

## Lot 8

I.	96-Well Real-Time PCR Instrument
II.	Gene Pulser XCELL Total Instrument
III.	TC20 Automated Cell Counter
<b>Only brands from Europe, North America, or Japan are acceptable.</b>	
<b>I. 96-Well Real-Time PCR Instrument</b>	
Peltier-based instrument with a capacity of 96 samples and possibility of temperature increment between -10°C to 10°C/cycle	
5-Color multiplex system in addition to FRET Channel to detect the DNA probes with Fluorescence Resonance Energy Transfer Chemistry	
Optical technology based on a photonics shuttle with 6 channels	
Factory calibrated optics; should not require any periodic calibration kits or normalization	
Should be able to perform true thermal gradient runs in Real-time PCR with dynamic ramping	
The gradient should enable running 12 samples at 8 different temperatures in the same run enabling to run 4 different concentrations in triplicates at different temperatures	
Fluorescence from all 96 wells should be acquired in each run to avoid losing reagents and precious samples	
Can run and view amplification data traces as stand-alone or through a PC	
Can connect directly to Wi-Fi for completely wireless operation and data retrieval with possibility for experimental setup and data management	
Can be programmed to send the data and notifications directly to email or Local network	
Should be a fully open system (that does not require proprietary reagents, plastics or fluorophores)	
Able to cool the samples down to 4 degrees overnight	
Able to give reliable results with sample volumes between 1–50 µl	
Robust lid for best sealing and uniformity (Lid should heat up to 110°C)	
Sensitivity: Should detect one copy of target sequence in human genomic DNA	
List of references of Real Time PCR instrument sold in Lebanon should be stated	
One Year Warranty	
Should be very flexible and user-friendly and include all the data analysis modes mentioned below in the same software	
Analysis of multiple experiments on one plate	
Protocol Autowriter that generates an optimal protocol based on polymerase, T <sub>m</sub> of primers and product length	
Data Analysis Modes needed: Statistical analysis with t-tests, one way ANOVA, and two-way ANOVA Data analysis options include bar chart, box and whisker plot, dot plot, clustergram, scatter plot, volcano plot PCR quantification with standard curve Melt curve analysis Gene expression analysis by relative quantity ( $\Delta C_q$ ) or normalized expression ( $\Delta\Delta C_q$ ) with multiple reference genes and individual reaction efficiencies Application-specific data analysis for gene expression and SNP genotyping studies Multiple file gene expression analysis for comparison of an unlimited number of C <sub>q</sub> values for multi-	

4

12

plate studies

Allelic discrimination/End-point analysis

Able to generate a customizable report containing run settings, data graphs, and spreadsheets that can be printed directly or saved as PDFs

## II. Gene Pulser XCELL Total Instrument

Modular laboratory electroporation system for universal application across eukaryotic (mammalian, plant), prokaryotic (bacteria, fungi), and suspension cell types.

System to be composed of main pulse generator unit, capacitance extender (CE) module for large-capacitance control, pulse controller (PC) module for resistance modulation, and shockpod cuvette chamber with safety interlock

Needed Pulse & Electrical Specifications

- Voltage: 10–3,000 V (adjustable)
- Waveform: Exponential decay & square pulse
- Capacitance (CE Module): 25–3,275  $\mu\text{F}$  in 25  $\mu\text{F}$  increments
- Resistance (PC Module): 50–1,000  $\Omega$  in 50  $\Omega$  increments (& infinity)
- Sample Resistance:  $\geq 20 \Omega$  (10–2,500 V);  $\geq 600 \Omega$  (2,500–3,000 V)
- Square-Wave Timings: 10–500 V: 0.05–10 ms; 500–3,000 V: 0.05–5 ms; multiple pulses
- Control & User Features

Program Modes: Manual, preset (bacterial, fungal, mammalian), optimization, user-defined protocols

Memory: Stores up to 100 previous experiments with delivered voltage/time data

Interface: Graphic display with keypad interface and waveform preview.

Safety Circuitry: Should feature PulseTrac and arc protection ensure safe pulse delivery and automatic capacitor discharge.

One-handed cuvette chamber handling with lid interlock preventing pulse with open lid.

## III. TC20 Automated Cell Counter

o Automated Cell Counter: benchtop instrument designed to automatically count mammalian cells (including

live/dead discrimination) using trypan blue dye exclusion and a slide-based imaging system

o Rapid, accurate counting and viability assessment utilizing brightfield microscopy and trypan blue dye

Exclusion to distinguish between live and dead cells.

Features needed

o Fully Automated Counting: Counts cells and calculates viability in less than 30 seconds. No manual counting or hemocytometers required.

o Brightfield Imaging System: Uses a high-resolution optical detection system with automatic focus and

Exposure control for clear cell visualization.

- o Live/Dead Cell Discrimination: Employs trypan blue dye exclusion method, automatically distinguishing viable (unstained) from nonviable (blue-stained) cells.
- o Small Sample Volume: Requires only 10  $\mu\text{L}$  of sample per reading.
- o Onboard Memory: Stores up to 100 counts internally; data can also be exported via USB.
- o Automatic Calculations that displays the below parameters:
  - Total cell count (cells/mL)
  - Viable cell count
  - Cell viability (%)
  - Mean cell size ( $\mu\text{m}$ )
  - Histogram of size distribution
- o Disposable counting slides (two chambers per slide), minimizing contamination and eliminating cleaning steps
- o Factory calibrated—no user calibration or maintenance needed.
- o Intuitive color LCD screen with touchpad navigation; no external computer needed.
- O Data Export: USB port allows data export to PC for analysis or reporting.
- o High Resolution Cell size detection range: 6–50  $\mu\text{m}$  (ideal for most mammalian cell lines)
- o Counting range:  $1 \times 10^4$  to  $1 \times 10^7$  cells/mL
- o Compact Size and and light weight

4

18



## LOT 9

I.	Biosafety Cabinet
II.	Fume Hood Cabinet
III.	Cabinet for Organic Solvents
IV.	Freezer -20°C
V.	ELISA Reader (Without Incubator)
VI.	CO <sub>2</sub> Incubator
<b>I. Biosafety Cabinet</b>	
Standard fitted with tempered glass side windows, manual sliding front safety glass window, LED lighting.	
The work surface should be Stainless Steel with 2 x European sockets with UV Germicide lamp and EC fans and 1 x air speed monitoring sensor.	
Should have an Anti-microbiological coating on the working surface.	
Cabinet depth 764 mm (compatible with most laboratory doors)	
Overall height 1260 mm	
Should have a 10° sloped front window for a better working position	
304L stainless steel chamber with rounded angles and hardened security glass sides	
Hermetically closable sealing around the front window	
Security anti-reflective front window with UV protection, with no visual obstacles on the lower edge	
Microprocessor control with filter-loading-self-compensation	
Main screen showing the laminar flow speed and the filter	
Ecomode function UV light and fans with timer to be programmable	
Control panel with international colour code to indicate cabinet status	
Four predefined languages (Spanish, English, French and German)	
Laminar flow speed 0.35 / laminar flow rate 1310	
<b>II. Fume Hood Cabinet</b>	
Fume Hood Should comply with the international standards, such as ASHRAE 110-2016 and EN-14175	
Fume Hood dimensions should be approximately 1500x850x2365 mm.	
Should include:	
<ul style="list-style-type: none"> <li>• Exterior made of phenolic resin with a steel epoxy-polyester painted structure. One piece sash.</li> <li>• Interior in phenolic resin with high chemical resistance.</li> <li>• Epoxy resin worktop with raised edge and cupsink.</li> <li>• Four electrical outlets, water tap and nitrogen with remote access.</li> <li>• Basic operating system (ON/OFF switch)</li> <li>• System should feature the below:</li> <li>• Safety sash lock system</li> <li>• Various fittings &amp; Valves</li> <li>• Exhaust collar (DN 250)</li> <li>• ELB (IP 54)</li> </ul>	

<ul style="list-style-type: none"> <li>• Built in under bench cabinet</li> <li>• Socket &amp; Valve Scaffold support (STS stand)</li> <li>• LED Lamp</li> <li>• Combination sash</li> <li>• Raised edge worksurface Touch pad monitor</li> <li>• Fume hood is Supplied with the digital control monitor</li> </ul>
<b>III. Cabinet for Organic Solvents</b>
Storage cabinet should comply with the international standards for solvent storage
Fire resistance, corrosion resistance, and adjustable shelving
Size: between 700 and 900 Liters
Reinforced doors, leak-proof construction, and locking mechanisms to prevent spills and unauthorized access
Should feature exhaust system and filtration to manage fumes
<b>IV. Freezer -20°C</b>
Capacity should be 320 LT
External structure should be in hot-dip galvanized steel, anti-corrosion treated and PVC film coated. Scotch-brite stainless steel internal structure.
System should have a 80 mm of insulation obtained by injection of high density polyurethane CFC-free foam for excellent product preservation and best energy saving.
Should have a Self-closing solid door, with folding magnetic gasket on four sides for perfect closing. Right hand opening or left hand on request. Lock with key.
Should be equipped with either 6 scotch-brite stainless steel shelves, removable and adjustable in height or 6 scotch-brite stainless steel drawers, adjustable in height, with telescopic ball-bearing slides and plexiglas frontal side.
Temperature range must be between -10°C and -32°C. Factory preset to -30°C. Digital adjustable with an increment of 0.1°C.
Refrigeration system should be Completely sealed, silent and highly efficient hermetic compressor and ventilated air condenser (suitable also for tropical countries). Internal static evaporator.
Should be CFC/HCFC-free R290 refrigerant gas.
Should feature Four one way wheels with stabilizing adjustable feet
Door lock with key
Power cord with Schuko type plug or British type plug
Protection fuses (on power switch and electronic mainboard)
RFI filter
Password protected power switch and settings
Electronic control panel with alarm system
Remote contact (dry, volt-free) for alarm
Data logger with USB port to download readings and data
Memory of latest alarms visible on screen
<b>V. ELISA Reader (Without Incubator)</b>
Proven performance and reliable day-to-day results through patented optical design and in-built self-diagnostics

A broad wavelength range of 340-850 nm for a wide variety of research and routine applications such as ELISA
Immunoassays, protein quantification, endotoxin, cytotoxicity and proliferation assays, enzyme assays and growth curves
The system should be equipped with an eight-position filter wheel with three standard filters, 405 nm, 450 nm and 620 nm, preinstalled
A set of additional easy-to-install filters: 492 nm, 570 nm, 595 nm, 750 nm
Fast and accurate measurement of both 96- (7 seconds fast mode /13 seconds normal mode) and 384-well plates for various throughput requirements
Ease of use through the large color screen and a variety of language versions
Visual and logical SkanIt software for comprehensive instrument control and data handling
Verification plate available for instrument performance verification
Robot compatibility for high-throughput environments
Multiple languages choose between English, German, French, Spanish, Italian, Portuguese, Russian, Chinese, and Japanese (touchscreen models)
<b>VI. CO<sub>2</sub> Incubator</b>
Volumes should be 190 litres
Working temperature should be from 5 °C above ambient temperature up to 60 °C
CO <sub>2</sub> concentration should be 0,1 up to 20% CO <sub>2</sub> –
Incubator should meet requirements of an absolute stabile and reproducible environment for growth of cells and other cultures.
System should have a temperature management system WITHOUT a fan, what reduces evaporation and contamination risk.
System should be based on direct 6-sided heating system to allow very precise and homogenous conditions and are very easy to install or maintain.
Should be provided with Big LED read out
Contamination risk avoided by using of no fan
Relative humidity up to 95% RH at 37 °C
Microprocessor control
Stainless Steel interior AISI 304 (DIN 1.4571)
System should have Anti-microbiological paint
4 stainless steel trays should be included
Infrared drift-free CO <sub>2</sub> sensor alarms and diagnostic values
Operation via 4-buttons
System should have an Internal glass door
System should have HEPA filter on incoming CO <sub>2</sub> / N <sub>2</sub> tubing
Seamless inner chamber



## LOT 10

<b>I. FTIR/NIR/RAMAN</b>
<b>Only brands from Europe, North America, or Japan are acceptable.</b>
System should feature Gold optics, for far IR, mid IR and near IR operations
Should enable easy, on-site swapping of interferometers, detectors and sources.
Should include a XT-KBr beamsplitter
Beamsplitter must feature continuous on-line alignment to ensure ultimate sensitivity and accuracy
Fully sealed and mounted in the sealed/desiccated/purged zone
All reflective optics permitting wide spectral range performance
0.09 cm <sup>-1</sup> resolution with variable aperture
Signal-to-Noise, 1 minute scan, Peak-to-Peak, 4 cm <sup>-1</sup> : 65,000:1
Wavenumber Precision: Better than 0.0008 cm <sup>-1</sup>
<p>Spectrometer should include the following:</p> <ul style="list-style-type: none"> <li>• Four position source mirror</li> <li>• Long Lifetime Infrared Source</li> <li>• Tungsten-Halogen white light source</li> <li>• Mounts for J-port emission optics and Raman InGaAs detector</li> <li>• Three position Paraflect detector mirror</li> <li>• DLaTGS detector</li> <li>• Liquid N<sub>2</sub> Cooled MCT-A Detector with CdTe window (11,700-600 cm<sup>-1</sup>)</li> <li>• ATR module to be permanently installed on the machine, outside the sample compartment, to simultaneously run ATR and transmission experiments.</li> <li>• NIR Module</li> <li>• Raman Module</li> <li>• Smart Transmission accessory</li> <li>• Complete purge system</li> <li>• Internal Validation wheel for system performance verification</li> <li>• Should include NIST Traceable Polystyrene and NG11 Glass</li> <li>• Full transmission kit for liquid and solid sampling</li> <li>• Compatible with TGA Accessory</li> <li>• Compatible with FT-IR Microscope</li> <li>• A suitable desktop PC with screen</li> </ul>
<p>System must be supplied with all the following items:</p> <ul style="list-style-type: none"> <li>• NIR Module with Integrating Sphere with the following specifications: <ul style="list-style-type: none"> <li>- Desiccated CaF<sub>2</sub> Window</li> <li>- CaF<sub>2</sub> Optics for external beam</li> <li>- Validation wheel for NIR included</li> </ul> </li> </ul>

- Sapphire window
- Built-in InGaAs Detector
- Operation controlled via software
- Touch Point support for fast setup and data collection
- Should include 5cm Sample Cup Spinner Accessory for NIR and 5cm Sample Cup
- Polystyrene reference sample
- Viscous Liquid Sampling Accessory - Transflectance
- Cup Holder Assembly
- Raman Module with the below specifications:
  - Compact, dependable 1064 nm laser
  - Fits in the sample compartment
  - Clamping action makes all electrical contacts
  - Laser turns on and is ready for operation within 30 seconds of install
  - Raman InGaAs detector for FTIR mirror mount
  - Built-in sampling stage
  - Polystyrene reference sample included
  - Computer controlled movement
  - USB Camera for viewing and collecting visual images
  - Stokes only Rayleigh filter
  - Compatible with sample compartment shutters
  - Class I laser safe device
  - Sampling kit and sampling plates included
  - Combined 9-hole and microscope slide plate
  - Combined 3-vial and 4-vial holder (vials, NMR tubes, etc.)
  - 48-well plate
  - Well pattern matches standard 96-well plates
  - Should include Certified Raman Polystyrene Standard
  - Should include 4-mL Glass Sample Vials, pack of 200
  - Should include Pellet Press for Raman Sampling

System should be supplied with a software including the below features:

- Auto Analyze feature to perform and report prediction, searching, Peak Labelling immediately after collection without any need for intervention.
- Auto Report feature to automatically view results, print or add to current notebook.
- Automatic atmospheric suppression to remove H<sub>2</sub>O and CO<sub>2</sub> interferences (no standards needed)
- System Performance verification monitors system status
- Quantitative and qualitative method development prediction and deployment.
- Password protection and user login support
- Full array of data conversion and correction tools such as: Kubelka Munk, Kramers Kronig and Advanced ATR correction
- Complete set of spectral data processing tools
- Spectral Search: high-resolution library generation, customizable information fields, single or multi-region search, library management, with over 1400 spectra included libraries
- Extensive on-line help and video tutorials



- Advanced data management capability treats the entire hard drive as a database
- Must have Multi-Component and Contaminant Search
- Support for FT-IR and Raman spectral data
- Should feature more than 9100 infrared spectra in high resolution format in the collection of hydrocarbons, alcohols, phenols, aldehydes, ketones, esters, anhydrides, lactones, dyes, indicators, alkynes, nitro and azo compounds phosphorous and sulphur containing compounds, inorganic, and silanes

4

18