1. FLOW CYTOMETER WITH SORTING FACILITY

Specifications:

1. System should be equipped with at least five solid state lasers such as blue – 488nm, red 630-640nm, violet – 405nm and UV - 355nm and YG -562nm for simultaneous operation.
2. Should have the provision for onsite up gradation with additional solid state lasers.
3. System should have arrangement to accommodate spatially separated lasers firing simultaneously.
4. Should have at least thirteen simultaneous fluorescent colour detection capabilities along with forward & side scatter detection with upgradability to perform up to thirty simultaneous fluorescent color detection.
5. Should have sorting capability of at least 50,000 cells per second with four-way sort at >98% purity.
6. Ability to detect nanoparticle in scattered light with threshold triggered of 0.001%.
7. Should have capability to perform analysis at a rate of up to 70,000 cells per second.
8. Should have automated drop delay determination and monitoring
9. Should have user friendly interface for instrument set up and sort monitoring
10. Should have 32 bits digital signal processing with 4 decade dynamic range.
11. Should have ability to sort cells of widely different shapes and dimensions.
12. Should have sample loading automation with fully programmable, computer-controlled sample input station with provision to accommodate various tube sizes including 0.5 ml, 1.5 ml, 5 ml & 15 ml tube.
13. Should have operational features of automatic agitation and automatic back flush along with access to instrument control.
14. Should have provision for the auto-cleavable sheath as well as waste tanks, and replaceable sterile sample tubing.
15. Should have multi-well sorting ability with flexibility of sorting cells into 96 and 384 wells.
16. Must be equipped with NSF-49 tested Class II Biosafety Cabinet–220-240V (made by reputed international manufacturer) to achieve sterile sorting.
17. Should have user friendly acquisition and analysis platform with software for
    a. Online and offline use, capable of importing and exporting all standard flowcytometric sorter (FCS) formats.
    b. Histograms, dot plots, and related statistics generated using system software should be imported into other applications, such as Microsoft Word, Excel and Power point.
    c. Software must be able to acquire and sort without dropping any events, while simultaneously allowing the operator to run other applications.
    d. Auto compensation
    e. Offline analysis must be possible for at multiple sites.
17. Computer: System should come with all required acquisition/analysis software with computer hardware of compatible configuration and flat panel color LCD Monitor, color printer & online-UPS.
18. Company should have dedicated application specialists and service engineer stationed in Chennai with a proven track record to provide onsite training.
19. 3 - 5 years warranty.

2. REAL TIME PCR MACHINE

SPECIFICATIONS

1. An integrated system for both Real-Time PCR & post-PCR (end-Point) analysis using in-built peltier based PCR Machine.
2. It should be possible to use computer for system control, operation, analysis, net-working of multiple system.

3. Thermal Cycling System :
   - Peltier-based
   - Instrument should be quoted with 96 well block.
   - Instrument must also have option to upgrade to 384-well and no service visits or re-calibration are necessary after a block change.
4. Optical System :
   - Detection by CCD/PI camera and excitation by Halogen/LED lamp.
   - The light source should be user-interchangeable that is readily accessible and can be replaced from the front of the instrument.
   - Should have more than 5 excitation (450–670 nm) and 5 emission (500–720 nm) filter sets to enable collection of up to 10 unique combinations of wavelengths during a single run for multiplexing.
   - System should able to collect data for all filters for all wells regardless of plate setup.
5. Sensitivity : The system should be able to detect 1 copy of template for a single reaction

6. Chemistry support: The instrument should be open system capable of running various chemistries so that different chemistries using TaqMan, SYBR green etc. The instrument software will allow both TaqMan® and SYBR® chemistries in the same run by collecting different filter colors for PCR versus melt curve stages.
7. Data: The instrument software provides raw fluorescent data and multicomponent (segregated by dye type) data for troubleshooting of experiment.
8. Dyes Calibrated :   System should provide an option to use more than 10 different Dyes combinations. The system should provide addition of new dyes without any hardware change within the wavelength range.
9. Passive reference Dyes : Any calibrated dye preferably ROX should be used as Optional use of passive reference dye for normalization.

10. Run Time: The instrument should be designed to complete a 40 cycle real-time PCR reaction for standard and fast chemistries.

11. Reaction volumes : 5-20 µL for 96 well

12. Ramp Rate should be adjustable

13. Temperature Range : 4°C - 100°C

14. Uniformity : +/- 0.50°C

15. Supported plastic ware :0.1ml 96 well Plate/ Single tubes with caps/8tubs strips

16. Consumable support : Vendor is able to supply all the necessary consumables to perform real-time quantitative PCR and SNP genotyping, including PCR reagents designed for use with the fluorogenic 5' nuclease assay, PCR reagents designed for use with SYBR® Green I dye assay chemistry, fluorogenic probes, reaction plates and adhesive plate sealing covers. PCR reagents are also available with an optional passive internal reference ROX dye to minimize well-to-well variability.

17. Softwares Application :
    - Absolute quantitation
    - Relative quantitation
    - High resolution Melt curve.
    - Allelic discrimination/SNP (Single Nucleotide Polymorphism) detection
    - Plus/minus assays that utilize internal positive controls

18. Primer & probe designing software that designs probes and primers in a manner such that PCR is carried out under universal thermal cycling parameters irrespective of template DNA to eliminate the optimization of PCR condition for running 96 different samples on a single 96 well plate in a single run should be provided.

19. Training, service and application support: The Vendor should have a good service and application support back up along with Instruments to provide an effective application related troubleshooting and support. The Vendor should provide comprehensive Training at training centre on the operation of the instrument, Chemistry options and software

20. 3 - 5 years warranty.

3.   GENE EXPRESSION PROFILING SYSTEM

Specifications

The system should consist of in-solution hybridization, post-hybridization processing, digital data acquisition, and normalization in one simple workflow. Must offers a simple, cost-effective way to profile hundreds of mRNAs, microRNAs, or DNA targets simultaneously with high sensitivity and precision. It should be an integrated system comprised of a fully automated prep station, a digital analyzer, the CodeSet and all of the reagents and consumables needed to perform the analysis.

The system should have the following features:
- Quantify up to 800 targets in a single reaction with sensitivity and precision greater than that of microarrays
- Should cover applications like Gene Expression, miRNA profiling, miRGE expression analysis, Copy number variation, Single Cell Analysis, FFPE studies, RNA-Seq and Array validation and Gene Signature Validation.
- Have the ability to perform direct measurement of individual nucleic acid molecules and provide a digital output
- An integrated system capable of detecting and quantifying nucleic acids (mRNA, miRNA, lncRNA, dsDNA, and ssDNA)
- Capable of generating > 48,000 determinations per day under standard working conditions
- Should have an intuitive touch screen user interface on the instrumentation that walks users step-by-step through all necessary workflows
- Generate gene expression and miRNA data from formalin-fixed paraffin embedded (FFPE) samples that is equivalent to (indicated by $R2$ values >0.95) fresh frozen samples
- Eliminate the requirement for RNA purification and enable measurement of RNA directly from cell lysates, tissue lysates, and raw de-parrafinized FFPE with performance that is equivalent to (indicated by $R2$ values >0.95) RNA purified from such specimens
- Enable mRNA and miRNA to be analyzed together in a single reaction
- Provide fully automated post-hybridization sample processing and data collection
- Offer various levels of Service and Software Maintenance Plans to support instrumentation
- 3 - 5 years warranty.

Should be supported with publications covering all the applications with high impact factors.

4.   LIQUID NITROGEN STORAGE CONTAINERS WITH ACCESSORIES

SPECIFICATIONS

1.   MICROPROCESSOR CONTROLLED TISSUE STORAGE LN2 SYSTEMS

- Precise liquid level control over 16 parameters with auto fill system
- Control panel mounted on the top of the unit for convenient access and easy touch pad programming
- Digital temperature display sensor located under the lid
- 24 tricolor LED continuous display for actual liquid nitrogen level and high-level/low-level set points
- Remote alarm contacts for in-house remote
- Fast access to samples with large, piston-supported insulated lid
- Keyed lock for security
- Storage racks with boxes
- 2D barcode reader
- Riser for vapour storage
- LN2 self pressurised supply tank of 200-250 litres capacity
- Elbow length safety gloves
- 3-5 years warranty

2. LN2 STORAGE CONTAINER WITH LEVEL MONITOR

- Hanging rack and gridded box design for complete tracking and easy retrieval of samples.
- Suited for both manual and computerized inventory record keeping methods.
- Advanced Vacuum insulation to minimize liquid nitrogen evaporation and reduce operating costs.
- Compact size to easily fit into any lab.
- Secure locking hasp to prevent unauthorized entry
- 2" box racks to be included
- Compact size stores up to 4000 samples.
- Roller base for easy mobility
- Liquid Nitrogen Capacity   : 100 to 120 litres
- Average Static Liquid Nitrogen Consumption Rate : 0.99 Litres/day
- Static Holding Time   : 100 to 120 days
- System Capacity   : 3000 to 4000 vials
- Racks included with vessel : 4
- Boxes per rack   : 10
- Box capacity   : 100 vials
- Height with Lid   : 37.5 inches
- Diameter   : 22 inches
- Neck Diameter   : 8.5 inches
- 3-5 years warranty

3. LN2 STORAGE SYSTEMS
- System for storing and dispensing small amounts of liquid nitrogen
- Lightweight aluminium Dewars with low-static evaporation rates.
- Convenient handle for pouring and for use in applications where only small quantities of liquid nitrogen are needed.
- Fitted with self-pressurized withdrawal accessory devised to easily dispense LN2 without pouring.
- Wheeled accessory cart for easy mobility
- Liquid Nitrogen Capacity   : 20 to 30 Litres.
- Neck diameter   : 2.5 inch/6.4cm
- Static Holding Time   : 145 days
- Static Evaporation Rate   : 0.22litres/Day
- Vessel Exterior Dimensions   : 17.0 X 24.1 inch (Diameter x Height)

4. LN2 DRY SHIPPERS (TRANSPORTATION)
- Innovative material absorbs liquid nitrogen to prevent spillage during shipment
- 8 days static holding time
- Durable construction and sturdy base allow dry shipper to withstand rough handling
- Lockable lid prevents unauthorised entry
- Easily transported via most common carriers
- Lightweight aluminium design and convenient pail-style handle
- LN2 Capacity – 1 .5liters.
- Static Evaporation rate of 0.19L/Day
- Vessel Exterior Dimensions - 7.3 Diameter x 13.5 Height inches.
- 3-5 years warranty

5. HIGH THROUGH PUT CELL IMAGING SYSTEM

Specifications

1. The instrument should be a confocal spinning disc in conjuction with at least 8 or more automatic excitation options.
2. The instrument should be capable of imaging live or fixed cells from user friendly formats such as slides, 96, 384 and 1536 well formats.
3. Instrument optics should be capable of acquiring fluorescence, bright field, digital phase contrast and point scan confocal images and should have auto focus features, at least ≤ 58 um pinhole size.
4. Light source should be either a diode based or at least 300 Watts Xenon lamp based source with a wavelength range of 350 – 650nm continuous spectrum.
5. Excitation and Emission filter slots to be completely automated with at least 8 positions in each and should cover the wavelength range as mentioned above.
6. System should have a 14 bit Peltier cool camera CCD or better with chip size 1350 x 1030 pixel, 6 or 7 um square. The CCD camera to have at least 1.3 mega pixel or better.
7. The required objective magnifications are from 2X to 100X high Numerical Aperture &
   long Working Distance. Using 2X objective, the system must be able to enter whole well in 384-well microplate format and more than 85 % of the well plane in 96-well format and enable to quick scan of microplate (preview mode/prescan).
8. Should have at least 4 automatically exchangeable objective lenses for different fields of view / resolutions (10x to 100x objectives, high NA or long WD) and must be marked with bar code for error-free operation.
9. Optical resolution for 20X objective lens to be equal to 0.40 or 0.7in XY(μm) and depth of focus to be at least 4 μm or better, field of view to be 670 x 510 μm2.
10. Confocal mode to be a Nipkow disc or any better disc with Pin hole size at least <58um or less. Should have Lateral resolution – 320nm @ 500nm light, Z- resolution – 1um @ 500nm light , Depth of Confocal plane – 2.6um(40X), 1.9um(60X), 1.3um(100X). better specifications are preferable if any.
11. Should have a large field of view for better analysis
12. Focal plane thickness to be at least 2 – 10 μm
13. The scan table to be a high resolution scanning stage (<160nm mechanical Z travel).
14. Should be a modular field upgradable for any robotic automation like Liquid Handling System etc.
15. System should have a Live Cell capability (Environmental control chamber, Temperature & CO2 controlled).
16. Instrument storage capability should be at least 1TB or better.

17. Should be provided with wave length ranges for Excitations from 350-400nm, 410 - 430nm, 450-500nm, 500-580nm, 600-640nm. (Other ranges to be quoted in the option).
18. Should be provided with wave length ranges for Emission from 400 – 480, 500-550nm, 560-630nm & 650-760nm.(other ranges to be quoted in option).
19. The confocal measurements should be capable of acquiring Z-sections. Should be capable of sectioning multicellular layers with single cell resolution as well as sectioning for sub-cellular resolution.
20. Software Capability :
    i) Should allow for fully automated image acquisition.
    ii) Should be networking capable.
    iii) Online image evaluation and data management.
    iv) Multicolor measurements either in pre defined plate formats – 96,384, 1536well plates or in user defined plate formats.
    v) Multiple image fields within single well as well as Z- stacks.
    vi) Plug and play applications with ready-made image analysis solutions as a starting point.
    vii) Should support the image analysis for NEURITE length measurement, cell proliferation/counting, Apoptosis, Cellular morphology etc.
    viii) Software should be able to recognize different cell populations or regions easily.
21. Software to be provided with at-least one local license with a suitable branded PC.
    Preferably to be equivalent to the following:
    - Windows® 7 (64 bit) or better, l Intel® Xeon® SixCore E5-2620 or better,
    - 32 GB RAM , Hard drive 2 TB (RAID 1, 2X 2TB)
    - Screen resolution of 1920 x 1200 (24"), DPI setting: normal size (96 DPI),
    - Gigabit Ethernet connection to PC.
22. Software should be multi-processor enabled for fast parallel processes maximizing today's grid-based computing environment. Also to have machine learning capabilities to provide information on different cell population or region and optimal image segmentation and cell classification.
23. Team of Application Scientists should be available preferably to be available locally to provide technical support, troubleshooting and help us to optimize our assay protocols.
24. 24x7 online technical support services should be provided
25. Stand by equipment / unit should be available to avoid any delay in completing the experiments in case of any breakdown.
26. For up gradation to High Through put imaging, vendors with proven robotic platforms are preferable.
27. Testimony (End User Certificate) from at least one existing User with minimum one Publication in any International Journal using the instrument is Mandatory for the preliminary qualification of Vendors.
28. 3 - 5 years warranty.

6. AUTOMATIC LIQUID HANDLING SYSTEM

Specifications

- System should perform – pipetting,Serial dilution,reagent dispensing, Sample transfer from tubes to Plate reformatting 384 to 96 viceversa and single tube. Pipetting precision and accuracy lower than 2% CV for lowest dynamic volume range, hitpicking and Normalization.
- System should have minimum 6 positions up to 12 positions (ANSI/SBS standard)
- System should have facility to check labwares and detect all programs to avoid error.
- System should have Interchangeable tools for pipetting and a gripper tool for plate movements
- System should have automatic tool selection without any manual intervention to assist in selection of the best tool to use for a specific function.
- System should offer precise and robust pipetting tool autoclavable both single-channel and 8-channel separately.
- System's dynamic volume range should be 1 µL to 1000 µL
- Contact free liquid dispensing to avoid cross contamination. Liquid level detection using IR sensor.
- System should have an enclosure to protect samples against airborne particles & dust protection
- Thermo rack for PCR, reagent reservoir etc.
- Software should have option for liquid level tracking and user format 6, 96, 384well plates, 0.2mlpcr tubes, DWP plates also.
- Should include below pipetting tools with ISO Compliance and automatic tool calibration warning.
    ✓ Single Channel Pipette Tool with Liquid level sensing (Capacity 1ul-40uL)
    ✓ Eight Channel Pipette Tool (Capacity 1ul- 40uL)
    ✓ Single Channel Pipette Tool with Liquid Level Sensing (Capacity 40ul- 1000uL)
    ✓ Eight Channel Pipette Tool (Capacity 40-1000uL)
- System should have inbuilt intergrated mixer with temp control for mixing plates,tubes, etc.
- System should come with built-in software and accessories for magnetic bead based Nucleic acid extraction with magnetic finger module and racks accessories etc.
- Open system to carry out sample preparation for PCR,QPCR, Sequencing, NGS, Normalization etc..
- System should come with optimized software's for PCR Purification and PCR Cleanup methods.
- System should have an option to upgrade in future to integrate various third party Equipments viz Multimode Readers, Incubators, Plate Storage Devices, PCR etc…
- System should have tips with filter, without filter, reuse options etc.
- System should come dedicated control unit or Computer, Monitor (at least 22 inches.
- 3 - 5 years warranty.

7. MULTIMODE READER WITH PROTEIN-PROTEIN INTERACTIONS MODULE

Specifications

The instrument should be a modular multimode plate reader with Photometric technology, Fluorescence intensity technology Luminescence technology, AlphaLISA/Screen technology and Novel Technology for Cellular and Biochemical label free assays to support end point, kinetic, spectral and well area scanning measurements.

Instrument should have dual excitation Monochromators and dual emission Monochromators

Instrument should automatically calibrate results with different gain settings to obtain single consistent measurement range

Instrument should read plate formats up to 384-wells; it should also have the option to read up to 8 cuvettes at a time.

Instrument should have plate ID Bar code readers for all sides of the microplates used.

Preferably the instrument should have movable detectors/plate height sensor for optimization and standardization of the assays.

Application demo has to be provided by trained Application scientist for initial optimization and standardization of the assays for minimum 2 days at site for free of cost.

It is preferred to have cell cytotoxicity assay, Alpha assays and Photometric, Fluorescence, Luminescence micro plates for initial optimization and standardization of the assays supplied along with main instrument as free of cost. Alpha reagents for initial optimization should be supplied as free of cost.

Photometry:
Light Source   : Xenon flash lamp
Wave length selection   : Dual excitation monochromators and Dual emission monochromators
Wavelength range   : 230-1000 nm
Wavelength increment: 0.5 nm or less
OD value   : for 96 well & 384 well plate 0-4 OD.
Accuracy   : @ 2 Optical density should be <2%
Precision   : @ 2 optical density should be <0.1%.
Band width   : 5 nm
Detection   : Photodiode

Fluorometry:
Light Source   : Xenon flash lamp
Wave length selection   : Dual excitation monochromators and Dual emission monochromators
Wavelength range   : 230-850 nm
Wavelength increment: 0.5 nm or less
Band width   : for excitation and emission 5nm.
Sensitivity   : < 1 fmol for fluorescein with 96 & 384 well plate reading
Detection   : Photomultiplier tube

Luminometry:
Measurement   : Flash and glow luminescence.
Sensitivity   : 96 & 384 well plate for ATP < 10pM (Glow)
                                        384 well plates for ATP < 15 amol/well (Flash)
Lower detection limit : < 1 fg for Firefly luciferase
Dynamic Range   : 6 logs
Cross talk   : < 0.02%
Detection   : low noise photomultiplier tube
Dispenser should be quoted.

Alpha LISA/ Alpha Screen detection:
Light Source   : High power Laser
Measurement   : AlphaLISA/Alpha Screen.
Sensitivity   : < 100 amol, 384-well plate (25µL, phosphorylated bio-peptide, kinase
                                        assay)

Novel Biosensor based Cellular and Biochemical Assay Technology:
Detection method   : Optical biosensor
Detection technology   : Dynamic Mass Redistribution based on changes in refractive index
System variability   : 5 pm
Plate format   : 96 and 384 plates

The instrument must perform cellular label free assays like Antibodies / Biologics, Cell Adhesion, Chemotaxis, Cytotoxicity, GPCRs, GPCR Heterodimerization, Ion channels, Nuclear Hormone Receptors, Phagocytosis, Receptor Tyrosine Kinases, Toll-like Receptors (TLRs), Transient Transfections, Viral infection detection

The cell based label free assays should have compatibility to use Cells such are Endogenous & Recombinant, Primary & Stem, Adherent & Suspension, Freshly Cultured & Frozen and Patient Samples.

The instrument must perform biochemical label free assays like Assay Development, Aggregation, Direct Binding Assay With Nuclear Receptors, Fragment Screening, Functional Enzyme Assays, HTS, Kinases & Proteases, Microarray, Protein-Oligo(DNA / RNA) Interactions, Protein:Protein, Receptor –Antibody Binding, Antibody –Antibody Binding, Small Molecule Binding, binding strength (KD).

The biochemical label free micro plates should have dual-sensor self-referencing technology in order to avoid false positive result.

Incubation:
Minimum temperature   : ambient temperature +2 °C
Maximum temperature   : +65 °C
Temperature gradient @ 37 °C   : ±0.5 °C
Heating time for room temperature to 37 °C : < 15 min
Temperature accuracy   : ± 1 °C
Condensation prevention   : It is preferred to have upper heating element which should have option to
                                                                              adjust to the higher temperature than the lower element (max. difference 4 °C or
                                                                              more).

Plate shaking

Modes	: Linear, orbital and double orbital.
Speed	: Three speed levels
Amplitude	: Adjustable

Software:

Should be possible to run calculation methods including average, % CV, standard deviation, Z factor, blank correction, dilution correction and many more

Software should have Real-time display for Label-free kinetic trace, Label-free response calculation tools.

Software must be included in price and should also function on curve fit, dose response, kinetic parameters, user defined calculations.

Data export format-should be USB, Internal network, CSV including Excel, text, graphics.

There must be no limitations on the number of installation of the software.

Software available offering features needed for compliance with the FDA's 21 CFR Part 11 with database based software.

Suitable computer to be provided free of cost along with the equipment

Warranty: 3 - 5 years.