

Government of India
Bhabha Atomic Research Centre
Applied genomics Section

Ref: AGS/2022/E/30421

07/02/2022

Sub: Invitation of quotation (Two-part Bids) for RNA Sequencing and bioinformatics analysis of bacterial samples.

Quotations are invited for the RNA Sequencing and bioinformatics analysis of **18 bacterial samples** (annexure-I).

1. **Technical and financial bids should be sent in two separate envelopes** as per the guidelines of two bid tender procedure. **Technical bid should not indicate the price.**
2. Bacterial pellets will be provided under dry ice conditions which will be used by the supplier for RNA extraction, ribosomal RNA removal/depletion, library preparation (**Stranded**), RNA sequencing and bioinformatics analysis as per the details in annexure-I. Both RAW and PROCESSED data and results of analysis should be provided as soft copy.
3. The company/firm should collect the samples from Bhabha Atomic Research Centre, Trombay, Mumbai.
4. The quotation must include the PAN, GST no. of the firm/supplier. Taxes and excise duties shall be quoted separately. Form AF shall be provided wherever necessary.
5. The quotations should be on printed letter head, in original, and must reach by **Date: 25th Feb 2022. Technical and financial bids should be sent separately in two sealed envelopes by Indian post only (speed post/normal post)** super scribed with the above subject (reference number) and the due date. The address on the envelop should read

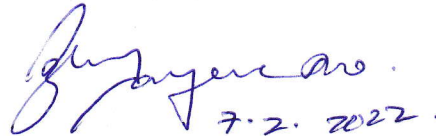
**The Head,
Applied Genomics Section,
Bhabha Atomic Research Centre,
Mod. Labs, Trombay, Mumbai 400 085.
Attention: Dr. Shyam Sunder**

6. The bidder shall deliver the finished components after approval by the appropriate authority, **within six months from the date of final work order** issued to the bidder.
7. Samples will be provided in lots, in a span of five months from the date of work order. The work should be completed within **5 weeks** after the samples are submitted in a lot.
8. The finished components and the scrap from the free issue material (if any) shall be delivered by the bidder at Applied Genomics Section, Bioscience Group, MOD Labs, Bhabha Atomic Research Centre, Trombay, Mumbai 400 085.
9. 100 % payment will be made only after the satisfactory completion of the work for all the samples.
10. Director, BSG, BARC reserves the right to accept/reject any or all the quotations without assigning any reason.

Shyam
7/2/2022

Shyam Sunder
Shyam Sunder
SO/E

Through,


7.2.2022

Head, Applied genomics Section

डॉ. नारायण राव, ए.व्ही.एस.एस/Dr. Narayana Rao, A.V.S.S

अध्यक्ष, अनुप्रयुक्त जीनोमिक्स अनुभाग/Head, Applied Genomics Section

भाभा परमाणु अनुसंधान केंद्र / Bhabha Atomic Research Centre

भारत सरकार / Government of India

मुंबई / Mumbai - 400085.

Annexure-1

Specifications for RNA Sequencing and bioinformatics analysis of bacterial samples.

1. Bacterial pellets (Samples) will be provided on dry ice. Samples should be collected at North gate, BARC, Trombay.
2. Samples: 18 bacterial samples (~5MB genome)
3. The company will have to extract RNA from bacterial samples provided. Samples should be processed to eliminate rRNA transcripts. **Stranded** library preparation required.
4. Platform: Sequencing should be done on Illumina platform like Illumina X Ten/Novoseq or an equivalent instrument of Illumina and read length should be **2 X 150 bp reads PE**.
5. Data Requirement: 10 million reads/Sample, >90% of the bases above Q30.
6. Quality Control should be done as per following criteria;
RNA to be extracted from bacterial samples and library (**stranded**) to be prepared as per standard procedure. Quality control of Sample using Agilent tape station/ Gel electrophoresis or Qubit. QC reports should be sent and take an approval to proceed with library preparation. Qubit should be used for measuring the quantity of the library before sequencing and Tape station profile of Library should be provided to confirm the purity of sample and library.
7. Sequencing quality testing: The following checks will have to be performed for an input fastq file for analysis:
 - A. Base quality score distribution.
 - B. Sequence quality score distribution.
 - C. Average base content per read.
 - D. GC distribution in the reads.
8. Detailed technical note should be provided for Bioinformatics Analysis.
9. Primary Bioinformatics: Base Calling, Filtering and Trimming and adapter removal has to be done and statistic report should be shared.
10. Secondary Bioinformatics Analysis: Annotation and Identification of SNPs should be done and Alignment against the available reference genome for comparison should be done. Expression estimation and differential expression analysis. Gene enrichment, gene ontology and pathway analysis.
Analysis Requirement/deliverables: Ref based analysis.
 1. Primary Statistics report - QC results.
 2. Read statistics reports
 3. Transcript statistics of assembled transcript sequences
 4. Sample wise transcript expression matrix (RPKM values)
 5. Transcript annotation results (Gene Ontology and Pathway Analysis) using Uniprot /KEGG Database
 6. Differential expression (The expression of genes under different treatments)
 7. GO analysis results and pathway analysis results
 8. SSR Reports
 9. The detailed analysis of selected metabolic pathways (degradative pathways)
 10. Heat map of differentially expressed genes.
 11. Principal component analysis of data.
 12. The rRNA depleted mRNA (or Total RNA) and/ or the library should be returned to the customer. This is applicable for only 6 samples in a single shipment.
11. Complete Sequencing and Bioinformatic analysis should be carried out by the same company.
12. All methods, Kits, protocols followed should be disclosed by the company at the time of submitting the quote.
13. The service provider must have completed a minimum of 5 NGS projects from BARC and references should be attached along with quotation.

14. Head, AGS, BARC has the right to disqualify/cancel the service without certifying any reason.

15. Sample and data should be strictly and exclusively the property of BARC, Mumbai and it is mandatory on part of bidder to comply with non-disclosure terms.

Other terms and conditions

- 1) Entire work should be completed in 6 months of time from the date of work-order.
- 2) Data should be delivered through secured server & HDD only. To maintain data confidentiality, firm should not write data in CDs/DVDs. Data also should be provided in uploadable form in to the public databases. Both Raw and processed data and analysis results should be provided. Data should be delivered in soft copy form through secured server and external storage media (HDD).
- 3) Time lines to complete the program with complete analysis should be written clearly.
- 4) The details of progress of experiment will be intimated to the scientist and further processing in case of any issues will be based on the instructions of the customer only.
- 5) Acknowledgement letter given by any scientist who had used your services shall be included.
- 6) Establishment of firm: Firm should be established in India at least 10 years before with NGS lab and experience in handling NGS projects. Scientist from BARC may visit your facility, NGS lab.
- 7) Genomics lab: Service Provider should have in house facility of Illumina X Ten/Novoseq machine and Proof of lab facility should be provided.
- 8) The company should have good experience/ record in conducting such experiments before with proof of publications and or certificate given in writing.
- 9) Proof of Publications: Minimum 50 publications should be cited for NGS and Analysis.
- 10) Sample should be processed within India and not sent out of India. Library preparation, sequencing and analysis should be done by the same company in India.
- 11) Quotation should be on company letter head with GST, PAN, and CST number
- 12) Need to complete analysis of projects and support for queries till publication.
- 13) Head, AGS, BARC has the right to disqualify/cancel the service without certifying any reason
- 14) Sample and data should be strictly and exclusively the property of BARC, Mumbai and it is mandatory on part of bidder to comply with non-disclosure terms.
- 15) **Submission of a point-by-point compliance sheet mentioning bidder's specifications against all the specifications mentioned in the tender document with proper documentary/literature evidence is mandatory, failing which the quotation will be rejected.**