CONFOCAL WORKSTATION

The imaging workstation should includes high resolution & sensitive spectral confocal imaging for fixed and live sample imaging for cell biology applications, protein-2 interactions and imaging of tissues and modal organisms. The system include multichannel Fluorescence imaging with Z-stack, time-lapse including co localization, FRET, FRAP, Photo activation and conversion imaging & analysis. The system should be upgradable to FCS/FCCS, Multiphoton, FLIM attachment. The system should beavailable with the below mentioned configuration:

[Amendment]
Clause "The system should be upgradable to FCS/FCCS, Multiphoton, FLIM attachment. The system should beavailable with the below mentioned configuration:"
should read as
"The system should be upgradable to FCS/FCCS/Multiphoton, FLIM attachment in future. The system should beavailable with the below mentioned configuration:"

A. Motorized Inverted Fluorescence Research Microscope:

a) Fully Motorized Inverted Fluorescence Research Microscope for BF/DIC/Fluorescence preferably with dedicated touch screen TFT display for controlling motorized components of the microscope and tilt-able eye piece for better ergonomy.
b) Programmable motorized X-Y scanning stage, Universal sample holders for slides, 35/60 mm Petri dish,24 well plates,labtek chambers with multipoint, tile and mosaic imaging software.
c) 12V/100W halogen/LED illumination for transmitted& reflected light & 120W metal halide illumination for Fluorescence.
d) Motorized 6 position DIC nosepiece, Universal Motorized Condenser NA 0.55 or better with modules for DIC, 6-7 position fluorescence turret for accommodating fluorescent filters for sample visualization.
e) High precision Z-focus drive with step size of 15 nm or better.
f) High resolution confocal grade apochromat objectives of10x/0.40, 20x.0.8/0.75, 40x/1.30oil, 60/63x/1.40oil immersion, 100x/1.40 oil immersion. Dedicated Water Dipping Objective 20X/1.0 with WD of 2 mm or more for deep tissue imaging work.
g) Automated shift free DIC accessories for all objectives.
h) Band pass fluorescent filters for DAPI, RFP, GFP, Cy3 or more should be offered.
i) Anactive anti-vibration table with compressed air damping, bread board tabletop with M-6 threading for the complete microscope system.
j) Facility for live cell imaging including Incubation system with Temperature, CO2, humidity control and complete safety regulations should be offered. The parameters for Incubation system should be controlled by confocal software.
k) Dedicated Objective inverter for converting inverted to upright scope provided for Deep Tissue imaging applications with depth imaging up to 300 microns or better. A suitable stage for the upright mode should also be offered.
l) Monochrome cooled "CCD/CMOS, 2/3''Chip with 2.6 million or better net effective pixel resolution (FireWire based/USB III) with frame rate of 30 fps or better at full format, controlled by the sameconfocal software for multichannel, z stack, time lapse wide field imaging.

[Amendment]
Term ""..CCD/CMOS, 2/3''Chip with 2.6 million or better."
can read as
"…CCD/scientific CMOS, 2/3''Chip with 2.6 million/equivalent or better."

B) Spectral confocalimaging unit with built-in high sensitive detectors:

a) Laser point scanning and Confocal detection unit with PMT and HyD/GaAsP detectors. Detectors should be capable of working in Intensity and Spectral mode Imaging. Capable of simultaneous detection and separation of minimum 4 fluorophores or more out of which min 2 should be with high sensitivity GaAsP/ HyDdetetors with QE of 45% or better in the range of 450 nm to 650nm.

b) Scanner unit should have laser ports for Vis, UV and IR lasers. Scan Head should be equipped with NLO/Multiphoton Optics. It should include high efficient excitation laser suppression beam splitting device with either low angle of incidence dichorics or crystal based dichroic.

[Amendment]
Term ""…equipped with NLO/Multiphoton Optics..."
should read as
"…equipped with NLO/Multiphoton/IR Optics..:"

c) The scanner should have real ROI scan capability/ROI scancapability in real time for fast scan.Maximum scan resolution 4Kx4K or better per channel and should reduce to 16X16 resolutions.

[Amendment]
Term ""…should reduce to 16X16 resolutions."
should read as
"…should reduce to 16X16 - 64X64 resolutions"

d) Reflection mode Imaging should be possible to ensure imaging of material samples/ biocompatible material samples.

e) Scan speed 10 to 12fps or better @ 512x512. The scan head should be able to perform fast dynamic live cell time lapse imaging with a high speed of 400 fps or better @ 512X16 resolution.

f) [Amendment]
Clause "Scan speed 10 to 12fps or better @ 512x512. The scan head should be able to perform fast dynamic live cell time lapse imaging with a high speed of 400 fps or better @ 512X16 resolution.
should read as
"The system should be able perform fast dynamic live cell time lapse imaging with 25fps or better @512X512 full format and at least 10 time faster than that @512X16 resolution."

g) Transmitted PMT for laser based DIC imaging should be included.

h) The scan field diagonal should be atleast 20 mm or better. Scan Zoom range 1X to 40X with increments of 0.1X.

[Amendment]
Term ""…atleast 20 mm."
should read as
"…atleast 18-20 mm"

C. Solid State Diode Laser module with AOTF control:

a) The following laser lines are needed 405/408 nm, 440/445/448 nm, 488 nm, 514/515 nm, 561 nm and 633/640 nm (solid-state lasers) with 25mW or better input power

b) Optionally quote for solid state diode laser 594 nm for dedicated m Cherry applications.

c) All lasers should be connected to the scan head through fiber optic cable and should be controlledthrough AOTF for fast laser switching and attenuation in pixel precise synchronization with the laser scanner for Real ROI scan/ROI scan in real time for FRAP, Photo activation/conversion experiments slow and high scanning speed mentioned.All the laser lines should be controlled through a computerized AOTF device for fast laser switching and attenuation. Preferably solid-state lasers.

D. Realtime Online Hardware Based Super Resolution Imaging:

a) Fully automated hardware based, realtime and online Super resolution attachment with suitable high sensitive Detectors for complete Vis Spectrum.

b) The system should be able to work in Super resolution mode or better sensitivity and Confocal Mode for normal imaging.

c) Should be able to achieve Lateral resolution of 120-140 nm and Axial resolution of 350-400 nm. Depth of penetration for SR imaging should be 70 to 100 microns with better sensitivity (approx. 4 – 8 times better sensitive than Confocal). The claim should be supported by white paper and brochure.

[Amendment]
Clause: Should be able to achieve Lateral resolution of 120-140 nm and Axial resolution of 350-400 nm. Depth of penetration for SR imaging should be 70 to 100 microns with better sensitivity (approx. 4 – 8 times better sensitive than Confocal). The claim should be supported by white paper and brochure."

should read as

"Should be able to achieve Lateral resolution of 120-140 nm and Axial resolution of 350-400 nm. Depth of penetration for SR imaging should be 70 to 100 microns with better sensitivity (approx. 4 – 8 times better sensitive than Confocal if required). Any claim should be supported by appropriate documents/written brochure/principal website**"**

d) Detection should be based on dedicated GaAsP or high sensitive detectors for SR imaging.

e) At least 2 fluorophores simultaneous mode imaging should be possible with the SR system. Any dye used for confocal system can be used for imaging without changing sample preparation techniques/protocol. Should be able to perform at least 4 fluorophores imaging in sequential mode.

f) Should be able to perform live cell SR Imaging. All laser lines for Confocal Imaging should be used for imaging in SR mode.

g) **Frame rate of 15 to 20fps** or better @512X512 full format without compromise on the lateral and axial resolution in SR mode should be possible for fast live cell imaging applications.

h) SR mode should be able to perform 2D / 3D images, time series , tiling / mosaic , ROI imaging, multiple location imaging , photomanipulation experiments (FRAP , FRET etc)

F) **Control computer and Monitor:**

Latest 64 bit control computer with Intel Xeon Processor, DDR RAM 64 GB or better, HDD: 4 TB SATA upgradable to 8TB or better, DVD, SuperMulti SATA +R/RW, Graphics : AT Fire GL V5200 4GB DH DVI, Gigabit Ethernet, Win 10 64 bit , USB 2.0/3.0, Fire wire. Large 32" LCD/ TFT monitor and branded All-in-One color Laser Printers

G) **System control and Imaging Software:**

a) Software should be capable of controlling Motorized components of microscope, confocal scan head, laser control including AOTF and Image acquisition & processing for confocal and super resolution imaging.

b) Saving of all system parameters with the image for repeatable/reproducible imaging.

c) Line, curved line, frame, Z-stack, Time series imaging capabilities.

d) Real ROI bleach/ROI bleach in real time bleach for FRAP, Photo-activation/conversion experiments.

e) FRET imaging as well as Quantitative data analysis capability. System should be able to do FCS study.

[Amendment]
"Term System should be able to do FCS study."
should read as

"Deleted"

f) Standard geometry Measurements like length, areas, angles etc. including intensity measurements.

g) Co-localization and histogram analysis with individual parameters.

h) Spectral un-mixing with fingerprinting/real time unmixing for separation of overlapping excitation/emission spectra of fluorophores.

i) Additional Offline software with complete features as the main software with high end PC and monitor (same specs as the main system) should be made available.

j) Advanced 3D software to display 3D image data stacks with measuring tools, 3D Visualization & multichannel volume rendering 3D stacks, re-construction, measurements across z stack, movie co-localization with histogram analysis, intensity profiles for quantification. It should have function like shadow projections, transparency projection, surface rendering and clipping.

k) Dedicated Sample Navigator tool for Macro Imaging and Free ROI selection should be part of the software.

l) Online Image processing for SR data should be part of the software

m) Additional Offline software with complete features as the main software with high end dedicated PCand monitor (same specs as main PC) should be available

Others:

1. The vender should supply the entire system with all necessary accessories from single principle company/manufacturer and complete system integration of hardware components.
2. The vender should be responsible for the complete system installation, functioning maintenance, and training by trained engineering.
3. Bidders should clearly specify the after sales service/application support capabilities without any additional cost.
4. Provide all information about pre-installation requirements (i.e. rooms environment) for system installation without any additional cost.
5. The speed of the system should be upgradable to high speed dynamics.
6. The vendor should quote with 3 years warranty with all consumable and followed by 2 years of AMC for the quoted model.
7. Manpower support for minimum one year cost of which will be borne by Vendor.
8. Site preparation for installation and operation of the instrument.
9. Online UPS for the complete system including lasers should be included in the supply. The system should have a dedicated online branded UPS system with at least 30 min back up for the whole system.
10. Additional offline/online PC dedicated for data/image analysis should be included in the system.