Specifications for Upright Confocal

The Upright Confocal System should have confocal technology for fixed & Live Cell sample imaging as well as for Calcium imaging including FRAP, FRET and Photo activation / conversion.

The system should consist of:

1. Fully Motorized Upright Fluorescence Research Microscope for BF / DIC / Fluorescence preferably with touch screen display for controlling the motorized components of the microscope.

2. Programmable and motorized X-Y stage, Universal sample holders for slides, cover slips, 35 / 60 mm Petri dishes and 6 / 24 / 96 well plates.

3. High precision motorized Z-focus drive with step size of 20 nm or less.

4. PieZo / Galvo or other system capable of performing a similar level of precision Z-focusing has to be integrated and supplied with the system.

5. 12V / 100W halogen illuminations for transmitted light & 120W-130W metal halide / Mercury Arc lamp for Fluorescence illumination should be offered. It should have at least 2000 hrs. life for lamp.

6. Motorized 6-position DIC nosepiece, Universal Motorized Condenser with modules for DIC, 8-10 or better position fluorescence turret for accommodating fluorescent filters for sample visualization and camera based imaging, with automatic identification facility for fluorescent filters and objectives.

7. Automated shift free DIC accessories for all objectives. Band pass fluorescent filters for DAPI, GFP, CFP, YFP, Cy3, Cy5 with automatic identification facility should be possible.

8. High-resolution confocal grade Plan Apochromat objectives of 10x/0.40, working distance (WD) 2 mm, 20x/0.70, WD 0.5 mm, 40x/1.30 oil WD 0.2 mm; 40x0.85 water dipping with WD 2.1 mm or better; 60/63x/0.95 water dipping WD 2 mm or better; 60/63x/1.40 oil immersion WD 0.19 mm; 60/63x silicon objectives for high resolution live-cell imaging and 100x1.40, oil immersion WD 0.17 mm objective or equivalent high-resolution confocal-grade objectives should be offered. 40x and 60/63x objectives should be offered with corrected lambda.

9. Monochrome cooled high-resolution CCD camera (or equivalent camera) with 1.4 million effective net pixel resolutions or better controlled by confocal software with multichannel, Z-stack and time series imaging should be quoted

10. Suitable imported anti-vibration Table with compressed air suspension for the complete system or better should be quoted.

11. High-sensitivity confocal laser point scanning with built-in high sensitivity spectral detectors. Detection unit should be capable of working in Intensity (conventional intensity) and Spectral mode Imaging. It should be capable of simultaneous detection and separation of minimum four fluorophores or better based on high sensitive detectors each with QE of 45% or better.

12. Scanner unit should have laser ports for Vis, UV and IR lasers. The laser scanner should have the capability of fast scan for bleaching / photo-activation & normal scan for Imaging, to conduct experiments like FRAP, FLIP, photo activation, photo-conversion and photo-bleaching. Maximum scan resolution should be at least 6Kx6K or better per channel and should reduce to 16x16 pixels resolution or better.

13. Scan speed should be 6-8 fps or better @512x512 pixels resolution in Intensity as well as in Spectral mode. The scan head should be able to perform fast dynamic live cell time-lapse imaging with a temporal resolution of 3 msec or better. In video image mode scan rate should be 25-30 fps @512x512 pixels resolution.

14. The scan head should include PMT for fluorescence and laser based DIC imaging. The scan field should be 18 mm or better. Optical Scan Zoom range should be from 1X to 40X or better with increments of 1X or better while imaging.

15. Visible laser illumination system with AOTF control for the following laser lines: Blue diode 405 nm for DAPI excitation, Multi line Argon 457 or 458 / 488 / 514 nm laser with minimum of 35 mW laser power or better to optimally excite CFP, super glow GFP, Alexa 488, GFP, FITC, YFP, etc. For simultaneous GFP and YFP imaging the system should be equipped with appropriate emission wavelength filter set. It should have band pass filter 505-530nm and long pass filter 530nm to collect GFP and YFP signals, respectively. DPSS 561nm Laser with minimum of 20 mW or more to optimally excite Ds Red, Nile red, MitoTracker Red. 594nm 2mW laser to excite Cy3.5, Alexa 595, mCherry, Texas Red optimally. SS 633 Laser with minimum of 10 mW or better to optimally excite Cy5, Alexa 633, TO-PRO3 etc. The system should have optimum laser lines and filters for imaging of photoactivateable fluorescent GFP and green to red photoconversion of Dendra-2. (This requires a UV laser apart from 488 nm laser and special filters to excite chromophore and collect emission spectra between 553nm to 573nm).

16. The system should be supplied with micro point ablation laser with appropriate attenuator for targeted killing of a single cell in a living tissue or a layer of cells without damaging the neighboring cells. Micro point ablation laser should have both software and pedal operated control. Nitrogen pulse laser 355nm for ablation and micro irradiation experiments should be offered. It should be factory fitted according to the complete laser safety regulation and guidelines. The MicroPoint device should allow the user simultaneous viewing of the laser ablation in widefield or fluorescence imaging through an EMCCD camera.

17. The Computer Workstation should have; Processor: 64 bit Intel Xeon 6 core processor 2.4 Ghz or higher; Memory: 12GB DDR3 RAM or higher; Graphic card: Nvidia Quadro K5000 4GB; hard drive: 10 TB SATA (7200 rpm), DVD SuperMulti +R/RW; Gigabit ethernet, OS: Windows 7 64 bit OS (upgradable to Windows 8), 8 USB 3.0, Mouse and keyboard; Fire wire port and standard ports and accessories; Monitor: 32” standard LCD monitor.

18. Confocal Software will be required for complete control of all motorized functions of the microscope, digital camera, scan head and Laser control (including AOTF, image acquisition and processing). Saving of all instrument

parameters along with the image for repeatable/reproducible imaging. Frame / line / lambda capturing, Z-Stack, time series imaging capabilities. ROI bleach for FRAP experiments and allow for doing photo-activation and photo-conversion experiments and their analysis, FRET Imaging & Calcium Imaging, Co-localization analysis and volume rendering, Real time ratio-display & Real time spectral unmixing. It should have the capability to separate bleed through and auto fluorescence, 2D and 3D image deconvolution, Diverse measurements and statistical processing, Software should be capable of recording different Live cell imaging experiments. Advanced 3D and FRAP wizard software including dedicated FRET module should be offered along with the system. Software module for high dynamic range SDR imaging in GaAsP should be part of standard software.

19. Third party software Amira with an independent Computer Workstation should have; Processor: 64 bit Intel Xeon 12 core processor 2.4 Ghz or higher; Memory: 24GB DDR3 RAM or higher; Graphic card: Nvidia Quadro K5000 4GB; hard drive: 10 TB SATA (7200 rpm), DVD SuperMulti +R/RW; Gigabit ethernet, OS: Windows 7 64 bit OS (upgradable to Windows 8), 8 USB 3.0, Mouse and keyboard; Fire wire port and standard ports and accessories; Monitor: 32" standard LCD monitor. Amira has versatile use in image processing and reconstruction. The software should come with image segmentation, slice alignment and automatic and manual image registration for creating movies for time-lapse data. It should be capable of advanced 3D projection and visualization and at the same time it should be able to extract volume of 3D reconstructed images. http://www.vsg3d.com/amira/amira

20. Every part of the Upright Confocal Microscope should have a part number quoted (including objectives) that can be matched to the original catalog. Photocopied catalog will not be accepted for technical evaluation. Cite page number of catalog always while justifying each specification in the bid. In the absence of page number and appropriate support document technical capability of the instrument will be deemed void and may invite technical rejection. Citing of a web link in any form from a potential bidder will not be considered for technical evaluation.

21. The bidders should clearly specify the after sales/service/application support capabilities (including terms of Annual Maintenance Contract). Provide all information as regards to pre-installation requirements (i.e. room, environment) for system installation.

22. Online branded UPS system with auto power surge protection and reverse phase routing with at least 30 minutes power back-up time to support the complete system including lasers and computer should be provided.

23. The system should be equipped with all accessories for proper & effective functioning. Any up gradation of the system accessories and software within a year from the time of installation should be provided free of cost.

24. Price of individual components should clearly be specified in the standard and optional format in the quote. The quotation should justify each specification point by point in their order of requirements. Quotation not done in the proper format may invite technical rejection.

25. A list of at least 3 users in India (along with contact details and purchase

order) who are using this confocal system should be provided. Also provide a detailed list of users of the system in India/abroad with contact details.

26. If a bidder found giving misleading information about his system to secure the bid, he will be disqualified with immediate effect.

27. System should be quoted with at least three years of comprehensive warranty including lasers followed by five years of annual maintenance contract (AMC). Please mention the terms and condition of AMC clearly including annual price.

28. For sample preparation supply a stereo zoom trinocular microscope head of zoom range from 6:1 or better with manual focusing drive with selectable click-stops on a stand with twim boom. Gooseneck guide with cold light source 15V and apochromatically corrected objectives with magnification from 0.65X – 5X or better, 10X eye piece, Working distance of 70 mm or better,