



TENDER NOTIFICATION

Adichunchanagiri University is inviting Closed tenders for the supply of major and minor equipment for the Adichunchanagiri University R&D Centre from the competitive firms.

1	Name of the work	Supply of major and minor equipment for Adichunchanagiri University R&D Centre.
2	Tender documents available for download	18-12-2019 to 04-01-2020 up to 5:00 PM

Sl. No	Requirements for Adichunchanagiri University R&D Centre	Quantity (in No's)
Minor Equipment's		
1.	Horizontal Sub-marine agarose electrophoresis System with Digital Power supply with Digital Timer	2
2.	Autoclave	1
3.	Centrifuge without temperature control- Remi MODEL R24	2
4.	Deep Freezer - Remi MODEL RQV - 500 Plus	2
5.	Digital Heat Block	2
6.	Ultrasonic Bath Sonicator	1
7.	Gel Rocker	1
8.	Heating Mantle	4
9.	Hot Air Oven	1
10.	Incubator	1
11.	Motorless Magnetic Stirrers	5
12.	Magnetic Hot Plate Stirrers	5
13.	pH Meter	2
14.	Vacuum Pump - Oil free	2
15.	Mini Centrifuge	1
16.	Cyclomixer (Vortexer)	4
17.	Water Bath	3
18.	Microplate Shaker Digital	1
19.	UV Torch - hand held lamp with quartz filter	1
20.	PCR Workstation	1
21.	Ice Flaker	1
22.	Muffle Furnace	1
23.	TLC Plate Viewer	1
24.	Vacuum Oven	1
25.	Electrical Balance	3



Sl. No	Major Equipment's	Quantity (In No's)
1.	Table Top XRD	1
2.	FTIR Spectrophotometer	1
3.	Multimode Micro plate Reader	1
4.	High Performance Liquid Chromatography system	1
5.	NanoDrop Spectrophotometer	1
6.	Real time PCR system	1
7.	Probe Sonicator	1
8.	Refrigerated Centrifuge	2
9.	Microprocessor controlled -80°C upright ultralow deep freezer	1
10.	CO ₂ Incubator	2
11.	Class II Biohazard safety cabinet	2
12.	Computational workstation	1
13.	Liquid Nitrogen Plant	1
14.	Mini Vertical Electrophoresis	2
15.	Micro Volume UV/Vis Spectrophotometer	1
16.	Gel Documentation Unit	1
17.	Water Purification system	1
18.	Freeze Dryer or Lyophilizer	1
19.	Inverted Binocular Microscope with Camera	1

Note: Kindly send quotes in 2 bid formats (Technical and Financial bids sealed separately)



MINOR EQUIPMENT'S

1. Equipment Name: Horizontal Sub-marine agarose electrophoresis System with Digital Power supply with Digital Timer

Technical Specifications

Gel running trays	140 × 150 mm - 1 No, 70 × 150 mm - 2 No's, 70 × 70 mm - 4 No's (W × L)
Gel casting Tray	Compatible to gel running trays-1No.
Acrylic comb 1.5 mm	21-well - 3 No's (Compatible to 140 × 150 mm gel running tray) 10-well - 4 No's (Compatible to 140 × 150 mm & 70 × 150 mm gel running trays) 08-well - 4 No's (Compatible to 140 × 150 mm & 70 × 150 mm gel running trays) 06-well - 4 No's (Compatible to 70 × 150 mm gel running tray)
Back ground sticker	Yes
Cords	2 sets
Platinum electrodes	1 set

Digital Power supply with Digital Timer

Technical Specifications

Input Voltage	230 V ± 10% AC 50 Hz.
No of Outputs	4 No's
Output voltages	0-500 V insteps of 1 V
Output current	0-500 mA insteps of 1 mA
Digital Timer	24 hours
Voltage Display	Digital LED display

2. Equipment Name: Autoclave

Technical Specifications

Capacity	90-100 L
Electrical Power	230V, ±10% AC 50 Hz
Working pressure and Temperature	1.2 to 2.2 Kg/sq.cm at 121°C
Material of Construction	Stainless Steel
Gasket	Heat resistant SILICON door gasket withstand upto 140°C



Safety devices	Pressure switch and safety valve, self-locking of door when chamber is under pressure. Vacuum breaker for jacket Steam generator with gauge glass valves and Low water protection with audio visual indicator.
Digital Timer	Yes

3. Equipment Name: Centrifuge without temperature control-Remi MODEL R24

Technical Specifications

Max. Speed	rpm	17300
Max. RCF	'g'	27440
Max. Tube size	ml	100
Max. Capacity	ml	400
W × D × H	mm	400 × 500 × 455

Rotors:

Models	Capacity	Type of Rotor	Type of Container	Speed (RPM)	RCF 'g'
R-242	6 × 50 ml	Angular	Plastic	12100	14240
R-244A	8 × 15 ml	Angular	Plastic	15400	20150
R-248	24 × 1.5 ml	Angular	Plastic	17300	27440

4. Equipment Name: Deep Freezer - Remi MODEL RQV-500 Plus

Technical Specifications

Internal Volume (Liters)	500
Numbers of Trays	5
Internal Dimensions W×d×H (mm)	640×755×1030
External Dimensions W×d×H(mm)	800×975×1620
Minimum Temperature	-20°C
Insulation (CFC free polyurethane foam)	70 mm minimum for Body & 80 mm for Door
Temperature control	Microprocessor
Display	1" – 7 Segment, Big Size LED
Power Failure Alarm	Audio Visual Alarm
Door Open Alarm	Audio Alarm in case door open for over one minute
Internal Body Material	Stainless Steel - 304 grade (Standard Models), Stainless Steel - 316 grade (GMP Models)
External Body Material	Powder Coated CRCA Steel (Standard Models), Stainless Steel - 304 grade (GMP Models)



Noise Level	Less Than 65 db(A)
Recommended Voltage Stabilizer	VS-03
Electrical	220-240 volts, 50Hz, Single Phase

5. Equipment Name: Digital Heat Block

Technical Specifications

Input Voltage	230 V \pm 10% AC 50 Hz.
Temperature Range	5°C to 120°C
Temperature Stability	\pm 1.5°C
Temperature Uniformity	\pm 0.1°C
Heat Up Time to 100°C	50 minutes
Compatible for microtubes with capacity	0.5 ml, 1.5 ml and 2 ml

6. Equipment Name: Ultrasonic Bath Sonicator

Technical Specifications

Input Voltage	230 V \pm 10% AC 50 Hz.
Operating frequency	40 \pm 5 KHz
Tank capacity	10 \pm 2 L
Heater	Yes
Temperature range	Ambient +5 to 80
Sleep mode	Yes
Drain facility	Yes
Noise level	< 70 db
Timer, Continuous	Yes, 0.1-99.9 min digital

7. Equipment Name: Gel Rocker

Technical Specifications

Input Voltage	230 V \pm 10% AC 50 Hz.
Platform size	280 \times 280mm
Speed Variable	0-60 oscillations / minute
No of Platforms	One Platform
Platform mat	Rubber mat with stripes
Max. weight	Single platform 3.5 Kgs
Action	See-saw movement
Timer	Yes, 0-60 min digital

8. Equipment Name: Heating Mantle

Technical Specifications



Input Voltage	220 V \pm 10% AC 50 Hz.
Round-bottom flask	500 ml
Operation time	continuous
Maximum Temperature	Upto 400°C

9. Equipment Name: Hot Air Oven

Technical Specifications

Temperature Range	5°C above ambient to 250°C maximum
Temperature Accuracy	\pm 2°C
Temperature Uniformity	\pm 1°C
Controls	PID Controller
Temp Display	LED Display
Sensor	PT-100
Heating Element	Nichrome wire / Kanthal A1
Safety device	Over temperature protection, Electric leakage breaker; Temperature safety as per DIN 12880 Class 3.1
Exterior Chamber	MS powder coated
Interior Chamber	304 stainless steel
Insulation	Mineral Wool
Doors	Solid doors with silicone rubber gasket & lock
Shelves	2 - 3 Stainless steel shelves (Removable)
Air Circulation	Forced air circulation
Power Supply	220 Volts

10. Equipment Name: Incubator

Technical Specifications

Temperature Range	Ambient to 70°C maximum
Temperature Accuracy	\pm 2°C
Temperature Uniformity	\pm 1°C
Controls	PID Controller
Temp Display	LED Display
Safety device	Temperature over shoot high and low temperature alarm
Interior Chamber	304 stainless steel
Shelves	2 - 3 Stainless steel shelves (Removable)
Power Supply	220 Volts

11. Equipment Name: Motorless Magnetic Stirrers

Technical Specifications



Max. RPM	1500 RPM
Speed Setting	15 to 1500 RPM (at every 50 RPM)
Set - up plate material	Stainless Steel
Speed indicator	Yes
Permissible ambient temperature (°C)	5 - 40
Permissible relative humidity (%)	80
Voltage (V)	220 - 240
Frequency (Hz)	50
Load capacity (Water)	800 ml
Recommended Stir bar length	25 mm
Pulse function	Yes
Sync Mode	NO
Last run memory	Yes
Dimensions (W × D × H)	120 × 164 × 12 mm
Protection Class	IP65

12. Equipment Name: Magnetic Hot Plate Stirrers
Technical Specifications

Max. capacity	20 L
Max. speed (rpm)	2200
Stirring positions	One
Set up plate	Ceramic
Protection Class	IP21
Dimension (W × D × H) in mm	220 × 330 × 115
Set up plate in mm	180 × 180
Display	Digital
Temp range	From ambient - 350°C

13. Equipment Name: pH Meter
Technical Specifications



pH	Range	-2.00 to 16.00 pH
	pH Resolution	0.01 pH
	Accuracy	± 0.01 pH
	Calibration Points	up to 3 points
	pH Buffer options	USA (pH4.01/7.00/10.01) or NIST (pH4.01/6.86/9.18)
mV	mV Range	±1999 mV
	Accuracy	± 1 mV
	Resolution	1mV
Temperature	Range	0 to 105°C
	Accuracy	± 0.5°C
	Resolution	0.1°C
	Temperature Compensation	0~100°C, Manual / Automatic
General	Hold Function	Available
	Auto Off Function	Available
	Connector	BNC
	Display	LCD (135× 75mm)
	Power Requirements	DC9V, using AC adapters, 220VAC/50Hz
	Dimensions (L x W x H)	210 × 205 × 75 mm
	Packing Box Size	300 x 250 x 175 mm
	Weight	1.5 kg

14. Equipment Name: Vacuum Pump - Oil free
Technical Specifications

Max. Vacuum	650 mmHg
200 mmHg	2sec
300 mmHg	3sec
400 mmHg	4sec
500 mmHg	6sec
600 mmHg	11sec
650 mmHg	18sec
Max. flow rate	15-23 L/Min
Motor rotation	1400RPM
Horse Power	1/6 - 1/8 HP
Pole	4P
Noise Level	54 db



15. Equipment Name: Mini Centrifuge
Technical Specifications

Speed RPM / RCF (g)	6000 / 2000 g
Digital Display	Yes
Noise Level	< 55 dB
Power Supply	Universal (95 to 230V, 50/60Hz)
Dimensions (W×D×H) in mm	162 × 157 × 115 mm
Rotors and Adaptors (included in standard pack)	8 Slot × 1.5/2.0ml Closed Rotor
	PCR Strip Rotor (2 × 8 × 0.2 ml)
	Reduction Adaptors for 0.2 / 0.4 ml microtubes

16. Equipment Name: Cyclomixer (Vortexer)
Technical Specifications

Max. Speed	Upto 3000 rpm
Capacity	1.5 ml, 15 ml & 50 ml tubes
Rolling Movement	Yes
Driven Type	DC Motor
Input Voltage	230 V ± 10% AC 50 Hz.

17. Equipment Name: Water Bath
Technical Specifications

Temperature Range	Ambient to 100°C
Accuracy	± 0.1°C
Temperature Uniformity	± 0.1° at 37°C
Temperature Stability	± 0.5° at 37°C
Capacity	28 L
Display	Digital
Input Voltage	230 V ± 10% AC 50 Hz.

18. Equipment Name: Microplate Shaker Digital
Technical Specifications

Max. Speed	1200 RPM
Motion	Orbital (4 mm displacement)
Display	Digital RPM Display
Control	Electronic DC Control
Plate capacity	Four micro plate holders
Tray Size	270 × 200mm



19. Equipment Name: UV Torch - hand held lamp with quartz filter
Technical Specifications

Input Voltage	230 V \pm 10% AC 50 Hz.
Wavelength	254 nm and 365 nm
UV filter size	50 \times 150 mm
No. of UV Tubes	6W \times 1= 254 nm 6W \times 1= 365 nm

20. Equipment Name: PCR Workstation
Technical Specifications

Working area	600 mm \times 600 mm \times 600 mm LWH
Construction	Stainless Steel working area/ MS frames
Front panel	UV proof visible sheet
Fluorescent white tube	1 No.
UV light	1 No.
Input voltage	230V 50 Hz. \pm 10% AC
Digital Timer for UV Tubes	Yes

21. Equipment Name: Ice Flaker
Technical Specifications

Construction	Stainless Steel
Ice making capacity	50 kgs per day
Bin capacity	7 Kgs
UV light	1 No.
Input voltage	230V 50 Hz. \pm 10% AC
Digital Timer for UV Tubes	Yes

22. Equipment Name: Muffle Furnace
Technical Specifications

Phase	Single phase
Input voltage	230V 50 Hz. \pm 10% AC
Max. Temperature	1200°C
Heating by	Kanthal elements grooved with high temperature alumina tube
Display	LED / LCD Digital control with thyristor power pack, thermocouple and switchgears
Temperature Accuracy	\pm 1°C (\pm 1.8°F)
Temperature Controller	PID controller
External Chamber	MS w/ Powder Coating / 304 Grade Stainless Steel



Construction	(Optional)
Internal Chamber Construction	Ceramic Board & Grooved Refractory Chamber as per Temp. Requirement
Insulation	Ceramic wool insulation
Alarm	Audible & Visual type
Certification	ISO, CE & GMP
Stabilizer	As standard

23. Equipment Name: TLC Plate Viewer
Technical Specifications

Parameter	Value
Input Voltage	230 V \pm 10% AC 50 Hz
UV exposed area	300 \times 300 mm
UV tubes	254 nm and 365 nm
UV window	UV protective shield
UV area	Rubber mat with stripes
Max weight	6 kg
Unit protection	Through fast blow
TLC-View	UV cabinet for TLC plate viewing Dual wavelength, MS powder coated finish, 254 and 365 nm with separate range selector switch, white fluorescent light for inside chamber visibility, viewing window with UV protective shield, unit is protected by fast blow fuse

24. Equipment Name: Vacuum Oven
Technical Specifications

Display	Digital, LED/LCD
Chamber Volume (Litre)	75 Litre
Number of Shelves	2 - 3
Power Supply	>220 V
Temperature range	50°C to 300°C with \pm 2°C accuracy
Vacuum control	Uniform drying under Vacuum
Temperature control	Digital Temperature Indicator cum controller
Vacuum chamber	High quality heaters for quick and uniform heating.
Door	Thick tempered toughened glass window Perfectly sealed with silicone rubber gasket for observation without disturbing thermal condition.



Screw	4 Positive screw to tighten the lid to obtain perfect seal.
Working chamber	35 × 35 × 50 cm.
Current	230, AC, 50Hz

25. Equipment Name: Electrical Balance
Technical Specifications

Weighing capacity		2201 g
Minimum indication		0.1 mg
Range of external weights for calibration		95 - 220 g
Repeatability (standard deviation)		≤ 0.1 mg
Linearity		± 0.2 mg
Response time		Approx 3.0 seconds
Operating temperature and humidity limits		5 - 40°C 20~85% *2
Temperature coefficient for sensitivity (10-30°C)		± 2 ppm/°C
g	Accuracy class	1
	Capacity	220 g
	Verification scale interval (e)	0.001 g
	Number of verification scale interval	220000
	Scale interval (d)	0.0001 g
	Range of use	0.01g - 220 g
ct	Accuracy class	1
	Capacity	11100 ct
	Verification scale interval (e)	0.01 ct
	Number of verification scale interval	110000
	Scale interval (d)	0.001 ct
	Range of use	0.1 ct - 1100 ct
Response time		Approx. 3.0 seconds
Ambient operating temperature		10 - 30°C
Pan size (mm)		Approx. f 91
Display		LCD
Rated electric power supply		DC 12 V, 1 A
I/O terminal		DATA I/O
Pollution Degree		2
Overvoltage Category		Category II
Altitude		Up to 2000 m
AC adapter (primary)		AC 100- 240 V, 400 mA 50/60 Hz



MAJOR EQUIPMENT'S

1. Equipment Name: Table Top XRD

Technical Specifications

X-ray Generator

Tube load - 600 W or more

Tube voltage - 40 kV (Variable) or more

Tube current - 15 mA (Variable) or more

High voltage generation - High frequency method

Stability $\pm 0.05\%$ (for a $\pm 10\%$ variation in line voltage)

X-Ray shutter - Mechanical rotary shutter linked to Main door.

X-ray tube - Cu 1.0kW or higher

Safety Features

- a. Abnormal Generator Overload Detection.
- b. Abnormal Tube Voltage & Current Detection.
- c. Abnormal Cooling Water Flow and Pressure.
- d. X-rays completely Shut Off, Alarm and Warning.
- e. Light are activated if any Fail-safe Devices are.
- f. Tripped or Fail to operate.
- g. X-rays Shutt Off if any fails of warning light.
- h. Emergency Stop Switch

Goniometer Details

Type-Vertical Theta Theta or Theta 2 Theta

Radius minimum 140mm or more

Scanning method: θ - 2θ

Drive system-Pulse motor drive

Scanning range - at least $-3 \sim +145^\circ$ (2 Theta) or more

Scanning Speed-atleast $0.01 \sim 100^\circ/\text{min}$ (2 Theta) or more

Minimum step width- atleast 0.005° (2 Theta)

Accuracy Better than -0.02°

Knife Edge

Soller slit -2.5° or better

K-Beta reduction-Ni-Filter

X-ray Detector Details

Fast 1D solid state multistrip detector.

Should be able to suppress Fluorescence.

Also should work in both 0D and 1D.

Basic system should have the following Software Provisions

System condition setting

Real time angle calibration. New Angle correction method using Pre-measured Calibration data gurantees below 0.01° Accuracy

Manual measurement

Standard measurement

User-settable conditions



Sample name, Sampling width (step size), Scanning range, Scanning speed, Measurement mode (Continuous, step scan, integral measurement, skipscan) Peak Search Background calculation and subtraction, Profile smoothing, K-a2 calculation and removal, Peak Search.

Integrated Intensity calculation, Background calculation and subtraction, Profile Smoothing, K-a2 calculation and removal, Peak search, LPA calibration, Integrated calculation

Multiple Recording Software

Software for Qualitative Analysis

Si Standard (NIST Traceable)

Sample holders 20 No's

Chiller

External Chiller for cooling the Xray tube.

Computer

Branded PC with Windows 8 Professional or 10 Licensed version of latest type with 23" LED monitor suitable for the above XRD.

Sample Plates

Total of 60 numbers (Including Glass and Al)

2 numbers Low Background sample holders.

Operational Manual

A detailed system description document and operation manual should be provided along with the system. The document should include part details and allowable detachment/replacement procedures for all important components of the system.

Installation Commissioning and Training, Warranty

After receipt of the item at purchaser's site the complete system shall be integrated installed and commissioned at the designated place (at purchaser's site) by vendors representative. The vendor's representative should also provide complete hands-on training to the purchaser after installation and commissioning.

Warranty- 12 months.

2. Equipment Name: FTIR Spectrophotometer

Technical Specifications

- The FTIR Spectrophotometer should be fully PC based operating in Windows environment.
- It should have a measuring wave number range at least 7500 cm^{-1} to 350 cm^{-1} with a variable spectral resolution of from 0.5 to 16 cm^{-1}
- The IR source should be high intensity Ceramic source. Interferometer windows should be of non-hygroscopic material to for long life. The detector should be LiTaO_3 or DLATGS detector.
- The FTIR should have a Germanium coated KBr beam-splitter for highest energy throughput with anti-humidity coating on both surfaces for high resistance to humidity.



- The FTIR should have very high sensitivity with a guaranteed Signal-to-Noise ratio of minimum 10,000:1 or better Peak to Peak. Instrument should be capable for future up gradation for accessories for different applications like Horizontal or Vertical ATR analysis, Gas analysis, FTIR Microscope etc.
- It should have inbuilt mechanism to continuously monitor the alignment of the interferometer and correct it for perfect alignment during every scan and He-Ne laser for data sampling.
- The software should include all routine data processing functions like Arithmetic calculations, peak detection, dynamic spectrum subtraction, derivative calculation up to 2nd order, peak area integration, Absorbance to Transmittance conversion, log intensity conversion, data smoothing, peak normalization, interpolation etc.
- The software should also have as a standard feature advanced data processing capability including Single Point and Multi-Point Quantitation software, Multi-linear Regression (Multi-Component analysis) capability, Deconvolution, Film Thickness measurement, Spectral Purity measurement, Kubelka-Munk conversion, Kramer-Kronig Analysis, ATR correction Double Recurrence Analysis, Combined calculations, Food Additives Identification etc.
- The instrument should be supplied with built in Validation software and also should have the Standard analysis Program IR Pilot (23 Measurements + 4 kinds of data processing).
- Optional Items:
 - KBr Press set for pellet preparation should be supplied with Instrument.
 - Compatible PC to be quoted optionally.

3. Equipment Name: Multimode Micro plate Reader **Technical Specifications**

Detection Modes Possible, Combination of Spectrometer (option) based detection system for ABSORBANCE and Filter based detection for FLUORESCENCE to allow maximum sensitivity in respective measurement modes

- UV/Vis Absorbance, Filter based and should have provisions to upgrade to SPECTROMETER/MONOCROMATOR based ABSORBANCE in future at site
- Fluorescence Intensity - including FRET
- Time-Resolved Fluorescence - including TR-FRET
- High-Performance Luminescence - Glow and Flash Possible with Onboard Dispensers
- FRET & BRET
- TR-FRET (HTRF)
- Should have provisions to perform Alphascreen or should be upgradeable at site

Should be Certified and Validated for: -

- By Promega Dual Luciferase reporter Assays
- By BellBrook Labs for Transcreeper Assays
- By CISBIO for HTRF Assays



- By LifeTech for LANTHASCREEEN Assays
- Top and bottom reading
- Onboard injectors dispense reagents and initiate kinetic events
- Temperature control up to 45°C
- Microplate capacity 6 to 1536-well format
- Well-scanning-Multiple measurements in each well with 30×30 data points
- Automatic optical head recognition and optics switching
- Template manager for transferring standards, building complex data processing protocols and using default templates
- Versatile kinetic software features for endpoint, long-term and fast kinetic measurement
- Real-time kinetic monitoring

Measurement Modes: Top and bottom reading
Endpoint and Kinetic measurements
Sequential Multi Excitation measurements
Sequential Multi Emission measurements
Ratiometric measurements
Well Scanning

Multi-Color Detection: In Fluorescence and Luminescence modes,

Light Source: High energy xenon flashlamp in Absorbance and Fluorescence mode

Detector: Side window photomultiplier tube for All measurement modes

Optical Filters: Excitation and emission filter wheels for 8 filters each

Spectral Range: 240 - 900 nm

Absorbance: Advanced Spectrometer, wavelength range 220 - 1000nm
Spectral range: 220 - 1000 nm
Full spectrum captured in < 1 s/well
Selectable spectral resolution: 1 nm, 2 nm, 5 nm, 10 nm
OD range: 0 to 4 OD
Accuracy: < 1% at 2 OD
Precision: < 0.5% at 1 OD and < 0.8% at 2 OD

Sensitivity: FI < 0.2 fmol/well Fluorescein (Top and Bottom)
TRF < 30 amol/well Europium
LUM < 20 amol/well ATP, DLReady certified

Read Times Flying mode: 9s (96), 16s (384)

Reagent Injection: Should have provisions to upgrade to Onboard Dispensers



Shaking: Linear, orbital, and double-orbital with user-definable time and speed

Incubation: +5°C above ambient up to 45°C

Software: License-free software package -Reader Control
User Friendly Software with limitless possibilities for test set up/data analysis
Fully compliant with FDA regulation 21 CFR Part 11
Pathlength correction, Standard Curve

4. Equipment Name: High Performance Liquid Chromatography system **Technical Specifications**

I. High Pressure Binary Gradient HPLC Liquid Pump-1 No

- Flow Range: 0.000 to 10.000 ml, in 0.001 ml/min increments,
- Flow Precision of 0.1% RSD or 2 seconds SD
- Operating Pressure upto 6000 psi, throughout entire Flow Range.
- Flow Accuracy: $\pm 1.0\%$ of setting
- Compositional Accuracy: $\pm 0.5\%$
- Precise stepper motor driven Non-Circular Gear Piston Drive
- Dual Reciprocating Pistons to Provides Pulse free Solvent Delivery, and piston self centering mechanism
- 11 Gradient Profile in-built, to make easy to select the Gradient curves for HPLC analysis.

II. PDA Detector:

- Wavelength Range 190 to 800 nm
- The photodiode array detector must have the ability to set the sampling/data rate and filter time constants independently to maximize resolution and sensitivity.
- The photodiode array detector must have low noise.
- Allowing The photodiode array detector drift specification must be less than or equal to 1×10^{-3}
- The photodiode array detector must be able to collect up to eight (8) independent data channels simultaneously.
- The photodiode array detector must have an optical bandwidth of 1.2 nm or less.
- Lamp-The detector must have a high brightness lamp with a guaranteed life of 2000 hours
- The detector must have only one lamp source and not require more than one lamp for operation across the entire detector wavelength range
- The detector must have Lamp Optimization software and should be compatible with the instrument available.
- Data acquisition up to 80 hz.
- Path length should be 10 mm.



III. Manual Injector - 1 No

With mounting plate, 20 μ L syringe and 50 μ L syringe.

IV. Columns - 1No

Column C-18, 250 \times 4.6 mm, 5 micron particle size.

V. Chromatography Data Station with Calculation software Option:

Control, acquire and process data

- Oracle Database Based Software should control, **UV-VIS Detector**,
- Customised Sample analysis report to be generated.
- Interactive control and display of solvent delivery.
- All functions and features accessible from a single window-use the command bar to navigate.
- Wizards to simplify and automate common system functions.
- Methods - instrument, processing and reporting parameters in one place.
- **Oracle database** for better organization and easy retrieval or work and System user data.
- Diagnostics functions and configuration wizards.
- Extensive user help.

VI. All accessories including computer should be quoted

5. Equipment Name: NanoDrop Spectrophotometer

Technical Specifications

Absorbance Accuracy	3% (at 0.74 Abs at 350nm)
Absorbance Range	Pedestal: 0-300 ABS Cuvette: 0 - 1.5 ABS
Accuracy	0.002
Accuracy (Absorption)	3% at (0.74 at 350nm)
Applications	Nucleic Acid Quantification, DNA Quantification, RNA Quantification, Protein Quantification
Certifications/Compliance	UL/CSA and CE
Compatibility	Microsoft Windows 7 Professional (32-bit and 64-bit), Windows 8 (32- and 64-bit), and Windows 10 Pro (64-bit)
Concentration	2ng/ μ l-15,000ng/ μ l (dsDNA) ng/ μ l
Connections	USB
Depth (Metric)	20cm
Description	Microvolume Spectrophotometer, with cuvet capability



Detection Limits	Pedestal: 2ng/ μ L (dsDNA), 0.10mg/mL (BSA) Cuvette: 0.4ng/ μ L (dsDNA), 0.01 mg/mL (BSA)
Detection Range	Pedestal: 2-15,000ng/ μ L (dsDNA), 0.10 - 400mg/mL (BSA)
Detector Type	2048-element linear silicon CCD array
Footprint	14 \times 20cm
Heating Range	37°; \pm 0.5°C
Includes	Laptop Computer
Interface	Laptop Computer
Lamp	Xenon Flash
Measurement Time	< 5 sec.
No. of Samples	1
Pathlength (Metric)	10; 5; 2; 1 mm
Power Consumption	12VDC
Sample Volume (Metric)	1000, 0.5-2.0 μ L
Spectral Resolution	=1.8nm (FWHM at Hg 253.7)
System Requirements	Microsoft Windows 7 Professional (32-bit and 64-bit), Windows 8 (32- and 64-bit), and Windows 10 Pro (64-bit)
Type	Spectrophotometer
Volume (Metric)	0.5 to 2.0 μ L
Voltage	12VDC
Wattage	5 W
Wavelength Accuracy	\pm 1 nm
Wavelength Range	190-840 nm

6. Equipment Name: Real time PCR system

Technical Specifications

- Peltier based 96-Well \times 0.2 ml tubes or plate to run typical 0.2ml tubes, strips, and plates.
- Detection of minimum 5 different fluorescent reporters in the same tube without any addition of any passive reference dye.
- Should have a factory calibrated free optics with mass reduced sample block to allow heating and cooling at a fast-controlled rate.
- Should be upgradable to 384 well modules.
- Should have fast scan mode in which the scanning can be completed fast and a typical Gene Expression experiment can be done in less than 30-40 minutes.



- System should have Gradient Block with uniform ramping with a linear gradient with 8 different annealing temperatures or more with a programmable range of 1-24 Degree Celsius
- Should have peltier based heating and cooling method
- Maximum Ramping speed : 5°C per sec and average ramp rate should be 3.3°C
- Dynamic range - 10 orders of magnitude or better
- LED Excitation Source with Photodiode as Detection Source with a wavelength range of 450-730 nm
- Should have shuttle optics which travels across the plate, light is focused directly into center of each sample well to capture fluorescence.
- Six excitation and Six emission channels Each filter should correspond to one dye that ensures smooth differentiation of even dyes having high degree of spectral overlap.
- End point analysis for upto 5 fluorophores or more
- Should have mode for Melt curve analysis
- System should be used as basic end point PCR and Real Time PCR separately, which should be upgradable to automation
- System should have an integrated software for secondary and tertiary data analysis which should be capable to import and analyze data from any real time PCR platform.
- Should be capable of Detecting Cy5, FAM/Sybr Green, VIC/JOE, TAMRA/Cy3, Texas Red, Quasar705
- Open system capable of running various chemistries so that Different chemistries using TaqMan, Molecular Beacon, SYBR green etc all can be performed.
- Dynamic range of 10 orders.
- Temperature range 0-100°C with accuracy of $\pm 0.2^\circ\text{C}$ and uniformity of $\pm 0.4^\circ\text{C}$ within 10 sec of arrival at 90°C
- Automatic allelic discrimination by end point fluorescence or threshold cycle.
- Gene expression analysis by relative quantity (ΔCt) or normalized expression ($\Delta\Delta\text{Ct}$).
- Comparison of upto 5000 Ct values from different data files should be possible
- Should be able to quickly set up multivariate experiments with both technical replicates and biological groups
- Should be able to identify reference gene stability and select ideal reference genes
- Should automatically calculate Cq values and reaction efficiency
- Should run without a computer, run up to 4 systems from 1 computer
- Should be able to perform statistical analysis including T-Tests, and One-and Two-Way ANOVA
- Should be able to analyse multiplate studies.
- Software should be able to visualize the results in bar charts, box and whisker graphs, cluster graphs and volcano plots.
- Software should have express load feature which allows entry of data after experiment.
- System should be compliant with the MIQE Guidelines



- Should come with start-up consumables like SYBR Green, cDNA Synthesis kit and Plates, Tubes
- Should have service support based in Karnataka from manufacturer for the quoted model, support document to be submitted
- Installation list should be submitted along with reference letters.
- Warranty 1 Year.

7. Equipment Name: Probe Sonicator

Technical Specifications

- Microprocessor based programmable Probe Sonicator with control over probe intensity and suitable for nanoparticle dispersion, creating emulsion etc.
- The system should have automatic tuning with Frequency control, Automatic amplitude compensation. The system should automatically maintain the set amplitude under variable load condition.
- Display: Alphanumeric display with programmable LED/LCD screen or Touch Screen. Display items: Energy monitor, Watt meter, Amplitude, Time Indicator, Pulser and Temperature.
- Digital amplitude / Intensity control: Output amplitude can be set from 10 to 100%.
- Integrated temperature controller monitoring from 1°C to 100°C with stainless steel probe.
- The system should have 10-hour process timer with elapsed time indicator. Continuous mode up to 30 minutes or more.
- The system should have 1-59 second independent ON/OFF Pulse mode.
- System should have exclusive energy set point to monitor the amount of energy supplied to probes.
- Simultaneous monitoring and controlling of both the temperature of the sample and the amount of energy that is being delivered.
- Option to set the time, energy and amplitude.
- Up to 10 stored user-programmed presets for protocol duplication, automatic repetitive tasks, and elimination of user-to user method variability.
- The system should have variable power output control with sealed converter with Piezoelectric (lead zirconate titanate - Preferable) crystals.
- Should be microprocessor based with digital wattmeter.
- Electrical Supply: 230 VAC, 50 Hz
- Probe Power: 700-750 watt
- Operating Frequency: 20 KHz
- Probes should be made of Titanium alloys and should be autoclavable.
- Threaded and replaceable standard probe tip suitable to process different sample volume range.
- Operating Sample volume ranges (1) 0.25 ml to 5 ml (probe dia. 3 mm or less) (2) 5 mL-50 mL (probe dia. 6mm or less) (3) 50mL-250 ml (probe dia. 15 mm or less) and (4) 250-1000 mL (probe dia 25mm or less). Appropriate Probes must be supplied for these volume ranges.



- Two different types of probe, 1) with replaceable tip and 2) solid probe for volume range 50mL-250 mL must be quoted as compulsory accessory with the base module. Tip for processing 5mL to 50 mL should be also quoted and included as compulsory accessory. Rest of the probes should be quoted as optional accessory.
- Multiple sample processing probes can be quoted optionally.
- Converter, tool kit, power cord and other required accessories must be included
- System should be supplied with Sound abating enclosure with transparent door suitable clamp, support rod and labjack stand.
- Should have Integral temperature controller and memory to prevent overheating of the sample by terminating the probe power when the sample reaches a predetermined temperature limit.
- Provision for the Air cooling must be there to use during prolonged use with higher amplitude.
- Must be CE certified
- Must provide a user manual
- Should have user-friendly menu.
- 5 Years comprehensive warranty.
- Additional features/accessories if any that can potentially increase the productivity and safety of the instrument should be quoted as optional items.

8. Equipment Name: Refrigerated Centrifuge **Technical Specifications**

- Refrigerated Centrifuge with 3L capacity should include fixed angle rotor and swinging bucket rotor.
- System should have temperature range -9°C to 40°C.
- System should have maximum rpm of 15000 rpm or rcf of $22000 \times g$.
- System should have automatic rotor recognition function.
- System should have rotors with fixed angle with 24×2 mL, swing out rotor with 4×750 mL with Buckets and 250 mL adapters.
- System should have time range 0 to 99 mins, 1 sec increment.
- System should be rugged construction with reliable performance.
- System should have brushless motor and industrial grade inverter drive (VDF) for long service.
- System should have Extra-thick stainless-steel chamber and zinc coated alloy and steel frame for increase durability.
- System should have user accessible service section allow onsite maintenance.
- System should have programmable memory quickly administers routine tests and accommodate multiple users.
- System include lid with multipoint lock, emergency lid release when power failure.
- System Should have multiple sensors to prevent damage to centrifuge from misuse and malfunction.



- System should have safety alarms and sensors for lid lock, imbalance, overspeed and overheating.
- System should have pulse feature for performing short run to 90 sec perfect for fast pelleting.
- System should come with 3 years warranty.
- System should be CE, U/L, ISO Certified.

9. Equipment Name: Microprocessor controlled -80°C upright ultralow deep freezer

Technical Specifications

- Temperature range: Should maintain -70°C to -86°C even at ambient temperature.
- Temperature Accuracy: +/- 1°C of set temperature.
- Alarm: Should have audible and visible alarm for temperature, power fail etc.
- Size (capacity): 450 to 600 liters.
- Compressor: Powerful dual compressor to attain desired temperature smoothly and quickly.
- Dorr Handle: Should be ergonomically design and strong with lock system.
- Power: Should operate at 230 Volt and 50 to 60 Hz.
- Power consumption: Should be less than 17 Watt per day.
- Display: Microprocessor controlled digital and easy to read color display in one-degree increment.
- Inner chamber: Should be made up of heavy-duty corrosion resistant durable stainless steel.
- Outer Chamber: Should be made up of heavy gauge very good quality durable Steel with antimicrobial coating.
- Insulation: Should be very thick with suitable materials to prevent fall of temperature quickly.
- Shelves: Four to six inner shelves/ compartments with individual doors.
- Wheel: Heavy duty adjustable wheel at the bottom
- Refrigerant: CFC free
- Warranty: Minimum three years (parts and labour)
- Rack: Sufficient racks to hold 2" cryobox in all the selves.
- Voltage Stabilizer: Suitable on-line voltage stabilizer
- Certification: CE/ CSA / ISO-9001certified
- Service: Factory trained service engineer should be available in Karnataka

10. Equipment Name: CO₂ Incubator

Technical Specifications

- The system should be Air jacketed CO₂ incubator
- The system should be microprocessor-controlled CO₂ incubator. It should have touch screen LCD controller with easy icons and user-friendly control system.
- The system should have the Capacity of 170 L (± 5%).
- The system should be equipped with large, easy to read display screen.
- The system should be supplied with 3 numbers of adjustable SS shelves.



- The system should have two doors and inner door should be glass door to seal the chamber with Silicon gasket.
- The fluctuation/variation at 37°C should not be more than 0.1°C
- The system should have the Infrared CO₂ sensor
- Sensor must be able to withstand high temperatures during direct heat sterilization
- The system should have the CO₂ range 1-20% with accuracy 0.1%
- The system should have Built in on-demand high temperature decontamination cycle 140°C
- The system should have the option to mute the audible alarms
- The system should have the tracking alarm $\pm 1^{\circ}\text{C}$
- The system should have the seamless SS inner chamber.
- The system should have the Operating temperature range from ambient to 50°C. The temperature accuracy and uniformity should be less than 0.1°C
- The incubator should maintain uniform temperatures in the inner chamber
- The system should be offered with power rating of single phase 230 V 50 Hz
- The system should have onboard Diagnostic interface to show system parameters and functions.
- The system should be equipped with buzzer and visual alarm for power failure, CO₂, and temperature deviation against the setup temperature
- The incubator should be quoted with stackable kit with the main offer.
- The system should operate at 230 V, 50 Hz AC power
- The system should be supplied with all the accessories required to function.
- Compliance to each of the above points should be separately indicated and evidence presence for each of them (Product brochures should be highlighted wherever required).
- The system should be supplied with 3 years' warranty as a part of the offer.
- The System should be CE/ISO Approved.

11. Equipment Name: Class II Biohazard safety cabinet
Technical Specifications

- Size 1.2 × 0.6 × 0.6 metres
- EN 12469 Certified
- Recirculation 70% & Exhaust 30%
- Average Air Flow Velocity
 - Inflow: 0.45 m/s (90 fpm) at initial set point, audible/visual alarm should activate at 0.40 m/s (80 fpm)
 - Down flow: 0.30 m/s (60 fpm) at initial set point with uniformity of better than $\pm 20\%$
- Noise Level <62 dBA according to EN 12469
- Fluorescent Light Intensity at Zero Ambient >1280 Lux (>119-foot candles)
- Cabinet Construction
 - Main Body: 1.2 mm (0.06") 16-gauge electrogalvanized steel with white oven-baked epoxy antimicrobial powder coated finish



- Work Zone: 1.5 mm (0.06") 16-gauge stainless steel, type 304, with 4B finish
- Side Walls: UV absorbing tempered glass, 5 mm (0.2"), colourless and transparent
- ULPA filters with efficiency greater than 99.999 % for superior operator and product protection
- Standard Compliance
 - Filter performance: IEST-RP-CC034.1, IEST-RP-CC007.1, IEST-RP
 - Electrical safety: IEC 61010-1 / EN 61010-1 / UL 3101-1 / CSA C22.2 No. 1010.1-92
 - ISO Class 3 air cleanliness in work zone.
- Glass sides to increase visibility.
- Multi-piece work surface which can be removed for autoclaving
- Negative pressure plenum should surround contaminated positive pressure plenum for quiet, uniform airflow
- Microprocessor control with temperature compensated airflow sensor for supervising all cabinet functions.
- Antimicrobial coating on all painted surfaces to protect against surface contamination
- Should utilize an extremely efficient backward curve fan, allowing for exceedingly low levels of cabinet power consumption.
- Advanced separatorless mini-pleated ULPA filters tested to > 99.999% efficiency for 0.1 - 0.3-micron particulates.
- Digital read-out with alpha-numeric display should indicate all input, status and alarm functions.
- An administrator-controlled PIN (Personal Identification Number) which can be set to restrict access to main menu
- The cabinet work zone should not have welded joints to collect contaminants or rust.
- A recessed central area and stainless-steel drain pan channels for preventing liquids from entering the lower filtration and blower systems
- Angled viewing window and narrow profile front grille to improve reach into the work area
- Front armrest raised above the work zone to improve comfort and to ensure no airflow blockage
- Frameless, shatterproof sash for easier cleaning, and for larger, unobstructed viewing area
 - The Biohazard Safety Cabinet should be individually tested, documented by serial number and validated with the following test methods. Inflow / downflow velocity
 - PAO Aerosol challenge for filter integrity
 - Light, noise and vibration
 - Airflow pattern visualization
 - Electrical safety to IEC61010-1
- Electrical 220-240V, AC, 50Hz, 1ø
- Warranty 1 Year



12. Equipment Name: Computational workstation

Technical Specifications

The **Tensor EX TWS-1686525-SMD** is a Schrödinger MD Compatible System - FEP+ Workstation supporting 2x Intel Xeon processor Scalable family and a maximum of 768 GB DDR4 memory.

System Highlights:

- Designed to meet the requirements for Molecular Dynamics GPU Computing or highly complex Free Energy Perturbation (FEP) calculations
- Optimized to meet or exceed the published performance numbers
- Preinstalled Desmond GPU computing solutions, designed in collaboration with Schrödinger
- Save time from installing, optimizing, and validating
- Fully customizable to meet your budget
- 3 Year Warranty

Specifications

Processor & Chipset	
Number of Processors Supported	2
Processor Socket	LGA 3647
Processor Type	Xeon
Processor Supported	<ul style="list-style-type: none">• Bronze 31XX• Bronze 32XX• Silver 41XX• Silver 42XX• Gold 51XX• Gold 52XX• Gold 61XX• Gold 62XX• Platinum 81XX• Platinum 82XX
Number of UPI Links	3
Thermal Design Power (TDP)	Up to 205W
Chipset Manufacturer	Intel
Chipset Model	C621
Memory	
Maximum Memory	768 GB
Memory Technology	DDR4 SDRAM
Memory Standard	DDR4-2666/PC4-21300
Number of Total Memory Slots	12
Controllers	
SATA3	<ul style="list-style-type: none">• Via C621 chipset• RAID 0, 1, 5, 10
Display & Graphics	



Graphics Controller Manufacturer	ASPEED
Graphics Controller Model	AST2500 BMC
Graphic card	Tesla V100 32 GB 32 GB HBM2
Network & Communication	
Ethernet Technology	10GBASE-T
I/O Expansions	
PCI Express	<ul style="list-style-type: none"> • 5x PCI-E 3.0 x16 slots (Supports Double-Wide cards) • 1x PCI-E 3.0 x16 slot • 5x PCI-E 3.0 x8 slot
Drive Bays	
Hot-Swap Peripheral	4x 3.5"/2.5" drive bays 3x 5.25" drive bays
Interfaces/Ports	
Total Number of USB Ports	4
Number of USB 3.0 Ports	4 (2x front, 2x rear)
Number of SATA Interfaces	4x SATA3 Ports
NVMe	2x M.2 (22110/2280 PCI-E & SATA interface)
LAN	2x RJ45 10GBASE-T Ethernet LAN Ports 1x RJ45 Dedicated IPMI Port
Onboard Video	1x VGA Connector
Power Description	
Number of Power Supplies	2
Redundant Power Supplies	Yes
Maximum Power Supply Wattage	2000 W
Certification	80 Plus Platinum
Physical Characteristics	
Color	Black
Form Factor	Rack-mountable / Tower
Rack Height	4U
Height	16.8"
Width	6.9"
Depth	27.5"

13. Equipment Name: Liquid Nitrogen Plant

Technical Specifications

Liquid Nitrogen Plant and Related Services:

Include all Parts/Equipment to produce Liquid Nitrogen from Surrounding air:

- Daily Capacity of production: ≥ 6 L/day.
- Auto Transfer and auto stop after filling.
- LN2 Purity: $\geq 98.6\%$.
- Noise: ≤ 72 db at meter.
- Power Input: 220 V, 50 Hz, Single Phase with necessary power cord.



- Two 10 L Dewar with Transfer tube.
- 10 L Dewar scale with Digital Read out Interface.
- Installation of the Device and start up.
- Extra filters if Needed for the system.

Warranty: 12 Months fully free of cost.

14. Equipment Name: Mini Vertical Electrophoresis **Technical Specifications**

- Gel dimensions: 8.3 × 7.3 cm for Handcast gels and 8.6 × 6.8 cm Precast gels approximately
- Minimum simultaneous 4 gel running capacity in 45 mins
- Spacer thickness should be of 1mm and suitable combs of 5, 9, 10, 15 should be quoted each in 2 No's.
- If spacers integrated into the plates, at least 4 set of plates to be quoted.
- Empty cassettes for casting gels may be quoted in the accessories separately.
- Combs, sets of glass plates, casting stand, casting frame should be provided at least 2 No's each and one Gel releaser
- Sample loading guide for easy sample loading, electrode assembly with power cable, companion running module (dummy plate) modular tank with lid
- The system should have compatibility to run the precast gels should be available and may be quoted separately in the accessories.
- Should come with the western blot module that can be fit in the same tank

Power supplies for Electrophoresis

- Should have Output range (programmable) of, Voltage; 10-300 Volts, Current: 0.01-2.5 Ampere, Power: 1-300 watts
- Should give Constant voltage, constant current with automatic crossover
- Should have four output terminals pair recessed banana jacks floating in parallel to run four systems at a time.
- Should have Timer of 1min-99hr 59 min, fully adjustable.
- Should have real time editing function.
- Should have LED Display.
- Should have these Safety features: No-load detection, sudden load change detection, overload/short circuit protection, input line protection, auto power-up after power failure.
- Should have Input protection of Fuse on both hot and neutral.
- Should have auto recovery after power failure.
- Should have pause/resume function.

Mini-Transblot Specifications

- Should be able to Transfer 2, 10 × 7.5 cm gels in just 1 hr; low-intensity overnight transfers are also possible.
- To have Wire electrodes placed 4 cm apart provide strong electrical fields and efficient protein transfer.



- Should be Color-coded cassettes and electrodes ensure proper orientation of the gel during transfer.
- Should Include blue cooling unit is completely contained within the Mini Trans-Blot cell and absorbs heat generated during rapid transfers.
- Should be available either as a complete stand-alone apparatus or as a module compatible with the buffer tank and lid of the Mini-PROTEAN Tetra cell.

15. Equipment Name: Micro Volume UV/Vis Spectrophotometer
Technical Specifications

- UV/Vis Spectrophotometer for DNA RNA and Protein measurements.
- Should have wave length range of 190 nm to 1000 nm
- Light Source should be Xenon Lamp.
- Should measure sample volume as low as 0.5 μ l (at 0.2 mm) and 1 μ l (at 0.5 mm).
- Wave length accuracy should be + 2 nm.
- Spectral bandwidth 5nm or better.
- Should have auto ranging Path length 0.2 nm or 0.5 nm.
- Absorbance range should be 15A to 125A.
- Absorbance accuracy should be +2% at 260 nm.
- Absorbance precision should be less then 0.5A between 0A & amp; 1A (at 260 nm and 0.5 mm)
- Should detect DNA concentration as low as 2 ng/ μ l.
- Measurement time should be less than 6.5 sec.
- Dimensions of the system should be 280 \times 500 \times 156 mm
- Weight of the system should be less than 9.0 Kg.
- Should be a standalone system with android OS eliminating the requirement for PC to operate.
- Should have 7-inch-high definition colour touch screen display.
- Should have multiple USB ports for data retrieval and printer connectivity.
- Should have 10 GB internal memory for methods and results.
- Should provide with 3 years Warranty.

16. Equipment Name: Gel Documentation Unit
Technical Specifications

Imaging system should have Automatic capabilities with Application driven, user selected or recalled by a protocol.

- Should have 100% repeatability via recallable protocols.
- System should have pre-calibrated focus for any zoom settings & sample height.
- Should have appropriate flat fielding correction automatically & consistently applied to image data for every application.
- Versatile system to support wide range of applications like- Fluorescent dye like syber green, syber safe, Western blotting, 2-D, 1-D, Dot Blotting, Nucleic acid detection, Stain Free Gel Imaging Quantitation etc.
- Should have true 12-bit true CCD camera with more than 4 MP Resolution.



- System can take max. Sample size 28 X 36 cm.
- System should have precalibrated & optimized dynamic image flat fielding
- It should universal dark hood & upgradeable to chemiluminescence.
- Should have motorized zoom lens- f/1.2, 12-75mm with numerical feedback value to reduce the experimental variation -Capable of Optimizing, saving, and quickly recalling the imaging acquisition settings
- Safe DNA Imaging without UV exposure- using the Optional Blue Conversion screen to prevent damage from UV and preserve samples for downstream protein production.
- Reproducibly position or center the sample on the image platen by using Optional gel alignment templates.
- The system should be capable of using it as a standalone UV Transilluminator.
- Should be supplied with Software which is compatible with Macintosh and window operating system.
- Should come with 1 D analysis software with following features
- Single mouse click from image capture to results and reports, very fast and efficient.
- Should have comprehensive automated quantitative analysis of proteins & DNA samples in seconds.
- Intuitive and well organized (efficient) selection of workflows based on applications
- Should calculate precisely continuous focus curves that are consistently and automatically applied for every zoom position and sample height. No user intervention for focusing. All calculations are done at setup, once and for all image captures
- Should have facility to save the protocols.
- Should provide a complete non-pixelated image during zoom.
- Should have a option of exporting the images as per publication guidelines of size and DPI.
- Software should be multi user capable and Mac Compatible software to be provided.
- Should be supplied with Stain Free Gel Solution Kit for 120 Gels.
- Should be supplied with a system for analysis.

17. Equipment Name: Water Purification system

Technical Specifications

- Water Purification system capable of independently dispensing both Type I and Type II or Equivalent Specification water.
- System should be accepting upto 2000 micro Siemens Feed Water Conductivity.
- Tap water should be treated in a pre-treatment cartridge for efficient removal of particles, colloids, free chlorine and hardness.
- Reverse osmosis step should be water conservative and should ensure constant flow rate and optimal water quality.
- All the cartridges used should have considerable life.



- Should have electro deionisation or other equivalent or superior technology for removal of ions.
- The resin beads used should be of superior quality and should not degrade by exposure to harsh chemicals
- The Resin beads should be able to be continuously regenerated without affecting its quality.
- The module should be able to continuously regenerate its beads used. Thereby effectively reducing operational cost.
- The cartridges should be easily replaceable.
- The replacement cartridges should not be very expensive.
- The Equipment should have a low maintenance cost.
- The generated water should be treated with UV to destroy bacteria, before it is stored in the storage tank.
- The storage tank should be capable of maintaining the purity of stored water.
- A vent filter should be there for preventing airborne contamination.
- Biofilm formation should be prevented.
- The water dispenser should be designed such that various small filters/cartridges can be connected for obtaining specific quality water for different research needs (Ultra-pure water free of particulates, pyrogens, nucleases, VOCs, endocrine disruptors and organics for LC).
- Should be able to dispense pre-assigned volume of water.
- Production Rate minimum 10 Liters/Hour
- Should have calibrated meters for continuous monitoring and display of water quality parameter.
- Should have customisable alert and alarms.
- Should have certificate of calibration from recognised international agencies.
- Should have certificate of conformity from recognised international agencies.
- Should meet internationally recognised safety norms.
- Prompt services should be available.
- A minimum warranty for one year including Spares & Consumables.
- AMC terms & conditions beyond the warranty period to be specified.

Type I water with the following properties

- Resistivity ($M\Omega\cdot cm$) = $18.2M\Omega\cdot cm$ @ $25^{\circ}C$
- Conductivity ($\mu S/cm$) < $0.055 \mu S/cm$
- TOC $\leq 5ppb$
- Bacteria < 10CFU/100mL
- Pyrogens (endotoxins) < 0.001EU/mL
- RNases < 1pg/mL
- DNases < 5pg/mL
- Particulates (size > $0.22\mu m$) < 1/mL
- Sodium (ppb) < 1
- Chloride (ppb) < 1
- Total Silica (ppb) < 3
- Flow rate = 1.5 - 2 Liters /min

**Type II water or Equivalent Specifications with the following properties
(Customization Require as per user applications)**

- Resistivity ($M\Omega\text{-cm}$) = 12-15 $M\Omega\text{-cm}$ @ 25 deg C, or more
- Conductivity ($\mu\text{S/cm}$) < 1
- TOC < 30ppb
- Bacteria < 10CFU/100mL
- Pyrogens (endotoxins) < 0.001EU/mL
- RNases < 1pg/mL
- DNases < 5pg/mL
- Particulates (size > 0.22 μm) < 1/mL
- Sodium (ppb) < 5
- Chloride (ppb) < 5
- Total Silica (ppb) < 3
- Flow rate = 1.5 - 2 Liters/min

18. Equipment Name: Freeze Dryer or Lyophilizer
Technical Specifications

Vacuum freeze-drying technology
Drying curves displayed on LCD screen
Low noise compressor
Condenser, control panes, shelves and Trays made of stainless steel
Tray spacing can be customized
Drying chamber equipped with acrylic sheet for safety and visibility
Condenser features pre-freezing function
CFC free refrigeration system

System Specification:

Dimensions (H×W×D)	330 × 470 × 640 mm
Cover enclosure rating	IP22
Operating temperature range	+5°C a +27°C
Max storage temperature	+50°C
Noise level	< 50 db (A)

Cooling system performance

Ice condenser capacity	4 kg
Max ice capacity	2.4 kg (24 hours)
Minimum condenser temperature	- 50°C
Condensing surface	0.15 m ²

Instrumentation

Controls and display	Touchscreen + connection RS232
Temperature readout with sensor	Sonde PT100 (-70°C +100°C)
Vacuum gauge Sensor	Pirani (1000-10-3 mbar)



Refrigeration system

Compressor	1/3 HP hermetic
Gas type	R404A
Compressor type	182ST605 Danfoss
Gas Charge	0.6 kg

Electrical data

Power supply	220/240V, 1 ph, 50 Hz
Installed power	0.5 kW
Internal/external protection rating fuse	10A

Construction materials

Enclosure	Powder coated carbon steel sheet
Front/control panel	PVC/PVC
Condenser body	Aisi 304 Stainless Steel Aisi 304 Stainless Steel
Vacuum line	PVC
Extension vacuum line pipe	Aisi 304 Stainless Steel

Vacuum pump minimal performance

Pump type	Double stage rotary vane or scroll pump Double
Ultimate vacuum	Better than 0.01 mbar
Pumping speed	Rotary pump 5/8 mc/h Scroll Pump 5/10 mc/h

Bulk trays and plate should accommodate for freeze drying.

19. Equipment Name: Inverted Binocular Microscope with Camera Technical Specifications

Observation Method	Phase Contrast
Observation Tubes	Widefield (FN 22), Tilting Binocular
Stage	IX3-SVR Mechanical Stage with Right Handle, X: 114 mm, Y: 75 mm Fixed stage plate with left- or right-hand drive carrying standard inserts for slide or various culture plates, flasks and Petri-dishes etc.
Condenser	Universal Condenser Dry: NA 0.9/ W.D. 1.5 mm, Oil: NA 1.4/ W.D. 0.63 mm (1.25 X - 100 X) Ultra-Long Working Distance Condenser, NA 0.3/ W.D. 73.3 mm
Objectives	4x/5x, 10x, 20x and 40x with long working distance for Bright field and Phase contrast applications.



Eye pieces	10X magnification with minimum 20 mm field of view
Suitable Samples	Sample thickness up to 10 μ m
Use of Plastic Containers	Yes
Illumination System	Built-in Transmitted Illumination System LED Illuminated ON/OFF switch-Interface - power supply including mains cable
Power Supply	AC 100-240 V, 50/60 Hz
Digital camera with software kit	Color digital camera for on-screen microscope image display with min resolution of 2000 \times 500 pixels or better 1/2" CMOS sensor progressive scan. 24 bit or higher color depth. Suitable optical C-mount. Supported operating systems windows 8 or windows 10.

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Dr. C.K. Subbaraya

Registrar

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