Plate, Fast 96-well	4432389
JUN™ Dye Spectral Calibration Plate for Multiplex qPCR, Fast 96-well	A24735
MUSTANG PURPLE™ Dye Spectral Calibration Plate for Multiplex qPCR, Fast 96-well	4457328
VIC™ Dye Spectral Calibration Plate, Fast 96-well	4432396
384-well	
ABY™ Dye Spectral Calibration Plate for Multiplex qPCR, 384-well	A24736
FAM™ Dye Spectral Calibration Plate, 384-well	4432271
JUN™ Dye Spectral Calibration Plate for Multiplex qPCR, 384-well	A24733
MUSTANG PURPLE™ Dye Spectral Calibration Plate for Multiplex qPCR, 384-well	4457334
VIC™ Dye Spectral Calibration Plate, 384-well	4432278

[1] Catalog numbers that appear as links open the web pages for those products.

Dye spectral calibration plates for the QuantStudio™ 12K Flex Real–Time PCR System

See your instrument user guide for recommended calibration schedules and detailed calibration instructions.

Plate	Cat. No.[1]
96-well 0.2 mL	
ABY™ Dye Spectral Calibration Plate for Multiplex qPCR, 96-well	A24738
FAM™ Dye Spectral Calibration Plate, 96-well	4432327
JUN™ Dye Spectral Calibration Plate for Multiplex qPCR, 96-well	A24737
MUSTANG PURPLE™ Dye Spectral Calibration Plate for Multiplex qPCR, 96-well	4461599
VIC™ Dye Spectral Calibration Plate, 96-well	4432334
96-well 0.1 mL	
ABY™ Dye Spectral Calibration Plate for Multiplex qPCR, Fast 96-well	A24734
FAM™ Dye Spectral Calibration Plate, Fast 96-well	4432389
JUN™ Dye Spectral Calibration Plate for Multiplex qPCR, Fast 96-well	A24735
MUSTANG PURPLE™ Dye Spectral Calibration Plate for Multiplex qPCR, Fast 96-well	4457328
VIC™ Dye Spectral Calibration Plate, Fast 96-well	4432396
384-well	
ABY™ Dye Spectral Calibration Plate for Multiplex qPCR, 384-well	A24736
FAM™ Dye Spectral Calibration Plate, 384-well	4432271
JUN™ Dye Spectral Calibration Plate for Multiplex qPCR, 384-well	A24733
MUSTANG PURPLE™ Dye Spectral Calibration Plate for Multiplex qPCR, 384-well	4457334
VIC™ Dye Spectral Calibration Plate, 384-well	4432278

[1] Catalog numbers that appear as links open the web pages for those products.

Dye spectral calibration plates for the QuantStudio™ 5 Real-Time PCR System

See your instrument user guide for recommended calibration schedules and detailed calibration instructions.

Plate	Cat. No.[1]
96-well 0.2 mL	
QuantStudio™ 3/5 Spectral Calibration Plate 1 (FAM™, VIC™, ROX™, and SYBR™ dyes), 96-Well 0.2-mL	A26331
QuantStudio™ 3/5 Spectral Calibration Plate 2, 96-Well 0.2-mL (ABY™, JUN™, and MUSTANG PURPLE™ dyes)	A26332
96-well 0.1 mL	
QuantStudio™ 3/5 Spectral Calibration Plate 1, (FAM™, VIC™, ROX™, and SYBR™ dyes), 96-well, 0.1 mL	A26336
QuantStudio™ 3/5 Spectral Calibration Plate 2 (ABY™, JUN™, MUSTANG PURPLE™ dyes), 96-well Fast (0.1-mL) Plate	A26337
384-well	
QuantStudio™ 5 Spectral Calibration Plate 1, (FAM™, VIC™, ROX™ TAMRA™, and SYBR™ dyes), 384-well	A26334
QuantStudio™ 5 Spectral Calibration Plate 2 (ABY™, JUN™, MUSTANG PURPLE™, NED™, and Cy®5 dyes), 384-well	A26335

[1] Catalog numbers that appear as links open the web pages for those products.

Dye spectral calibration plates for the QuantStudio™ Dx Real-Time PCR Instrument (RUO mode)

See your instrument user guide for recommended calibration schedules and detailed calibration instructions.

Plate	Cat. No.[1]
96-well 0.2 mL	
ABY™ Dye Spectral Calibration Plate for Multiplex qPCR, 96-well	A24738
FAM™ Dye Spectral Calibration Plate, 96-well	4432327
JUN™ Dye Spectral Calibration Plate for Multiplex qPCR, 96-well	A24737
MUSTANG PURPLE™ Dye Spectral Calibration Plate for Multiplex qPCR, 96-well	4461599
VIC™ Dye Spectral Calibration Plate, 96-well	4432334

(continued)

Plate	Cat. No.[1]
96-well 0.1 mL	
ABY™ Dye Spectral Calibration Plate for Multiplex qPCR, Fast 96-well	A24734
FAM™ Dye Spectral Calibration Plate, Fast 96-well	4432389
JUN™ Dye Spectral Calibration Plate for Multiplex qPCR, Fast 96-well	A24735
MUSTANG PURPLE™ Dye Spectral Calibration Plate for Multiplex qPCR, Fast 96-well	4457328
VIC™ Dye Spectral Calibration Plate, Fast 96-well	4432396
384-well	
ABY™ Dye Spectral Calibration Plate for Multiplex qPCR, 384-well	A24736
FAM™ Dye Spectral Calibration Plate, 384-well	4432271
JUN™ Dye Spectral Calibration Plate for Multiplex qPCR, 384-well	A24733
MUSTANG PURPLE™ Dye Spectral Calibration Plate for Multiplex qPCR, 384-well	4457334
VIC™ Dye Spectral Calibration Plate, 384-well	4432278

[1] Catalog numbers that appear as links open the web pages for those products.

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Procedural guidelines

- Keep the PCR Reaction Mix on a chilled block during real-time PCR reaction setup.
- The PCR Reaction Mix can be formulated up to 48 hours before sample preparation and stored at 2–8°C. See step 1 in "Prepare the real-time PCR reactions" on page 16.
- The assembled PCR Reaction Mix containing the sample lysate is stable for at least 48 hours when stored at 2–8°C. See step 3 in "Prepare the real-time PCR reactions" on page 16.
- Ensure that the instrument is calibrated for each detector dye and passive reference dye, according to the instrument user guide. See Chapter 2, "Calibration information".

Before you begin

DBS wash buffer and stabilizing buffer are stable at room temperature and can be prepared several days in advance. They do not need to be prepared fresh.

- Prepare DBS wash buffer—to prepare a 5% stock, add 5 g of liquid Thesit™ reagent into lukewarm 1X PBS to a final volume of 100 mL. Mix well, then dilute using lukewarm 1X PBS to prepare 0.5% DBS wash buffer.

  DBS wash buffer is 0.5% (w/v) Thesit™ reagent in 1X PBS.

  Note:
  - Alternatively, a higher or lower concentration and/or volume of stock can be prepared based on the throughput of your laboratory.
  - Heat the Thesit™ reagent until liquid and the 1X PBS until lukewarm to allow the Thesit™ reagent to dissolve readily.

- Prepare stabilizing buffer—add 0.5 mL of 10% Tween®-20 Surfact-Amps™ Detergent Solution to 100 mL of TE Buffer.

  Stabilizing buffer is modified TE buffer (10 mM Tris, 0.1 mM EDTA, pH 8) with 0.05% Tween®-20 detergent added.

  Note: Discard the Stabilizing Solution provided in the Extract All Kit. This assay workflow utilizes the prepared stabilizing buffer as described in this section.

Prepare the standard curve

The plasmids used to prepare the standard curve for TREC and KREC quantitation are as follows.

Target	GeneArt™ Construct ID	Size in base pairs (bp)
TREC	18ACJFZP	2747 bp
KREC	18ACJFTP	2786 bp

1. Re-suspend the lyophilized plasmid with Low TE:
   a. For a 5 µg lyophilized plasmid, add 500 µL of Low TE to the tube.
   b. Vortex and centrifuge the tube.
   c. Let it sit on benchtop for 5-10 minutes at room temperature.
   d. Vortex and centrifuge the tube again.

Target	Concentration	Approximate copies per µL
TREC	10 ng/µL	3.37 x 10^9 copies/µL
KREC	10 ng/µL	3.33 x 10^9 copies/µL

2. Dilute the TREC plasmid by 1:10 in prepared stabilizing buffer (for example, add 5 µL of plasmid to prepare 50 µL total volume in stabilizing buffer—0.05% Tween®-20 detergent in low TE buffer), then denature for 10 minutes at 95°C to linearize the plasmid.

   The final concentration of the linearized plasmid will be approximately 3.3 x 10^8 copies/µL.

   Note: Linearization of the plasmid is required only once.

3. Dilute the linearized plasmid solution by 1:10 in stabilizing buffer to prepare a stock.

   The final concentration of the stock will be approximately 3.3 x 10^7 copies/µL. The stock can be stored at 4°C for short-term use.

4. Prepare serial dilutions as needed. Mix each dilution well by vortexing, followed by centrifugation between each dilution step.

   All of the serial dilutions must be diluted in stabilizing buffer and can be stored at 4°C for short-term use.

5. Repeat step 1 to step 4 for the KREC plasmid.

The recommended standard curve points are as follows.

Standard curve	Copies per µL of plasmid	Approximate copies per reaction[1]
Point 1	3.3 x 10^5 copies/µL	3.0 x 10^6 copies/reaction
Point 2	3.3 x 10^4 copies/µL	3.0 x 10^5 copies/reaction
Point 3	3.3 x 10^3 copies/µL	3.0 x 10^4 copies/reaction
Point 4	3.3 x 10^2 copies/µL	3.0 x 10^3 copies/reaction
Point 5	3.3 x 10^1 copies/µL	3.0 x 10^2 copies/reaction
Point 6	3.3 x 10^0 copies/µL	3.0 x 10^1 copies/reaction

[1] We recommend running each point in triplicate and using 9 µL of plasmid solution in a 20 µL PCR reaction in a 96-well plate. For a 384-well plate, adjust the plasmid serial dilution as needed and calculate copies per reaction based on 6.75 µL of plasmid solution in a 15 µL PCR reaction.

Extract the DNA

1. Place a DBS punch (1.5 mm or 3.2 mm) from a blood card into the well of the 0.2 mL optical 96-well reaction plate.

   Note: Use only one punch per well.

2. Wash the DBS punch.
   a. Add the DBS wash buffer to each sample well.
      - 1.5 mm DBS punch: 70 µL
      - 3.2 mm DBS punch: 150 µL

b. Seal the plate with a clear adhesive film, then centrifuge at 2400 rpm for 1 minute to wet and submerge the punch.

c. Shake the plate for 30 minutes at 1500 rpm on a microplate shaker.

d. Centrifuge briefly to collect the contents at the bottom of the wells, then remove and discard the supernatant.

e. Add 150 µL of water to each sample well, then remove and discard the water.

3. Add 5 µL of DNA Extract All Reagent Lysis Solution to each sample well.

4. Seal the plate, then centrifuge briefly to collect the contents at the bottom of the wells.

5. Incubate the reaction plate for 5 minutes at 95°C.

6. Centrifuge briefly to collect any condensed droplets at the bottom of the wells, then cool to room temperature before opening the seal.

Note: Optionally, place the plate on a chilled block to quickly cool the plate.

7. Add 35 µL of stabilizing buffer to each sample well.

Note:
- The total lysate volume per 1.5 mm or 3.2 mm DBS punch is 40 µL.
- Use the stabilizing buffer prepared in "Before you begin" on page 13.

8. Seal the plate, vortex briefly, then centrifuge briefly to collect the contents at the bottom of the wells.

9. Transfer the lysate to a fresh optical reaction plate according to the following table.

DBS punch	Lysate volume per well	Reaction plate
1.5 mm	9 µL	96-well (0.1 mL or 0.2 mL)
3.2 mm	9 µL	96-well (0.1 mL or 0.2 mL)
3.2 mm	6.75 µL	384-well

Prepare the real-time PCR reactions

1. Prepare the PCR Reaction Mix in an appropriately sized microcentrifuge tube according to the following table.

Component	Volume per reaction[1]	
	96-well plate	384-well plate
2X TaqPath™ ProAmp™ Multiplex Master Mix	10 µL	7.5 µL
20X TaqMan™ SCID/SMA Plus Assay	1 µL	0.75 µL
Total PCR Reaction Mix volume	**11 µL**	**8.25 µL**

[1] Add 10% overage for pipetting loss. Excess PCR Reaction Mix can be stored at 2–8°C for up to 48 hours.

2. Vortex to mix, then centrifuge briefly to collect the contents at the bottom of the tube.

3. Add the PCR Reaction Mix to each well containing either the transferred lysate, TREC/KREC plasmids (in order to generate standard curve), or negative control sample (for example: nuclease-free water to serve as No-Template Control or NTC).
   - 96-well plate: 11 µL
   - 384-well plate: 8.25 µL

4. Seal the plate with an optical adhesive film, vortex to mix, then centrifuge briefly to collect the contents at the bottom of the wells.

Set up and run the real-time PCR instrument

See your instrument user guide for detailed instructions to program the thermal cycling conditions or to run the plate.

Note: The instrument must be configured with the block appropriate for the plate type.

1. Select or create dye detectors, then assign them to each well in the plate layout.

Target	Reporter	Quencher
SMN1	FAM™ dye	MGB-NFQ
TREC	JUN™ dye	QSY™
KREC	ABY™ dye	QSY™
RNase P	VIC™ dye	QSY™

2. Set up the following conditions.
   - Cycling mode: Fast
   - Passive reference: MUSTANG PURPLE™ dye

3. Set the reaction volume.
   - Reaction volume for a 1.5 mm DBS punch in a 96-well plate: 20 µL
   - Reaction volume for a 3.2 mm DBS punch in a 96-well plate: 20 µL
   - Reaction volume for a 3.2 mm DBS punch in a 384-well plate: 15 µL

4. Set up the following thermal cycling protocol.

Step	Temperature	Time	Cycles
Initial denaturation / Enzyme activation	95°C	20 seconds	1
Denature	95°C	1 second	40
Anneal / Extend	60°C	20 seconds	

5. Load the plate into the real-time PCR instrument.

6. Start the run.

Analyze the results

See your instrument user guide for more detailed information about data analysis.

1. View the amplification plots.

2. Set the baseline and threshold values.

3. Calculate the C_t values on the instrument.

4. *(For standard curve experiments)* View the standard curve for the following items:
   - Slope
   - Amplification efficiency
   - R^2 values
   - Y-intercept
   - C_t values
   - Outliers

Overview of baseline and threshold values

You can use the real-time PCR system software to set the baseline and threshold values for the amplification plot, either automatically or manually.

- The *baseline* refers to the initial cycles of PCR in which there is slight change in fluorescence signal.
- The intersection of the *threshold* with the amplification plot defines the C_t in real-time PCR assays. The threshold is set above the background signal and within the exponential growth phase of the amplification curve.

A Safety



WARNING! GENERAL SAFETY. Using this product in a manner not specified in the user documentation may result in personal injury or damage to the instrument or device. Ensure that anyone using this product has received instructions in general safety practices for laboratories and the safety information provided in this document.

- Before using an instrument or device, read and understand the safety information provided in the user documentation provided by the manufacturer of the instrument or device.
- Before handling chemicals, read and understand all applicable Safety Data Sheets (SDSs) and use appropriate personal protective equipment (gloves, gowns, eye protection, and so on). To obtain SDSs, see the "Documentation and Support" section in this document.

Chemical safety

WARNING! GENERAL CHEMICAL HANDLING. To minimize hazards, ensure laboratory personnel read and practice the general safety guidelines for chemical usage, storage, and waste provided below. Consult the relevant SDS for specific precautions and instructions:

- Read and understand the Safety Data Sheets (SDSs) provided by the chemical manufacturer before you store, handle, or work with any chemicals or hazardous materials. To obtain SDSs, see the "Documentation and Support" section in this document.
- Minimize contact with chemicals. Wear appropriate personal protective equipment when handling chemicals (for example, safety glasses, gloves, or protective clothing).
- Minimize the inhalation of chemicals. Do not leave chemical containers open. Use only with sufficient ventilation (for example, fume hood).
- Check regularly for chemical leaks or spills. If a leak or spill occurs, follow the manufacturer cleanup procedures as recommended in the SDS.
- Handle chemical wastes in a fume hood.
- Ensure use of 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.)
- After emptying a waste container, seal it with the cap provided.
- Characterize (by analysis if needed) the waste generated by the particular applications, reagents, and substrates used in your laboratory.
- Ensure that the 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.

AVERTISSEMENT ! PRÉCAUTIONS GÉNÉRALES EN CAS DE MANIPULATION DE PRODUITS CHIMIQUES. Pour minimiser les risques, veiller à ce que le personnel du laboratoire lise attentivement et mette en œuvre les consignes de sécurité générales relatives à l'utilisation et au stockage des produits chimiques et à la gestion des déchets qui en découlent, décrites ci-dessous. Consulter également la FDS appropriée pour connaître les précautions et instructions particulières à respecter :

- Lire et comprendre les fiches de données de sécurité (FDS) fournies par le fabricant avant de stocker, de manipuler ou d'utiliser les matériaux dangereux ou les produits chimiques. Pour obtenir les FDS, se reporter à la section « Documentation et support » du présent document.
- Limiter les contacts avec les produits chimiques. Porter des équipements de protection appropriés lors de la manipulation des produits chimiques (par exemple : lunettes de sûreté, gants ou vêtements de protection).
- Limiter l'inhalation des produits chimiques. Ne pas laisser les récipients de produits chimiques ouverts. Ils ne doivent être utilisés qu'avec une ventilation adéquate (par exemple, sorbonne).
- Vérifier régulièrement l'absence de fuite ou d'écoulement des produits chimiques. En cas de fuite ou d'écoulement d'un produit, respecter les directives de nettoyage du fabricant recommandées dans la FDS.
- Manipuler les déchets chimiques dans une sorbonne.

- Veiller à utiliser des récipients à déchets primaire et secondaire. (Le récipient primaire contient les déchets immédiats, le récipient secondaire contient les fuites et les écoulements du récipient primaire. Les deux récipients doivent être compatibles avec les matériaux mis au rebut et conformes aux exigences locales, nationales et communautaires en matière de confinement des récipients.)
- Une fois le récipient à déchets vidé, il doit être refermé hermétiquement avec le couvercle fourni.
- Caractériser (par une analyse si nécessaire) les déchets générés par les applications, les réactifs et les substrats particuliers utilisés dans le laboratoire.
- Vérifier que les déchets sont convenablement stockés, transférés, transportés et éliminés en respectant toutes les réglementations locales, nationales et/ou communautaires en vigueur.
- **IMPORTANT !** Les matériaux représentant un danger biologique ou radioactif exigent parfois une manipulation spéciale, et des limitations peuvent s'appliquer à leur élimination.

WARNING! HAZARDOUS WASTE (from instruments). Waste produced by the instrument is potentially hazardous. Follow the guidelines noted in the preceding General Chemical Handling warning.

WARNING! 4L Reagent and Waste Bottle Safety. Four-liter reagent and waste bottles can crack and leak. Each 4-liter bottle should be secured in a low-density polyethylene safety container with the cover fastened and the handles locked in the upright position.

Biological hazard safety

WARNING! Potential Biohazard. Depending on the samples used on this instrument, the surface may be considered a biohazard. Use appropriate decontamination methods when working with biohazards.

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. Conduct all work in properly equipped facilities with the appropriate safety equipment (for example, physical containment devices). Safety equipment can also include items for personal protection, such as gloves, coats, gowns, shoe covers, boots, respirators, face shields, safety glasses, or goggles. Individuals should be trained according to applicable regulatory and company/ institution requirements before working with potentially biohazardous materials. Follow all applicable local, state/provincial, and/or national regulations. The following references provide general guidelines when handling biological samples in laboratory environment.

- U.S. Department of Health and Human Services, *Biosafety in Microbiological and Biomedical Laboratories (BMBL)*, 5th Edition, HHS Publication No. (CDC) 21-1112, Revised December 2009; found at:
  https://www.cdc.gov/labs/pdf/CDC-BiosafetymicrobiologicalBiomedicalLaboratories-2009-P.pdf
- World Health Organization, *Laboratory Biosafety Manual*, 3rd Edition, WHO/CDS/CSR/LYO/2004.11; found at:
  www.who.int/csr/resources/publications/biosafety/Biosafety7.pdf

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Documentation and support

Related documentation

Document	Pub. No.
TaqMan™ SCID/SMA Plus Assay Quick Reference	MAN0019380
TaqMan™ SCID/SMA Plus Assay Calibration Guide	MAN0019382

Customer and technical support

Visit **thermofisher.com/support** for the latest service and support information.

- Worldwide contact telephone numbers
- Product support information
  - Product FAQs
  - Software, patches, and updates
  - Training for many applications and instruments
- Order and web support
- Product documentation
  - User guides, manuals, and protocols
  - Certificates of Analysis
  - Safety Data Sheets (SDSs; also known as MSDSs)

Note: For SDSs for reagents and chemicals from other manufacturers, contact the manufacturer.

Limited product warranty

Life Technologies Corporation and/or its affiliate(s) warrant their products as set forth in the Life Technologies' General Terms and Conditions of Sale at **www.thermofisher.com/us/en/home/global/terms-and-conditions.html**. If you have any questions, please contact Life Technologies at **www.thermofisher.com/support**.