Technical Specification for the purchase of Real Time PCR Machine for the DST Sponsored Project , Institute of Life Sciences, CSJM University, Kanpur

Technical Specifications:

1. System should have minimum of six detection channels: 530, 560, 610, 640, 670 and 710 nm.
2. System should efficiently be working with following detection dyes: SYBR Green, Fluorescein, VIC, Tamra, Cy3 , Hex, FAM and T Red.
3. System should be applicable for gene expression analysis, quantification assays, SNP genotyping, allelic detection with multitasking work frame with latest technology.
4. System should be compact, durable, easy handling and have fast speed to carry out the assigned task.
5. System should have the technology by which on line cycle to cycle monitoring with continuous display of readings for Fluorescence, temperature changes and progression of amplification could be performed.
6. System should have sample loading facility for 32 capillary tubes on a carousel. Tubes should have higher surface to volume ratio to obtain uniform temperature during heating and cooling process.
7. Excitation should be with long shelf life light emitting diode.
8. Total reaction volume for majority of the chemistries should be with in 20 µl range.
9. Typical run time should be less than 30-40 minutes for 35 cycles.
10. Temperature range should be from 40-98^{0}C with accuracy of ±0.3^{0}C.
11. Programmable fast ramping rates from 0.1-20^{0}C/ second for ultra rapid cycling.
12. System should have a linear dynamic range upto @10 x.
13. Multiplexing up to six plex. .
14. System should be flexible for developing chemstries with four color hybridization probes, dual color Taqman/ Hydrolysis probes, Molecular Beacons, Simple Probes etc.

15. System should be ready to use IVD and Research Kits for Mutaion, Infectious, Genomic, Haematology, Oncology and GMO studies. Kits should contain UNG to prevent carryover contamination between PCR reactions.
16. All reagents (ready to use kits, enzyme, probes, primers, nucleotides, dyes, Taqman master mix and multi flexing reagent) should be manufactured and available from the same supplier for a minimum period of 8 years with licensing rights to perform PCR.
17. System software should have the provision to use Fit Point Method OR Second Derivative Maximum Method for calculating the concentrations. PCR efficiency factor should not be set to 2 in the software and the system should determine and use the efficiency factor during the analysis.
18. Application software should include melting curve analysis for Tm calling, genotyping, absolute and relative quantification assays, qualitative analysis and nucleic acid quantification. Fully automated grouping and calling of melting curves with flexible customized programming.
19. System should be supplied with licensed Probe/ Primer design software for designing the primers and Hybridization probes in a single run. Software should also have the provision to check the compatibility of multiple nucleotides for multiplex PCR assays.
20. Only licensed and authorized Real Time PCR platform should be supplied along with licensing rights for software applications including relative quantification.
21. Analysis workstation should be of latest branded Pentium IV PC/ Laptop with licensed Windows Operating System and latest high speed processor. Printing of reports should be with color printer. Maintenance of the computer/ laptop and printer should be done by the supplier of Real Time PCR machine free of cost for minimum of 7 years.
22. System to operate at 220 V/ 50 Hz and Suitable UPS with atleast 60 minutes back up should be provided along with the Real Time PCR machine.