

**[BCH]**  
**DEPARTMENT OF BIOCHEMISTRY,**  
**UNIVERSITY SCHOOL OF SCIENCES, GUJARAT UNIVERSITY**  
**(F.O.R. Department, 3 years Extended Warranty (1 or 2+2 years CAMC from principals))**

**1. 2D Gel Analysis with Software and western Blot attachment:**

**2-D Gel electrophoresis Unit:** 2-D Gel Electrophoresis should be useful for proteomics study. System should be capable of separating biomolecules quickly and effectively. System should deliver purified proteins, nucleic acids, and other biomolecules for sequencing, antibody production, crystallography and other applications etc. System should include: Isoelectric focusing unit with compatible power supply, focusing trays with lids, forceps and other necessary accessories for basic unit,

**Isoelectric focusing unit (IEF):** System should be capable of running 7-24 cm IPG strip, various lengths in single system. Various lengths viz: 7, 11, 17 and 24 etc.

- Current should be monitored in each IPG strip; Capacity 12 strips per tray,
- Temperature controlled platform, power mode should be constant, real time clock; System should include power supply; Output voltage 12,000V with 1V increment; Current 0-2.5mA, Power approx. 0-25W; Voltage ramping profile should be slow, linear. Platform; Voltage profile: slow, linear etc. Temperature 10-25°C,
- Device should be programmable viz: Rehydration and focusing time, platform temp., and current limit per IPG etc.

**SDS PAGE Electrophoresis unit:** The SDS PAGE unit should include casting stand, spacers, combs, central cooling core, buffer chambers (lower and upper), lid with cable and other necessary accessories.; 1. System should be capable of running 16x16 cm, 16x20 cm size of gels, 2. System should accommodate at least 17 cm IPG strip, 3. Device should accommodate handcast and precast gel, 4. System should run more than 100 samples at a time, 5. Temperature should be uniform during running gel and central cooling must be provided, 6. System should accommodate denaturing and native polyacrylamide gel, 7. System should be user friendly for handling.

**Power Supply:** Should attempt to maintain the selected voltage by automatically adjusting the current flow; maintain the user selected current flow by automatically the voltage supplied, 1. Maximum power 500W, Timer 0-999 min, 2. Input Voltage: 100-240V, freq. 50/60HZ, 3. Voltage 10-500V in Volts, current 0.01-500mA; 4. Output mode of voltage and current should be constant. 5. System should be programmable, 6. System should be capable of leakage and load detection, 7. System should have over load and short circuit protection, 8. Operating temp from 0-40°C; 80-90% humidity; 9. LED display system.

**Software:** 2D Gel analysis software with all the recent features

**2. Microplate spectrophotometer for Nano-drops**

Read method: Endpoint, kinetic, spectral scanning, well area scanning; It should be able to run spectral scans of 2 µL samples, or samples,

Low Volume Plate: The low volume plate should be capable of measuring up to sixteen 2 µL samples for rapid nucleic acid or protein quantification. It should be also capable of measuring two miniature cuvettes and at least one standard cuvette.. The plate should be re-usable and have low maintenance. The fused silicon slides should be easily removable and replaceable.

Micro-plate types: Should be capable of reading 6-, 12-, 24-, 48-, 96- or more well plates

Light Source: Xenon Flash Lamp, Lamp life 1 billion flashes

Wavelength range: 200 nm – 999 nm, selectable in 1 nm increments through tunable grating monochromators.

Bandpass – 5 nm; Dynamic range – 0 to 4.0 OD; Resolution - 0.0001; Monochromator wavelength accuracy –  $\pm 2$  nm; Monochromator wavelength repeatability –  $\pm 0.2$  nm; Reading speed – 96-well Normal: 49 seconds; 96-well Rapid: 38 seconds; 96-well Sweep: 15 seconds  
Software

Single integrated windows based software for Reader control and data analysis with at least 5 user licenses should be supplied with the instrument. The software should be able to analyze the data and perform all the calculations. Power – 100 – 240 VAC, 50-60 Hz, Consumption < 40W; Regulatory – Instrument should be CE and NRTL Safety Agency marked.

### **3. Freezing and Cooling Systems**

Microprocessor controller with digital display; Adjustable High/low temperature alarm; Door open alarm; Frost free, Forced air cooling; Adjustable shelves- Shelf : 4 or more; Capacity : More than 600 Ltrs; Temperature Range :  $1^{\circ}\text{C} \sim 8^{\circ}\text{C}$ , Lock : Yes; Wheels : 4 (All)  
Energy Consumption: **VC in 10.8 units/24Hrs**; Provision for in built power supply for small equipments

### **4. Visible Spectrophotometer:**

Microprocessor based, Wave Length Range: Full Visible range (350 – 900nm), Grating: high, Spectral Band Width: 0.5 to 4nm, Resolution: 0.2 or better, Wave length accuracy:  $\pm 0.3$  nm, Wavelength reproducibility: 0.01 nm, Scan Rate: 500nm or more/min, Pre-aligned Halogen lamp Photometric accuracy:  $\pm 0.001$  A 10; Detector: Photo Multiplier Tube (PMT), It should have % transmission, Absorbance and Concentration mode scanning with single, multiple and spectrum scan option. The instrument operation and data processing should be on Board with good quality digital display.

### **5. Real Time Thermal Cycler-**

PCR system for carrying out molecular biology works of Microorganisms and Animal tissue to detect the target genes.

**Basic Features** - Four excitation and Four detection channels (365-680 nm excitation, 450-750 nm detection) with separate channel for HRM (**High resolution melting curve analysis**)

- **Excitation & Emission Filters (Source)** - Fixed optical path, separate high power excitation LEDs or high-intensity xenon lamp, and emission filters per channel, LEDs (450-684nm range) correspond to each dye that ensures smooth differentiation of even dyes having high degree of spectral overlap, System should come with lifetime warranty on excitation LEDs.
- **Detector** - Highly sensitive photomultiplier detector with gain setting (sensitive control), CCD Camera

**Number of Wells** - Compatible for Diagnosis purpose, **Sample Volume** - 5  $\mu\text{l}$  to 30  $\mu\text{l}$ ;

**Flexibility** - System should have flexibility to accommodate 0.1 ml, 0.02 ml, 0.03 ml tubes;

**Dynamic Range** - 10 orders of magnitude; **Heating & Cooling** - System should have heating and cooling technology (**either peltier-based or without peltier**), with ramping speed  $5^{\circ}\text{C}/\text{sec}$ , Temperature uniformity:  $\pm 0.01^{\circ}\text{C}$ , Temperature resolution:  $\pm 0.02^{\circ}\text{C}$  for HRM application, Temperature range: 0 to  $100^{\circ}\text{C}$ ;

**Reagents & Accessories** - PCR enzyme master mix, HRM dyes for minimum 100 runs should be provided, Pentium i5 All in one PC with Windows 7 should be provided, Detection and analysis software pertaining instrument should be provided; **Application** - Primary validation of gene expression using human cells, Absolute quantification of gene expression for array validation, gene-knockdown studies, or SNP analysis, Statistical analysis tools, SYBR, F, T, H, R, TE, TA, V, C3, C5, Light C R, Running cost per sample should be mentioned, mentioning detailed cost of primers, HRM dyes and other accessories etc, One stop training facility,

## **6. Protein analysis System**

It should complement with existing lab methods such as blots and gels and give real time binding curves for visual confirmation in second. It is Ideal for understanding the real time interactions of target protein with any types of cellular molecules to know the mechanism of efficacy desirable conditions.

Simple dip and measure format based on bilayer Interferometry, capability to use wide ranges of sample in all possible forms or in different mode to study the binding with all different Biomolecules, such as antibodies, ligands, or other chemicals by covalent or non covalent interactions, should work with label or label free, capable of kinetic study such as association & dissociation rate constants and affinity events, detection should be independent or dependent of Refractive Index, pH or other alterations, Sample volume should be 5-500  $\mu\text{L}$  or lesser, Real time data acquisitions and monitoring should be possible; Latest software for analysis for quantitation and kinetics and other related parameters,