

Government of India
BHABHA ATOMIC RESEARCH CENTER
Molecular Biology Division

MBD/2020/ OPA/118312

05 November, 2020
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Sub: Reference based transcriptome sequencing and bioinformatics analysis of human blood samples on Illumina Platform

Dear Sirs,

1. Quotations are invited for the above work as per enclosed technical details.
2. Bidder shall quote for the extraction and sequencing of RNA from human whole blood cells.
3. The bidder should have experience in handling blood samples (clinical samples) for RNA Sequencing. (List of publications and projects carried out in past 5 years should be provided along with the quotation)
4. Bidder should have an in-house Illumina transcriptome sequencing facility, details of the in-house sequencing facility should be provided.
5. Vendors who do not have an in-house Illumina sequencing facility need not quote.
5. Taxes and excise duties shall be quoted separately. Necessary tax exemption certificates shall be provided, if applicable.
6. In detail methodology for the transcriptome sequencing should be provided along with quotation.
7. The quotations must reach Head, MBD by 11th December, 2020 and must be sent in a sealed envelope superscribed with the above reference number and due date given above by **SPEED POST** only. Quotation received by the courier will be considered invalid.
8. The address on the envelope should read: The Head, Molecular Biology Division, Bhabha Atomic Research Centre, Trombay, Mumbai - 400 085. Kind Attn: Mr. Mahesh Kumar Padwal
9. The bidder shall have to take an insurance policy against any materials issued to him by the purchaser.
10. Head, Molecular Biology Division, BARC reserves the right to accept/ reject any or all quotations without any reason.
11. **Technical specification as below .**
 - Preparation and quality control assessment of total RNA from whole blood cells (provided by us in Trizol)
 - Samples will be provided in maximum 3 batches, cost for the shipments to be borne by the vendor.
 - RNA extraction should be carried out by the vendor from provided sample. (In case of failure in RNA extraction, re- RNA extraction should be carried out at no additional cost.)
 - Ribosomal RNA depletion by ribo-depletion kit.
 - Proposed sequencing platform: Illumina Hiseq 2000/2500 only.
 - Number of Samples: 50
 - Data Requirement: 50 million reads/Sample. (Around 7.5Gb data per sample)
 - Remaining samples after completion of the project should be transferred to us without any additional cost with proper storage.
 - Failure in completion of the project on time, under any circumstances, will be penalized.

Scope of Work

1. Sequencing technology: Illumina SBS
2. Details: Illumina HiSeq 2500 Paired end run; 2X 150 bp
3. Bioanalyzer plots have to be used at every step to assess mRNA quality, enrichment success, fragmentation sizes, and final library sizes. The size distribution of the sequencing library has to be determined by gel electrophoresis. Both picogreen and qPCR has to be used for measuring the quantity of the library before sequencing.
4. After the libraries are constructed, paired end run has to be performed on Illumina's HiSeq 2000/2500 platform to obtain 2 x150 bp reads.
5. Detailed bioinformatics analysis and differential gene expression data to be provided.

NGS data analysis (bioinformatics) includes:

- Sequence Analysis quality QC
- Base quality score distribution
- Sequence quality score distribution
- Average base content per read
- Read length distribution
- GC content distribution of reads
- PCR amplification/read duplication related metrics
- Enrichment of specific sequences (over-representation of sequences)
- Biasing of k-mers -At least 90 % sequence should have Q value greater than Q30 -Low quality

sequence reads to be excluded from the analysis.

6. Differential expression analysis with functional annotation of differentially expressed genes, pathway analysis, heat maps, etc.

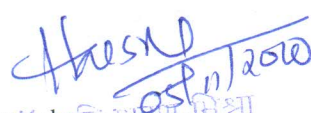
Data files should be uploaded to the server for immediate download and submitted in external storage devices/ hard-disk (1 TB hard-disk).

Yours sincerely


Mahesh Padwal
SO/

Email: mkpadwal@barc.gov.in
Phone No. 02225590404 / 20404

Head, MBD may please approve


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Approved by:


(AD, BSG)
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