



Bid Number/बोली क्रमांक (बिड संख्या):
GEM/2023/B/3986821
Dated/दिनांक : 20-09-2023

Bid Document/ बिड दस्तावेज़

Bid Details/बिड विवरण	
Bid End Date/Time/बिड बंद होने की तारीख/समय	11-10-2023 18:00:00
Bid Opening Date/Time/बिड खुलने की तारीख/समय	11-10-2023 18:30:00
Bid Offer Validity (From End Date)/बिड पेशकश वैधता (बंद होने की तारीख से)	180 (Days)
Ministry/State Name/मंत्रालय/राज्य का नाम	Ministry Of Agriculture And Farmers Welfare
Department Name/विभाग का नाम	Department Of Agricultural Research And Education (dare)
Organisation Name/संगठन का नाम	Indian Council Of Agricultural Research (icar)
Office Name/कार्यालय का नाम	Icar-national Research Centre On Yak, Dirang, Arunachal Pradesh
Item Category/मद केटेगरी	Custom Bid for Services - Generation of Whole Genome Sequencing and fulllength Transcriptome of Yak Genome with Comprehensive Bioinformatics Analysis
Contract Period/अनुबंध अवधि	2 Year(s)
Minimum Average Annual Turnover of the bidder (For 3 Years)/बिडर का न्यूनतम औसत वार्षिक टर्नओवर (3 वर्षों का)	45 Lakh (s)
Years of Past Experience Required for same/similar service/उन्हीं/समान सेवाओं के लिए अपेक्षित विगत अनुभव के वर्ष	3 Year (s)
MSE Exemption for Years Of Experience/अनुभव के वर्षों से एमएसई छूट/ and Turnover/टर्नओवर के लिए एमएसई को छूट प्राप्त है	Yes
Startup Exemption for Years Of Experience/अनुभव के वर्षों से स्टार्टअप छूट/ and Turnover/ टर्नओवर के लिए स्टार्टअप को छूट प्राप्त है	Yes
Document required from seller/विक्रेता से मांगे गए दस्तावेज़	Experience Criteria,Bidder Turnover,Certificate (Requested in ATC),OEM Authorization Certificate,OEM Annual Turnover,Additional Doc 1 (Requested in ATC) *In case any bidder is seeking exemption from Experience / Turnover Criteria, the supporting documents to prove his eligibility for exemption must be uploaded for evaluation by the buyer
Bid to RA enabled/बिड से रिवर्स नीलामी सक्रिय किया	No

Bid Details/बिड विवरण	
Type of Bid/बिड का प्रकार	Two Packet Bid
Time allowed for Technical Clarifications during technical evaluation/तकनीकी मूल्यांकन के दौरान तकनीकी स्पष्टीकरण हेतु अनुमत समय	2 Days
Evaluation Method/मूल्यांकन पद्धति	Total value wise evaluation

EMD Detail/ईएमडी विवरण

Required/आवश्यकता	No
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ePBG Detail/ईपीबीजी विवरण

Required/आवश्यकता	No
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Splitting/विभाजन

Bid splitting not applied/बोली विभाजन लागू नहीं किया गया.

MII Compliance/एमआईआई अनुपालन

MII Compliance/एमआईआई अनुपालन	Yes
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MSE Purchase Preference/एमएसई खरीद वरीयता

MSE Purchase Preference/एमएसई खरीद वरीयता	Yes
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1. If the bidder is a Micro or Small Enterprise as per latest definitions under MSME rules, the bidder shall be exempted from the requirement of "Bidder Turnover" criteria and "Experience Criteria" subject to meeting of quality and technical specifications. If the bidder is OEM of the offered products, it would be exempted from the "OEM Average Turnover" criteria also subject to meeting of quality and technical specifications. In case any bidder is seeking exemption from Turnover / Experience Criteria, the supporting documents to prove his eligibility for exemption must be uploaded for evaluation by the buyer.
2. If the bidder is a Startup, the bidder shall be exempted from the requirement of "Bidder Turnover" criteria and "Experience Criteria" subject to their meeting of quality and technical specifications. If the bidder is OEM of the offered products, it would be exempted from the "OEM Average Turnover" criteria also subject to meeting of quality and technical specifications. In case any bidder is seeking exemption from Turnover / Experience Criteria, the supporting documents to prove his eligibility for exemption must be uploaded for evaluation by the buyer.
3. The minimum average annual financial turnover of the bidder during the last three years, ending on 31st March of the previous financial year, should be as indicated above in the bid document. Documentary evidence in the form of certified Audited Balance Sheets of relevant periods or a certificate from the Chartered Accountant / Cost Accountant indicating the turnover details for the relevant period shall be uploaded with the bid. In case the date of constitution / incorporation of the bidder is less than 3-year-old, the average turnover in respect of the completed financial years after the date of constitution shall be taken into account for this criteria.
4. Years of Past Experience required: The bidder must have experience for number of years as indicated above in

bid document (ending month of March prior to the bid opening) of providing similar type of services to any Central / State Govt Organization / PSU / Public Listed Company. Copies of relevant contracts / orders to be uploaded along with bid in support of having provided services during each of the Financial year.

5. Purchase preference to Micro and Small Enterprises (MSEs): Purchase preference will be given to MSEs as defined in Public Procurement Policy for Micro and Small Enterprises (MSEs) Order, 2012 dated 23.03.2012 issued by Ministry of Micro, Small and Medium Enterprises and its subsequent Orders/Notifications issued by concerned Ministry. If the bidder wants to avail the Purchase preference for services, the bidder must be the Service provider of the offered Service. Relevant documentary evidence in this regard shall be uploaded along with the bid in respect of the offered service. If L-1 is not an MSE and MSE Service Provider (s) has/have quoted price within L-1+ 15% of margin of purchase preference /price band defined in relevant policy, then 100% order quantity will be awarded to such MSE bidder subject to acceptance of L1 bid price.

[OM No.1 4 2021 PPD dated 18.05.2023](#) for compliance of Concurrent application of Public Procurement Policy for Micro and Small Enterprises Order, 2012 and Public Procurement (Preference to Make in India) Order, 2017.

6. Estimated Bid Value indicated above is being declared solely for the purpose of guidance on EMD amount and for determining the Eligibility Criteria related to Turn Over, Past Performance and Project / Past Experience etc. This has no relevance or bearing on the price to be quoted by the bidders and is also not going to have any impact on bid participation. Also this is not going to be used as a criteria in determining reasonableness of quoted prices which would be determined by the buyer based on its own assessment of reasonableness and based on competitive prices received in Bid / RA process.

Additional Qualification/Data Required/अतिरिक्त योग्यता /आवश्यक डेटा

Introduction about the project /services being proposed for procurement using custom bid functionality:[1695211827.pdf](#)

Instruction To Bidder:[1695211831.pdf](#)

Scope of Work:[1695211837.pdf](#)

Service Level Agreement (SLA):[1695211841.pdf](#)

Payment Terms:[1695211844.pdf](#)

GEM Availability Report (GAR):[1695211860.pdf](#)

Buyer's Competent Authority Approval:[1695211893.pdf](#)

Buyers are requested to upload the format for price breakup of the lumpsum offering to be provided by the service provider (Please provide the format if financial upload required is selected as "Yes" while creating Bid):[1695211909.pdf](#)

Custom Bid For Services - Generation Of Whole Genome Sequencing And Fulllength Transcriptome Of Yak Genome With Comprehensive Bioinformatics Analysis (1)

Technical Specifications/तकनीकी विशिष्टियाँ

Specification	Values
Core	
Description /Nomenclature of Service Proposed for procurement using custom bid functionality	Generation of Whole Genome Sequencing and fulllength Transcriptome of Yak Genome with Comprehensive Bioinformatics Analysis
Regulatory/ Statutory Compliance of Service	YES
Compliance of Service to SOW, STC, SLA etc	YES
Addon(s)/एडऑन	

Additional Specification Documents/अतिरिक्त विशिष्टि दस्तावेज़

Consignees/Reporting Officer/परेषिती/रिपोर्टिंग अधिकारी

S.No./क्र. सं.	Consignee Reporting/Officer/ परेषिती/रिपोर्टिंग अधिकारी	Address/पता	The quantity of procurement "1" indicates Project based or Lumpsum based hiring.	Additional Requirement/अतिरिक्त आवश्यकता
1	NGOICHUNG KHOCHILU	790101,ICAR-NRC ON YAK, DIRANG, WEST KAMENG DISTRICT, PIN-790101	1	N/A

Buyer Added Bid Specific Terms and Conditions/क्रेता द्वारा जोड़ी गई बिड की विशेष शर्तें**1. Generic**

OPTION CLAUSE: The buyer can increase or decrease the contract quantity or contract duration up to 25 percent at the time of issue of the contract. However, once the contract is issued, contract quantity or contract duration can only be increased up to 25 percent. Bidders are bound to accept the revised quantity or duration

2. Buyer Added Bid Specific ATC

Buyer Added text based ATC clauses

Transcriptome of Yak Genome with Comprehensive Bioinformatics Analysis

ICAR-National Research Centre on Yak invites e-tenders for availing services to generate reference genome sequence and tissue-specific full length transcriptome sequencing with comprehensive bioinformatics analysis of large animal with chromosome number $2n = 2x = 60$. The genome of interest is diploid, with an estimated size of ~2.83 Gb. Quotations should be submitted following the two-bid system, with technical and financial bids to be submitted separately. The quote should include the components listed below. The overall project would be executed sequentially in two phases. **Phase - I** would involve raw data generation for Whole Genome sequencing, optical mapping, Hi-C scaffolding and ISO-seq Sequencing. **Phase - II** would be dedicated to Comprehensive Bioinformatics Analysis.

The following are the important points to note while bidding:

1. The bidders have to quote collectively for both phases along with individual quotes for each phase
2. Partial bidding/quotes for one phase only will not be considered.
3. L1 will be decided after aggregating the financial bids of both phases.

Phase I: Data Generation (PacBio Genome Seq, Optical Mapping, Hi-C Seq and ISO-Seq)**Service 1: Whole Genome sequencing using PacBio Sequel II**

1. Four tubes of 5 ml blood samples in EDTA tube stored at -80°C will be provided. A minimum of $10\mu\text{g}$ Ultra High molecular gDNA of more than 100Kb should be isolated from blood samples and 4 libraries should be prepared

of different barcodes and insert sizes of 13Kb, 15Kb, 18Kb, and 20Kb.

2. The quality (QC) of isolated HMW DNA using Qubit, Nanodrop and Femtopulse and DNA QC report should be provided.
3. DNA shearing should be done on the Megaruptor-3 platform and the quality control check shearing should be done on Femtopulse.
4. Sheared DNA should be purified using AMPure PB beads and analyzed through Femtopulse before preparing the SMRTbell library.
5. For each SMRT cell, the SMRTbell library should be prepared using SMRTbell Express Template Prep Kit 2.0/3.0.
6. Size selection should be using Bluepippin/ PacBio AMPure PB bead size selection.
7. The size selected and purified samples were further confirmed using Femtopulse and bound complex should be prepared using Binding kit.
8. Total data to be generated in 6 SMRT Cells per library. A total of 24 SMRT Cells (30hr run) on PacBio Sequel II should be generated and from each run 20 to 30 Gb HiFi data per SMRT cell should be provided.
9. Scientists should be allowed to participate during the PacBio Sequel II run.
10. The samples should not be sent outside of India and sequencer and technology should not be changed.

Service 2: Hi-C Sequencing using Illumina Nova Seq

11. Four tubes of 5 ml blood samples in EDTA tube stored at -80°C will be provided. Hi-C libraries should be prepared from the same animal blood used for PacBio data generation.
12. The four genomic DNA should be sheared with four different restriction enzymes DpnII, DdeI, MseI and HinfI and 4 Hi-C libraries should be prepared.
13. The Proximo Hi-C (Animal) Kit protocol to be used should be proven for a animal genomes and must cover up to 30 Mb crosslink or more.
14. Each Hi-C library should be sequenced in S4 flow cell of NovaSeq 6000 to generate minimum 850 Gb per HiC library.
15. $\geq 85\%$ of bases higher than Q30 at 2×150 bp should be generated.

Service 3: Optical Mapping in Bionano Saphyr

16. Four tubes of 5 ml blood samples in EDTA tube stored at -80 °C will be provided.

17. Optical Mapping should be prepared from the same animal blood used for PacBio data generation.
18. High molecular weight DNA isolation should be done as per the recommended protocol from the principal company (Manufacturer)
19. Minimum of 80X coverage should be >150 Kb molecule.
20. Should submit raw target data in BNX & CMAP format.

Service 4: Genome Annotation by Iso Sequencing using PacBio Sequel II

21. For genome annotation 36 tissues will be supplied and the service provider should isolate the high-quality RNA of more than 7 RIN value.
22. After RNA extraction, quantity should be checked using Qubit, purity ratios 260/280 and 260/230 were checked using Nano Drop, and RIN value should be checked using Bioanalyzer. The samples should also be checked in Agarose gel.
23. The RNA sampled should be qualified QC were further prepared full-length cDNA.
24. Full-length transcriptome library preparation using ISO-Seq protocol from the qualified sample should be performed.
25. From each RNA sample, short and long ISO-Seq libraries should be prepared of sizes 500bp to 3Kb and 3Kb to 10Kb to capture full-length transcripts.
26. Three tissues should be sequenced per SMRT Cell and each tissue should generate min 500K reads per tissue. Each SMRT cell should generate 250 to 300 Gb of data.
27. A total of 12 SMRT cells of PacBio Sequel II should be used to sequence 36 tissues.
28. For each library 80 to 100 Gb data per library should be generated using Single molecule real-time sequencing on CCS HiFi reads on PacBio Sequel II.
29. All the raw and analyzed data sets of Phase I, gDNA QC reports, library QC reports, sequencing, and CCS analysis reports with methods and results should be supplied in HDD and also stored in an online server.
30. Data should be stored in an online storage server for one year, access should be given to PI and deletion should be done after confirmation from the PI only.

Phase II: Bioinformatics Analysis:

Genome assembly:

1. Conversion of subreads to HiFi reads.
2. Genomic survey using HiFi reads.
3. Contig level genome assembly using HiFi reads.
4. Assessment of contigs level assembly in terms of quality & completeness

Genome Scaffolding using PacBio Contigs and Optical Map

5. BNG map creation and scaffolding of contigs using optical mapping.
6. Assessment of scaffold-level assembly in terms of quality & completeness

Super scaffolding of PacBio and Optical map-based scaffolds using Hi-C data

7. HiC reads QC and clustering
8. Alignment and scaffolding with the input assembly
9. Chromosome-level genome assembly and curation
10. Identification of chromosomes using telomeric repeats.
11. Genome quality assessment and visualization

Genome Annotation data analysis

12. Repeat identification in the genome.
13. Masking of repeat elements.
14. Non-coding RNA annotation
15. Identification of genes using different *ab-initio* gene prediction.
16. Creation of gene models and validation of predicted genes using ISO-Seq data and structural annotation
17. Identification of genes, isoform level expression, pathways related to milk, meat and hair growth, and cold tolerance.
18. Identification of non-coding RNAs, prediction of lncRNAs and their targets, splice junction variants, and novel transcripts discovery
19. Integration of gene models generated from different sources and their functional annotation Comparative Genomics and tertiary analysis.
20. Analysis of syntenic and structural variation, Ven diagram, Dot-plot analysis, Circos plot depicting GC content, no. of genes, TE density, Synteny block, SNPs, indels, comparison with published genome
21. Genome synteny analysis with closely related species
22. Comparative genomics to discover micro and macro-structural variants present in 4 major populations
23. Whole genome duplication, identification of single copy orthologs, phylogenetic analysis and divergence time estimation, gene gain and loss study to understand the evolution
24. Raw data and genome assembly submission in NCBI
25. Extended analysis support till publication
26. A minimum of two scientists should be allowed to work during the analysis at the service provider lab

b in India.

Terms and Conditions

1. The service provider should provide proof of in-house PacBio Sequel II facility and provide an OEM certificate.
2. The service provider should provide a certificate that the sample processing and sequencing will be done in India.
3. Service providers should provide a minimum of 20 purchase orders as proof of working with PacBio Sequel II, Hi-C and Optical Mapping samples in the last 4 years.
4. Service providers should provide a minimum of 10 purchase orders as proof of working on De novo assembly using PacBio Sequel II in the last 3-4 years.
5. Prior experience in preparing Hi-C libraries in India is mandatory.
6. The service provider should have a minimum 5 publications on *De novo* Genome Annotation and Assembly
7. The service provider should be an Indian company certified as per ISO Standards.
8. The service provider should be an Indian company with more than 51% ownership with the Indian citizen. Company registration and share certificate should be attached. Minimum 5 years of revenue, Income tax return, and P&L should be submitted.
9. The service provider should have a certified Indian Laboratory. The DSIR certificate should be valid for one year or more from the date of release of the tender.
10. A minimum of 100 publications in the last 5 years should be provided from Indian academic clients.
11. Service providers should provide certificates indicating that Scientists/researcher from the Institute is permitted to visit their facility and interact at any time of execution of the project
12. The service provider should submit the detailed Methodology, Deliverables, Time frames, and Milestones in the Bid.
13. The service provider should take the concurrence of the client before proceeding to each step i.e. from DNA QC to data generation.
14. The sample shipment should be included in the cost submitted. The vendor must be ready to arrange multiple shipments without any extra charges.

15. Wet lab workflow and Analysis Pipeline should be discussed and executed as per the Indenter's project requirement. Any deviation from the specification will not be allowed without prior approval from the PI.
16. The service provider should complete the project within 12 months time period.
17. Confidentiality and non-disclosure agreements must be submitted (that the service provider would not use or share the generated data with any third party except with the prior approval of the client).
18. Registration certificate of the firm/company.
19. GST certificate
20. IT return for the Financial Year 2020-21, 2021-22 and 2022 -23.
21. Copy of TAN/PAN in the name of firm
22. Undertaking indicating Non blacklisting of the service provider by Government or autonomous organizations/ institutions Universities etc.
23. The ICAR-NRC on Yak shall not be under any obligation to accept the lowest or any other offer received in response to this tender notice and shall be free to reject any or all offers.
24. The ICAR-NRC on Yak is not obliged to meet and have any discussion with any vendor.
25. The Director, ICAR-NRC on Yak reserves the right to reduce or terminate the period of contract or to extend its duration in the interest of the Institute, for any justifiable reasons, not mandatory to be communicated to the tenderer.

Payment Terms and Conditions

1. 40% payment of the total project cost will be released after the generation of whole genome sequencing, optical mapping, and HI-C scaffolding raw data
2. 50% payment of the total project cost will be released after the generation of ISO-seq data and gene prediction and validation of genes using full-length transcripts generated through ISO-Seq data.
3. The remaining 10% payment will be released after successful completion of the project.

Disclaimer/अस्वीकरण

The additional terms and conditions have been incorporated by the Buyer after approval of the Competent Authority in Buyer Organization, whereby Buyer organization is solely responsible for the impact of these clauses on the bidding process, its outcome, and consequences thereof including any eccentricity / restriction arising in the bidding process due to these ATCs and due to modification of technical specifications and / or terms and conditions governing the bid. Any clause(s) incorporated by the Buyer regarding following shall be treated as null and void and would not be considered as part of bid:-

1. Definition of Class I and Class II suppliers in the bid not in line with the extant Order / Office Memorandum issued by DPIIT in this regard.
2. Seeking EMD submission from bidder(s), including via Additional Terms & Conditions, in contravention to

exemption provided to such sellers under GeM GTC.

3. Publishing Custom / BOQ bids for items for which regular GeM categories are available without any Category item bunched with it.
4. Creating BoQ bid for single item.
5. Mentioning specific Brand or Make or Model or Manufacturer or Dealer name.
6. Mandating submission of documents in physical form as a pre-requisite to qualify bidders.
7. Floating / creation of work contracts as Custom Bids in Services.
8. Seeking sample with bid or approval of samples during bid evaluation process.
9. Mandating foreign / international certifications even in case of existence of Indian Standards without specifying equivalent Indian Certification / standards.
10. Seeking experience from specific organization / department / institute only or from foreign / export experience.
11. Creating bid for items from irrelevant categories.
12. Incorporating any clause against the MSME policy and Preference to Make in India Policy.
13. Reference of conditions published on any external site or reference to external documents/clauses.
14. Asking for any Tender fee / Bid Participation fee / Auction fee in case of Bids / Forward Auction, as the case may be.

Further, if any seller has any objection/grievance against these additional clauses or otherwise on any aspect of this bid, they can raise their representation against the same by using the Representation window provided in the bid details field in Seller dashboard after logging in as a seller within 4 days of bid publication on GeM. Buyer is duty bound to reply to all such representations and would not be allowed to open bids if he fails to reply to such representations.

This Bid is governed by the [General Terms and Conditions/सामान्य नियम और शर्तें](#), conditions stipulated in Bid and [Service Level Agreement](#) specific to this Service as provided in the Marketplace. However in case if any condition specified in General Terms and Conditions/सामान्य नियम और शर्तें is contradicted by the conditions stipulated in Service Level Agreement, then it will over ride the conditions in the General Terms and Conditions.

In terms of GeM GTC clause 26 regarding Restrictions on procurement from a bidder of a country which shares a land border with India, any bidder from a country which shares a land border with India will be eligible to bid in this tender only if the bidder is registered with the Competent Authority. While participating in bid, Bidder has to undertake compliance of this and any false declaration and non-compliance of this would be a ground for immediate termination of the contract and further legal action in accordance with the laws./जेम की सामान्य शर्तों के खंड 26 के संदर्भ में भारत के साथ भूमि सीमा साझा करने वाले देश के बिडर से खरीद पर प्रतिबंध के संबंध में भारत के साथ भूमि सीमा साझा करने वाले देश का कोई भी बिडर इस निविदा में बिड देने के लिए तभी पात्र होगा जब वह बिड देने वाला सक्षम प्राधिकारी के पास पंजीकृत हो। बिड में भाग लेते समय बिडर को इसका अनुपालन करना होगा और कोई भी गलत घोषणा किए जाने व इसका अनुपालन न करने पर अनुबंध को तत्काल समाप्त करने और कानून के अनुसार आगे की कानूनी कार्रवाई का आधार होगा।

---Thank You/धन्यवाद---