Reviewers

The first sample “Glycogen” is a kit user guide.

invitrogen
by life technologies

Glycogen

Catalog Number AM9510

Pub. No. 4386634 Rev. A

Contents	Quantity	Storage Conditions
Glycogen, 5 mg/mL	5 x 1 mL	Store at -20°C. Do not store in a frost-free freezer.

WARNING! Read the Safety Data Sheets (SDSs) and follow the handling instructions. Wear appropriate protective eyewear, clothing, and gloves. Safety Data Sheets (SDSs) are available from www.lifetechnologies.com/support.

Product description

Glycogen is a branched chain carbohydrate intended for use as a carrier for nucleic acid precipitation. This product is treated with Proteinase K and SDS to remove any contaminating nucleases, then extracted with phenol/chloroform, ethanol precipitated and resuspended in nuclease-free water.

Note: Glycogen is isolated from a biological source (mussels). Therefore, preparations may contain minute concentrations of DNA that may be detectable by RT-PCR and PCR.

Source: Mussel

Storage buffer (*not included*): Nuclease-free Water

Using Glycogen

Glycogen offers a means of enhancing precipitation without adding appreciable amounts of exogenous nucleic acids to the sample. For this reason, it is preferable to yeast RNA as a coprecipitant for applications where added nucleic acid could interfere or compete with subsequent enzymatic reactions. For example, glycogen may be an appropriate coprecipitant when using terminal transferase to add non-template directed nucleotides to the 3' ends of DNA fragments or when using polynucleotide kinase to end-label oligonucleotides.

For precipitation of nucleic acids:

1. Adjust the monovalent cation concentration of the solution (for example to 0.5 M Ammonium Acetate).
2. Add glycogen to a final concentration of 10–150 µg/mL, mix well, and then mix with one volume of isopropanol or two volumes of ethanol.
3. Chill the mixture for at least 15 minutes at –20°C or below, then centrifuge for at least 15 min at ≥10,000 x g.
4. Carefully remove the supernatant fluid and resuspend the nucleic acid in the desired buffer.

Quality control

Nonspecific endonuclease activity: A sample is incubated with supercoiled plasmid DNA and analyzed by agarose gel electrophoresis.

Exonuclease activity: A sample is incubated with labeled double-stranded DNA, followed by PAGE analysis.

RNase activity: A sample is incubated with labeled RNA and analyzed by PAGE.

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 found on Life Technologies' website at www.lifetechnologies.com/termsandconditions. If you have any questions, please contact Life Technologies at www.lifetechnologies.com/support.

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

The information in this guide is subject to change without notice.

For support visit **lifetechnologies.com/support** or email **techsupport@lifetech.com**

lifetechnologies.com

28 January 2013

Reviewers

The second sample “” is from a genetic analyzer user guide.

Applied Biosystems 3500 Dx/3500xL Dx Genetic Analyzer User Guide

User Guide

For in vitro diagnostic only. Not for use in the USA. For use in specific European countries.

CE IVD

Applied Biosystems

Instrument description

The 3500 Dx or 3500xL Dx analyzer is a fluorescence-based DNA analysis instrument using capillary electrophoresis technology with 8- or 24-capillaries.

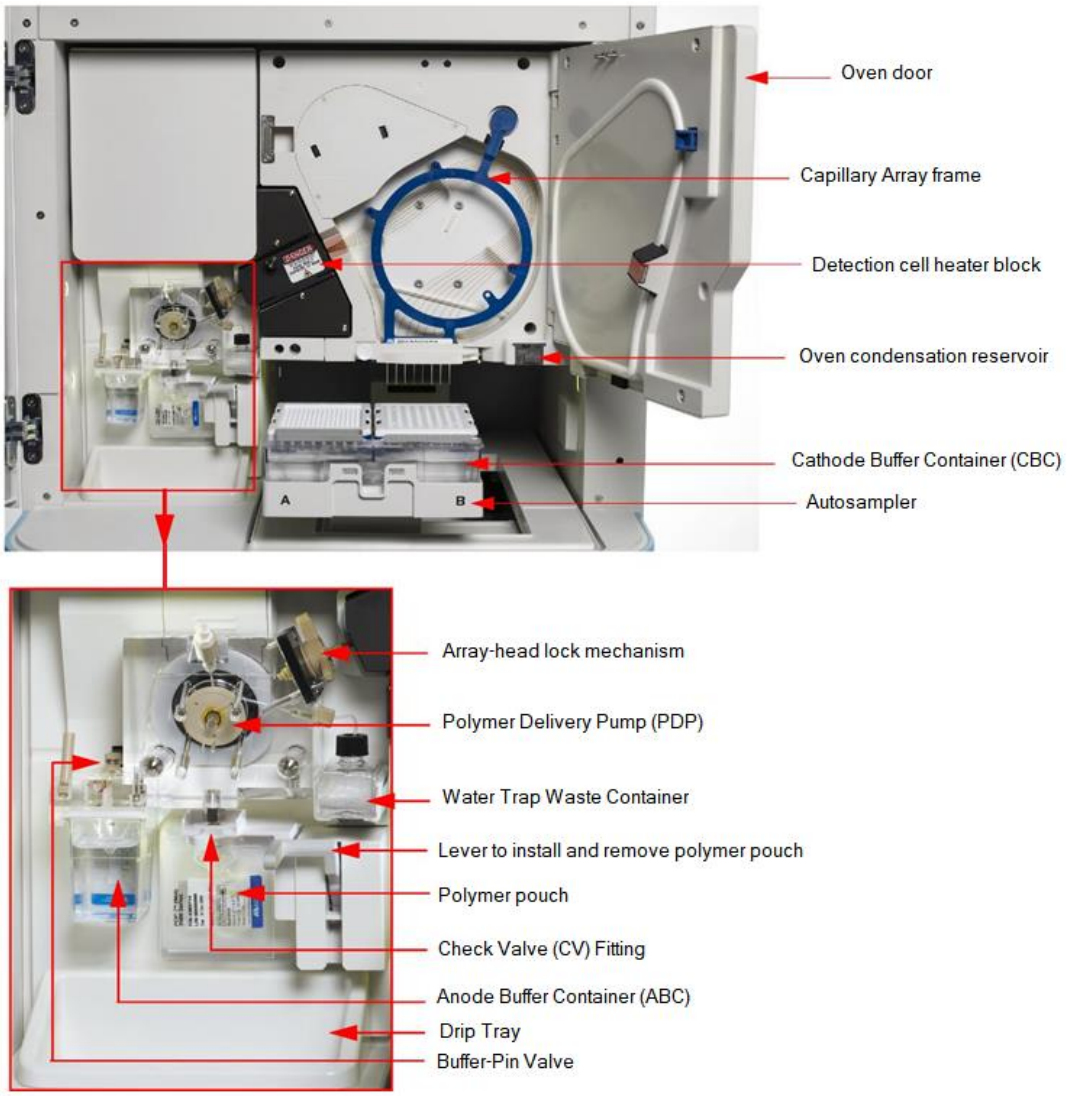
For information about instrument dimensions and connections, refer to the *Applied Biosystems 3500 Series Genetic Analyzer Site Preparation Guide* (REF 4401689).

Note: The purpose of the Site Prep Guide is to help you prepare your site for installation of the 3500 Dx or 3500xL Dx analyzer. For specific details about your system, please refer to this user guide.

Instrument interior

The following figure shows the 3500 Dx or 3500xL Dx analyzer.

Figure 1 Instrument interior components



Instrument parts and functions

IMPORTANT! Applied Biosystems 3500 Dx/3500xL Dx Genetic Analyzers systems require instruments and accessories marked for in vitro diagnostic use. Accessories not marked for in vitro diagnostic use cannot be used on the 3500 Dx or 3500xL Dx analyzer systems. You can only use accessories that have been verified for use with 3500 Dx or 3500xL Dx analyzer systems and marked for in vitro diagnostic use.

The following table explains the instrument parts and their functions.

Table 1 Instrument parts and functions

Part	Function
Autosampler	Holds the sample plates and Cathode Buffer Container (CBC) and moves to align the plates and CBC with the capillaries.
Oven	Maintains uniform capillary array temperature.
Oven condensation reservoir	Collects condensation from the oven.
Pump block	Includes the displacement pump chamber, polymer chambers, piston water seal, syringe fitting array attachment point (array port), the lower polymer block, and the CV/Fitting (Check Valve pouch attachment fitting).
Detection cell heater block	Holds the detection cell in place for laser detection and maintains the detection cell temperature of 50 °C.
Polymer Delivery Pump (PDP)	Pumps polymer into the array and allows for automated maintenance procedures.
Lower polymer block	Contains the buffer valve, anode electrode, buffer gasket, and holds the anode buffer container.
Radio Frequency Identification (RFID)	RFID tags to read the following information for primary instrument consumables: • Lot numbers • Serial numbers • Dates (expiration) • Capacity (usage) The primary consumables are: • Capillary Array • Cathode Buffer Container (CBC) • POP™ Polymer • Anode Buffer Container (ABC)
Capillary Array	Enables the separation of the fluorescent-labeled DNA fragments by electrophoresis. Capillary Array is a replaceable unit composed of 8 or 24 capillaries (50 cm and 36 cm length). **Not for diagnostic use** **Note**: The 36cm capillary is for human interface device or HID applications, only.
Anode Buffer Container (ABC)	The Anode Buffer Container (ABC) contains 1× running buffer to support all electrophoresis applications on the instrument. ABC has a built-in overflow chamber to maintain constant fluid height.
Cathode Buffer Container (CBC)	The Cathode Buffer Container (CBC) contains 1× running buffer to support all electrophoresis applications on the instrument.

Part	Function
Polymer pouch	Supplies polymer to the Polymer Delivery Pump.
Conditioning reagent	The pouch is used for priming the polymer pump, washing the polymer pump between polymer type changes, and during instrument shut down. It has adequate volume for a one-time use.

Theory of operation

The 3500 Dx or 3500xL Dx analyzer is a fluorescence-based DNA analysis system that uses proven capillary electrophoresis technology with 8- or 24-capillaries.

The 3500 Dx or 3500xL Dx analyzer is fully automated, from sample loading to primary data analysis, for sequencing.

In this document, the:

- Primary analysis for *sequencing* is referred to as basecalling.
- Primary analysis for *fragment analysis* procedures is referred to as sizecalling.

Note: Fragment analysis information is provided for research use and not diagnostic use. Fragment analysis information is identified as "Note for diagnostic use" throughout the document.

Not for diagnostic use

Preparing samples

When DNA samples are prepared for sequencing (BigDye® sequencing standard) on the 3500 Dx or 3500xL Dx analyzer, fluorescent dyes are attached to the DNA. For most applications, the sample is denatured so that only single-strand DNA is present.

Preparing the instrument

Two calibrations are required to prepare the instrument for sample runs:

- Spatial calibration – Determines the position of the image from each capillary, on the CCD array. For more information, refer to "Spatial calibration" on page 110.
- Spectral calibration – Generates a matrix for each capillary that compensates for dye overlap and is used to convert the 20-color data into 4-, 5-, or 6-dye data. For more information, refer to "Spectral calibration" on page 114.

During a run

The system:

- Prepares the capillary by pumping fresh polymer solution under high pressure from the polymer delivery pump to the waste position in the Cathode Buffer Container (CBC).
- Electrokinetically injects the sample into the capillary using a low-voltage for a few seconds.
- Washes the capillary tips in the rinse position of the CBC, then returns the capillary to the buffer position of the CBC.
- Ramps the voltage up to a constant voltage.

A high electric field is created between the ground end of the Anode Buffer Container (ABC) and the negative voltage applied to the load header of the capillary array. This field pulls the negatively charged DNA through the separation polymer. The smaller fragments migrate faster than the larger fragments and reach the detector first.

To ensure optimal separation and maintain denaturation of the DNA, the capillaries are thermally controlled in the oven and in the detection cell. The oven has a Peltier heat unit and fan-circulated air. The Peltier can heat and cool the oven to maintain sub-ambient temperatures, which are useful for non-denaturing applications such as SSCP (Single-strand conformation polymorphism).

- In the detection cell, the dyes attached to DNA are excited by a narrow beam of laser light. The laser light is directed into the plane of the capillaries from both the bottom and top. A small amount of laser light is absorbed by the dyes and emitted as longer wavelength light in all directions.
- Captures the fluorescent light on the instrument optics while blocking the laser light. The light passes through a transmission grating, which spreads the light out. The light is imaged onto a cooled, scientific-grade CCD array. For each capillary, 20 zones on the CCD are collected to provide 20-color data for each capillary.
- Converts the 20-color data into multi-dye data for the entire run. For sequencing applications, 4 different dyes are used to determine the 4 bases A, G, C and T.

Note: For fragment analysis applications, up to 6 dyes can be used in a single run for higher throughput.

Results

The software generates an electropherogram (intensity plot) for each dye based on the migration of DNA fragments over the run and generates primary analysis results:

- For sequencing applications, the electropherogram is adjusted to compensate for slight mobility differences due to the dyes, then basecalling is performed and quality values are assigned.
- For fragment analysis, the software uses the internal size standard to assign a fragment size and a sizing quality value to each peak.

Chapter 5: Calibrate and Check Performance

The procedures in this document are intended for in vitro diagnostic use only.

IMPORTANT! Applied Biosystems 3500 Dx/3500xL Dx Genetic Analyzers systems require instruments and accessories marked for in vitro diagnostic use. Accessories not marked for in vitro diagnostic use cannot be used on the 3500 Dx or 3500xL Dx analyzer systems. You can only use accessories that have been verified for use with 3500 Dx or 3500xL Dx analyzer systems and marked for in vitro diagnostic use.

Note: Fragment analysis information is provided for research use and not diagnostic use. Fragment analysis information is identified as "Note for diagnostic use" throughout the document.

Not for diagnostic use

Spatial calibration

The 3500 Dx Series Data Collection Software uses images collected during the spatial calibration to establish a relationship between the signal emitted by each capillary and the position where that signal falls on and is detected by the CCD camera.

When to perform a spatial calibration

Perform a spatial calibration after you:

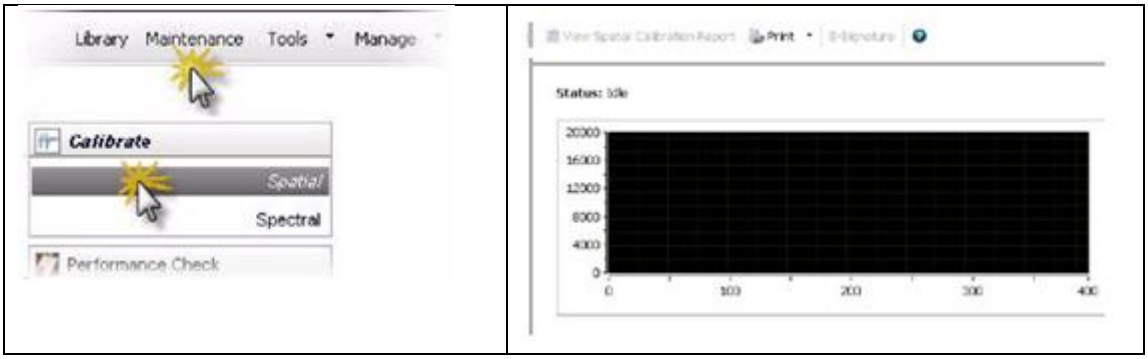
- Remove or replace the capillary array
- Open the detector door or move the detection cell
- Move the instrument

Perform a spatial calibration

IMPORTANT! Do not open the instrument door during a spatial calibration run. Doing so will stop the run and require you to restart the 3500 Dx Series Data Collection Software.

1. Access the Spatial Calibration screen: Select Maintenance, then select Spatial Calibration in the navigation pane.

Note: The screen does not display results unless you have previously performed a spatial calibration.



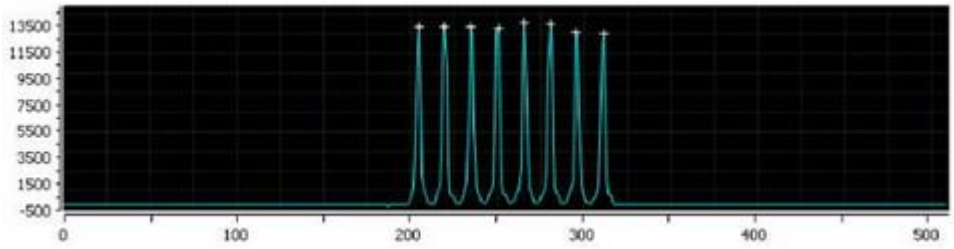
2. Select No Fill or select Fill to fill the array with polymer before starting the calibration.

(Optional) Select Perform QC Checks if you want the system to check each capillary against the specified range for spacing and intensity. During the calibration, the software calculates:

Attribute	Calculation	Threshold
Average peak height	sum of all peak heights / number of peaks	• 8-cap: 6400 RFU • 24-cap: 3000 RFU
Uniformity (peak height similarity)	standard deviation / average peak height	0.2
Capillary spacing	max spacing min spacing	2 pixels

3. Click Start Calibration.

The display updates as the run progresses.



If the average of any of the QC values exceeds the threshold, a Spatial QC Check error message is displayed.

Reviewers

This writing sample is from a site preparation guide.

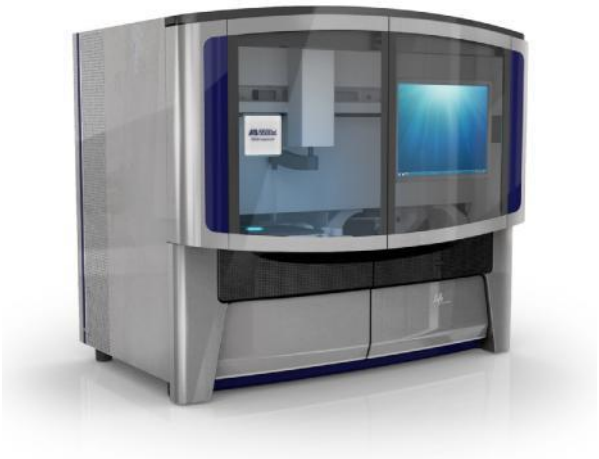
Site Preparation Guide

applied biosystems by life technologies™

5500 Series SOLiD™ Sequencers

SITE PREPARATION

Publication Part Number 4457364 Rev. B
Revision Date April 2011



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Part Number 4457364 Rev. B
04/2011

Site Preparation

The 5500 SOLiD™ Sequencer and the 5500 xl SOLiD™ Sequencer are the next-generation sequencers for ultra-high throughput DNA analysis, based on sequencing by oligonucleotide ligation and detection.

Purpose of this guide

This guide contains the necessary information needed to prepare the site for the receipt of the 5500 SOLiD™ Sequencer (or the 5500 xl SOLiD™ Sequencer) and sequencer accessories for installation.

If you purchase the 5500 Series SOLiD™ System bundle, the following sample-preparation equipment are shipped to your site.

- SOLiD™ EZ BeadTM System and accessories:
- SOLiD™ EZ BeadTM Emulsifier
- SOLiD™ EZ BeadTM Amplifier
- SOLiD™ EZ BeadTM Enricher
- Covaris® System from Covaris Inc. and accessories

For information about the packages dimensions and weights, how to prepare your site, and installation requirements refer to the following documents:

- SOLiD™ EZ BeadTM Emulsifier Site Preparation Guide (Part no. 4452499)
- SOLiD™ EZ BeadTM Amplifier Site Preparation Guide (Part no. 4454035)
- SOLiD™ EZ BeadTM Enricher Site Preparation Guide (Part no. 4454036)
- Covaris® Machine User Manual

The following information is included in this document.

Site preparation checklist

The following checklist must be completed and signed by the customer prior to the arrival of the Life Technologies Field Service Engineers (FSEs) for installation and set up of the system.

Note: After preparing your site and completing the checklist in this document, contact your Life Technologies Sales Representative to schedule the delivery of the sequencer.

Table 1 Site preparation checklist for the 5500 Series SOLiD™ System

Verified-Date-Initials ☑ - MM/DD/YY - Your initials	Requirements	See page
Receiving-site requirements		7
☐ _____ MM/DD/YY _____ INITIALS	The receiving site requirements have been met.	
Items shipped to the receiving site		8
☐ _____ MM/DD/YY _____ INITIALS	The items shown on the shipping list inspected and verified.	
Crates and packages dimensions and weights		9
☐ _____ MM/DD/YY _____ INITIALS	The system crates and packages dimensions and weights have been reviewed.	
Components dimensions and weights		10
☐ _____ MM/DD/YY _____ INITIALS	The system components dimensions and weights have been reviewed.	
☐ _____ MM/DD/YY _____ INITIALS	The building clearances allow passage of the sequencer dimensions from the receiving site to the installation room.	
Customer's responsibilities		12
☐ _____ MM/DD/YY _____ INITIALS	The customer responsibilities have been reviewed and accepted.	
Life Technologies Field Service Engineers' (FSEs) responsibilities		13
☐ _____ MM/DD/YY _____ INITIALS	The Life Technologies responsibilities have been reviewed and accepted.	
Installation-room requirements		13
	The following requirements specified for the installation room have been met:	
☐ _____ MM/DD/YY _____ INITIALS	• Installation room size and layout	13
☐ _____ MM/DD/YY _____ INITIALS	• Clearances required for the installation and service of the sequencer	15
☐ _____ MM/DD/YY _____ INITIALS	• Clearances required for the operation of the sequencer	15
☐ _____ MM/DD/YY _____ INITIALS	• Clearances required for computer and UPS unit	16
☐ _____ MM/DD/YY _____ INITIALS	• Installation room features	16

Receiving-site requirements

⚠ WARNING! PHYSICAL INJURY HAZARD. Do not attempt to lift or move the crated sequencer without professional assistance. The crated sequencer is heavy. Any incorrect lifting or moving of the crated sequencer can cause serious injury.

The delivery company uncrates and places the system components in the installation room. After you schedule for installation, the Life Technologies Field Service Engineers (FSEs) arrange and install the system components inside the installation room.

Contact your Life Technologies Sales Representative if your site does not accommodate the following requirements.

The receiving site has enough room to allow for the operation of the delivery, moving, and handling equipment. See "Crates and packages dimensions and weights" on page 9 for details.

An open area approximately 6 x 6 m (~20 x 20 ft) to receive the sequencer crate and other packaged materials.

The sequencer crate-cover must be lifted overhead to clear the sequencer. We recommend an open area, or a closed area with a vertical clearance of 300 cm (118.1 in.), to allow for proper unpacking.

The path from the receiving site to the installation room can accommodate the moving and handling equipment. See "Installation-room requirements" on page 13 for more information.

Note: Contact your Life Technologies Sales Representative if the path from the receiving site to the installation room contains elevators or stairs, or the building clearances do not allow the passage of the sequencer to the installation room. See "Components dimensions and weights" on page 10 for details.

Components dimensions and weights

The following tables provide the dimensions and weights of the system components.

⚠ WARNING! PHYSICAL INJURY HAZARD. Do not attempt to lift or move the crated sequencer without professional assistance. The crated sequencer is heavy. Any incorrect lifting or moving of the crated sequencer can cause serious injury.

Dimensions

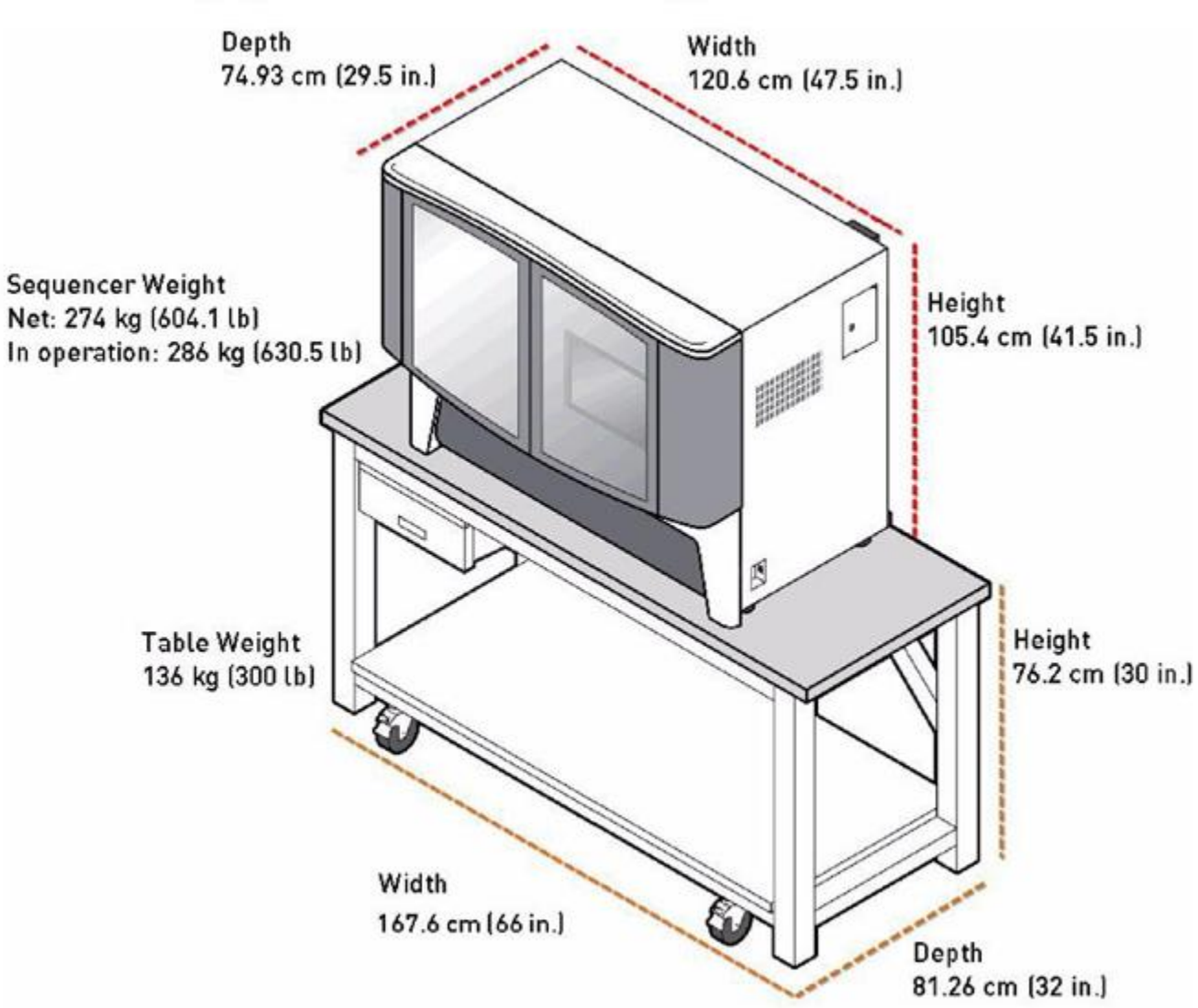
Depth
74.93 cm (29.5 in.)
Width
120.6 cm (47.5 in.)
Sequencer Weight
Net: 274 kg (604.1 lb)
In operation: 286 kg (630.5 lb)
Height
105.4 cm (41.5 in.)
Table Weight
136 kg (300 lb)
Height
76.2 cm (30 in.)
Width
167.6 cm (66 in.)
Depth
81.26 cm (32 in.)

Table 8 Dimensions and weight for the sequencer

Height	Length (depth)	Width	Weight
105.4 cm (41.5 in.)	74.93 cm (29.5 in.)	120.6 cm (47.5 in.) 194.3 cm (76.5 in.) with both doors open	274 kg (604.1 lb) excluding liquids ~284 kg (626.1 lb) including liquids

Table 9 Dimensions and weight for the computer

Height	Length (depth)	Width	Weight
56.54 cm (22.26 in.) 56.6 cm (22.28 in.) with the stand	57 cm (22.44 in.)	21.59 cm (8.5 in.)	24.9 kg (55 lb)

WARNING! PHYSICAL INJURY HAZARD. Do not attempt to lift the UPS unit without assistance (minimum of two people). Improper lifting can cause painful and permanent back injury. Refer to the UPS manufacturer user guide for more information.

Table 10 Dimensions and weight for the UPS unit, if purchased from Life Technologies

Region	Height	Length (depth)	Width	Weight
All (excluding Japan)	17.2 cm (6.8 in.)	75 cm (29.5 in.)	35.5 cm (14 in.)	66 kg (145.5 lb)
Japan	17.14 cm (6.75 in.)	78.99 cm (31.1 in.)	43.69 cm (17.2 in.)	65.32 (144 lb)

Table 11 Dimensions and weight for the monitor

Height	Length (depth)	Width	Weight
38.05 cm (14.98in.)	13.69 cm (5.39in.)	37.44 cm (14.74 in.)	3.04 kg (6.7 lb)

Table 12 Dimensions and weight for the keyboard drawer

Height	Length (depth)	Width	Weight
5 cm (2 in.)	46 cm (19 in.)	120 cm (47 in.)	5.5 kg (12 lb)

Table 13 Dimensions and weight for the mobile laboratory bench, if purchased from Life Technologies

Height	Length (depth)	Width	Weight	Weight capacity†
76.2 cm (30 in.)	81.28 cm (32 in.)	167.6 cm (66 in.)	136.1 kg (300 lb)	Minimum 400 kg (881.8 lb)

† The mobile laboratory bench is equipped with 1.27-cm (0.5-in.) leg-inserts with levelers, and the total weight on the mobile bench must be evenly distributed per wheel.

IMPORTANT! After positioning and leveling the mobile bench, for stability during operation, ensure that the bench rests on the stationary legs and not the casters.