Office of Director
**INDIRA GANDHI INSTITUTE OF MEDICAL SCIENCES,**
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Ref. No.: IGIMS / 2020/147 Adm. / Store Date: 04/ 03/2020.

# NOTICE

**Subject:- Purchase of "Next generation sequencing platform and Automated DNA sequencer" for Advanced Molecular Microbiology and Molecular Genomics at IGIMS- Patna on Proprietary basis Inviting Comments Thereon.**

The Institute is in process to purchase of following items:-

1. "Next generation sequencing platform; Make: ILLUMINA SINGAPORE PVT. LTD." for Advanced Molecular Microbiology and Molecular Genomics at IGIMS- Patna from M/S. Premas Life Sciences Pvt. Ltd., E-49/5, Second Floor, Okhla Phase II, New Delhi-110020.

2. "Automated DNA sequencer; Make: Life Technologies, USA" for Advanced Molecular Microbiology and Molecular Genomics at IGIMS- Patna from M/S. Vision Diagnostic (India) Pvt. Ltd., Plot No.. 405, Ground Floor Patparganj Industrial Area, Patparganj, Delhi-110092.

"Next generation sequencing platform; Make: ILLUMINA SINGAPORE PVT. LTD." & "Automated DNA sequencer; Make: Life Technologies" are Proprietary Items as stated by the said firms.

The above items and documents are being uploaded for open information to submit objection comments, if any, from any manufacturer regarding proprietary nature of the equipment/item. The comment should be received by office of the store, IGIMS, Sheikhpura, Patna (Bihar) on or before 17/03/2020 failing which it will be presumed that any other vendor is having no comments/objection to offer and case.

Director 4.3.20
I.G.I.M.S, Patna

## 1. Next Generation Sequencing Platform

- The NGS platform workflow should be Fast, simple, scalable bench top type next generation sequencing platform that should enable highly accurate variant detection, extremely uniform coverage, and sensitivity to detect low-frequency variants without use of any steps involving emulsion PCR.
- The system should be a single instrument capable of performing all range of low to high throughput applications like targeted resequencing of small to large gene panels, de novo assembly/whole genome sequencing of microbes, metagenomics, preimplantation gene diagnosis, high res HLA Typing in the small to mid-range data throughput segment as well as mouse/ human whole exome/ whole transcriptome, small/microRNA sequencing or NIPT in the high data throughput segment along with capability to run cytogenetic methylation micro arrays on the same instruments.The cost per sample for whole exome sequencing at 100x coverage for approximately 40 MB exome on the system should be less than USD 420 including sequencing and Library preparation Cost.
- Automated clonal amplification (templating/ clustering) to sequencing step should be on board along with additional capability to scan cytogenetic and methylation arrays on the same instrument.
- Sequencing should be based upon robust and globally proven with numbers of peer-reviewed publications.
- Sequencing should support sequencing read length in the range of 150-300 bp in single or paired end direction.
- The System should generated 120 Giga bases output or 400 million single or 800 million paired end tags or more which should enable multiplexing of at least 12 whole exome/ whole transcriptome samples per sequencing run with 30-40 million reads/tags per sample
- The NGS system should be provided with user friendly software and also a require bioinformatician for secondary data analysis and interpretation
- The system should have capabilities for microarray scanning for cytogenetic/methylation applications and should be provided with ancillary instruments for the same.
- The secondary data analysis should be followed of industry standard like FASTQ, SFF, BAM and VCF.
- Analysis should capable to automated SNV calling and provide option to its verification
- Variants can be verified manually using alignment and other quality parameters
- Analysis should also be capable enough to call CNV and Gene Fusion events as per instruction
- Analysis pipeline should also be able to process UMI Based sequencing reads for bias free CNV detection and good quality and improved sensitivity and specifically for variant calls
- Analysis pipeline parameters can be customized uniquely for each panel as per user requirement
- The software should provide the options to export alignment and variant results in PDF or excel format.
- Specification variants of interest should be recognized automatically
- Support for Clinical interpretation of identified variants and actionability
- Should have at least 12TB of data storage option on board or by attaching additional hardware/server to the quoted instrument
- Vendor should supply the ancillary instrument, if required for preparing libraries using kits along with the system.
- The vendor should have a fully functional NGS support lab in India for providing back up support if required for performing any troubleshooting activities
- Vendor should have strong base/resources available locally for providing quick onsite support with respect to instrument maintenance, application and bioinformatics training/troubleshooting exercises.

## 2. Automted DNA sequencer

1. Fully automated capillary based DNA sequencer
2. only licensed version of the system to be quoted along with user lincense to perforn the sequencing by sangar method.
3. number of capillaries 8-16-24 capillaries operating in parallel to meet through put employ capillary array that use bare silica capillary with a useful life that exceeds 160 runs the preferred capillary length is 36/50 cm.
4. Excitation source single 505nm solid state long life laser utilizing a standard power supply and without heat removed ducting.
5. Dye detection, cooled CCD detection technology and spectrograph for color separation. system must be able to detect and analyze up to 6 fluorescent dyes simultaneously for DNA fragment analysis.
6. Capillary illumination simultaneous dual-side illumination detection to maximize and signal uniformity and sensitivity that in reduces the requirements placed on the user for sample preparation and cleanup.
7. Tracking of consumable, radio frequency identification technology to track key consumables data.
8. Heating/cooling : active temperature cooling/heating that can maintain temperature from 18 0C to 70 0C .
9. System should be quoted with both 96 well plate option.
10. Sequencing throughput>80-100 samples/ day having >500bp read length with QV26.
11. Electrophoresis voltage up to 20kv.
12. Minimum computer configuration i7 processor 3.0 GHz processor operating system: suitable OS , installed RAM 8 GB bard driver 500 GB with required external hard disk , 7200 RPM SATA 3.0 Gb/s and 8 MB Data Burst Cache Microsoft ® Office Horne & student 2007 OEM Version 16 x DVD/RW Driver with DVD-R double layer write capibility integrated Intel ® 17 inch flat panal LCD monitor Graphices Media accelerator , 5 USB port, ethernet (100BASE- TX single-port minimum), Opical USB mouse , 5 year licensed antivirus.
13. Software: The vendor must supply software that are optimized for the instrument in area of denovo re-sequencing. Fragment analysis application like SSR, ISSR ALFP plant & microbial finger printing, microsatellite long sizing SSCP, SNP validation and screening linkage analyses.
14. Real time analysis system software should allow real time date quality evaluation providing immediate access to base called.
15. Consumables: consumables for 700 sequencing reactions should be supplied as start up material. applications-specific kits and sequencing reagents required to perform the sequencing by synthesis (SBS) should be manufactured and available from the same supplier.
16. The vendor should provide application training on the operation of the instrument, chemistry options and software in there regional lab.
17. Vendor should have at least 25 installations (includes all the available models) in india.
18. Suitable ups for running the system.
19. Electrical requirement :220 volt, 50hz.

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