NIH NATIONAL CANCER INSTITUTE

Posting Date: February 23, 2024

Closing Date: March 4, 2024 11:30 a.m

ET Reference Number: 24-019280

To: NCI Bid Board

From: Viviane Rivera
NCI CCR P-ARC
viviane.rivera@nih.gov

Subject: NCI Bid Board Posting – mRNA and lncRNA sequencing analysis after radiation using Human quad liver organ on a chip

The Radiation Oncology Branch (ROB) exists to plan and conduct pre-clinical and clinical research on the biologic and therapeutic effects of radiation administrated alone or in combination with other modalities of treatment; to develop novel technology and imaging based approaches for radiation oncology; to investigate the natural history of disease to understand and evaluate means of diagnostic assessment for the purpose of optimizing treatment selections; and to provide radiation therapy as well as general oncology consultations for patients admitted to other NIH Clinical Research Center (CRC) clinical services, in a collaborative approach.

The primary objective is based on the molecular profiling study with liver co-culture organ on a chip model the lab is proposing a mitigation study using liver quad culture model to identify clinically relevant drugs which would mitigate the radiation-induced effects. In order to do this, whole genome sequencing analysis below with these steps are highly need for Radiation Oncology Branch for selection of mitigators for radiation injury.

The National Cancer Institute, The Radiation Oncology Branch (ROB)is requesting mRNA and lncRNA sequencing analysis after radiation using Human quad liver organ on a chip from Novogene Corp Inc, Sacramento, CA. This is not a request for competitive quotations. However, if any interested party believes it can meet the attached requirements, it may submit a statement of capabilities. The capability statement must be in writing and must contain information and material in sufficient detail to allow NCI to determine is the party can fully meet this requirement. The capability statement must be received in the contracting office by 11:30 AM on March 4, 2024 ET. A determination by the Government not to compete this requirement based upon responses to this notice is solely within the discretion of the Government. Information received will be considered solely for the purpose of determining whether to conduct a competitive procurement.

Source Justification:

Only Novogene is capable of providing the services required at the level of quality required because the services are unique and specialized and because prior studies using liver-on-a-chip have been performed with this group. To ensure consistency in the design of probes used for gene expression data between current model and previous model, it is essential that the NCI uses the sequencing services of Novogene. If the sequencing platform were to change at this stage, the data cannot be compared from the previous study. Further, Novogene offers unlimited support for data analysis based on the investigators request

Attached Documents:
SF18
Statement of Work
52.204-24 Representation Regarding Certain Telecommunications and Video Surveillance Services or Equipment.
FAR Clause 52.213-4 Simplified Acquisitions Terms and Conditions (JAN 2014) is applicable and available in full text upon request

REQUEST FOR QUOTATION
(THIS IS NOT AN ORDER)

THIS RFQ ☐ IS ☒ IS NOT A SMALL BUSINESS SET-ASIDE

PAGE 1 OF PAGES 1

1. REQUEST NUMBER	2. DATE ISSUED	3. REQUISITION/PURCHASE REQUEST NUMBER	4. CERT. FOR NAT. DEF. UNDER BDSA REG. 2 AND/OR DMS REG. 1	RATING
POTS 24-019280	02/23/2024	POTS 24-09280		

5a. ISSUED BY	6. DELIVER BY *(Date)*
	04/04/2025

5b. FOR INFORMATION CALL *(NO COLLECT CALLS)*

NAME	TELEPHONE NUMBER	
	AREA CODE	NUMBER
Viviane Rivera	240	760-7125

7. DELIVERY ☐ FOB DESTINATION ☒ OTHER *(See Schedule)*

9. DESCTINATION

a. NAME OF CONSIGNEE: Molykutty Aryankalayil 301-496-1083

8. TO:

a. NAME	b. COMPANY	b. STREET ADDRESS
	Novogene Corp, Incc	10 Convent Drive, Rm B3B406

c. STREET ADDRESS	c. CITY
2921 Stockton Blvd. Suite 1810	Bethesda

d. CITY	e. STATE	f. ZIP CODE	d. STATE	e. ZIP CODE
Sacramento	CA	95817	MD	20892

10. PLEASE FURNISH QUOTATIONS TO THE ISSUING OFFICE IN BLOCK 5a ON OR BEFORE CLOSE OF BUSINESS *(Date)*

03/04/2024

IMPORTANT: This is a request for information and quotations furnished are not offers. If you are unable to quote, please so indicate on this form and return it to the address in Block 5a. This request does not commit the Government to pay any costs incurred in the preparation of the submission of this quotation or to contract for supplies or service. Supplies are of domestic origin unless otherwise indicated by quoter. Any representations and/or certifications attached to this Request for Quotation must be completed by the quoter.

11. SCHEDULE *(Include applicable Federal, State and local taxes)*

ITEM NUMBER (a)	SUPPLIES/SERVICES (b)	QUANTITY (c)	UNIT (d)	UNIT PRICE (e)	AMOUNT (f)
1	Human small RNA-seq (WBI) RNA sample QC. Customized library preparation.NovaSeq SE50 (10 M raw reads per sample. Standard Analysis Notice of Intent: If submitting capability statement, please e-mail only 1 copy of the technical capability statement to Viviane Rivera at viviane.rivera@nih.gov See attachment statement of work. This will be awarded as a Firm-Priced Contract.	56			

12. DISCOUNT FOR PROMPT PAYMENT	a. 10 CALENDAR DAYS (%)	b. 20 CALENDAR DAYS (%)	c. 30 CALENDAR DAYS (%)	d. CALENDAR DAYS NUMBER	d. CALENDAR DAYS PERCENTAGE
			0.00		

NOTE: Additional provisions and representations ☐ are ☐ are not attached.

13. NAME AND ADDRESS OF QUOTER	14. SIGNATURE OF PERSON AUTHORIZED TO SIGN QUOTATION	15. DATE OF QUOTATION
a. NAME OF QUOTER		
b. STREET ADDRESS	16. SIGNER	
	a. NAME *(Type or print)*	b. TELEPHONE AREA CODE
c. COUNTY		
d. CITY / e. STATE / f. ZIP CODE	c. TITLE *(Type or print)*	NUMBER

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STANDARD FORM 18 (REV. 6/1995)
Prescribed by GSA-FAR (48 CFR) 53.215-1(a)

STATEMENT OF WORK (SOW)

Instructions: This document should be used for the acquisition of SERVICES. Instructions (and sample language) for completion are in red, and should be excluded from the completed document.

1.0 TITLE: MicroRNA sequencing analysis after radiation using Human quad liver organ on a chip

2.0 BACKGROUND

Radiation induced injury to the normal liver tissue is a limiting factor in the application of radiation therapy for the treatment of liver cancers. In a previous study from our lab, liver was identified as the most radiation-affected organ in whole body irradiated Gottingen minipigs in terms of gene expression profiles. The liver-on-a-chip model mimics the complexity of the organ. These chips could be seeded with all the four major liver cell populations-hepatocytes, Kupffer cells, stellate cells, and liver sinusoidal endothelial cells (LSECs). The advantages offered are many. Besides being ethical to use, chip platform also offers the advantage of studying the interaction of the liver specific cells without interference from systemic effects that could not be controlled in a live animal. These are most well suited to perform initial drug screenings and establish optimal and most-effective concentrations. MicroRNA sequencing will provide a complete molecular profile which enables to see the target genes which are regulated by microRNAs which enables the process of selecting the mitigators for radiation injury. So whole genome microRNA sequencing analysis is highly relevant for the liver quad culture mitigation study.

2.1 **OBJECTIVE:** Based on the molecular profiling study with liver co-culture organ on a chip model we are proposing a mitigation study using liver quad culture model to identify clinically relevant drugs which would mitigate the radiation-induced effects. In order to do this, whole genome microRNA sequencing analysis below with these steps are highly needed for Radiation Oncology Branch for selection of mitigators for radiation injury.

1.Data Quality Control: filtering reads containing adapter or of low quality.
2. Summary of the Length Distribution
3. Common and Specific Sequences among samples
4. Mapping to Reference Genome
5. Identification of Known miRNA
6. Identification of rRNA, tRNA, snRNA, snoRNA and non-coding RNA
7. Identification of Repeat Associated small RNAs
8. Alignment of small RNA to mRNA, exon and intron

9. Prediction of Novel miRNAs and Secondary Structure Detection from unannotated small RNAs
10. Expression Pattern of known miRNAs
11. Base Bias of miRNAs
12. Classification and Annotation
13. Correlation analysis (for samples with biological replicates only)
14. Differential Expression and Cluster Analysis (for two or more groups)
15. Prediction of miRNA target genes
16. Enrichment Analysis of differentially expressed miRNA target genes
(1) GO Enrichment (2) KEGG Pathway Enrichment

3. SCOPE: This project is a multi-step process with each step dependent on the successful completion of the former. The process starts with a quality check of the RNA and follows with sequential steps of rRNA depletion, globin RNA depletion, adapter ligation, cDNA preparation, sample purification and QC, reading on an Illumina platform, aligning reads to a reference genome, and finally data clean-up and analysis for identifying differentially expressed microRNAs in comparison to unirradiated control samples.

4. CONTRACT REQUIREMENTS/ AND PERSONNEL QUALIFICATIONS

The contractor shall perform the following tasks:

4.1 <u>microRNA sequencing</u>

- 1.1.1 Total RNA sample quality control
  - 1.1.1.1 Nanodrop: tests RNA purity
  - 1.1.1.2 Agarose Gel Electrophoresis: tests RNA degradation and potential contamination
  - 1.1.1.3 Agilent 2100: checks RNA integrity
- 1.1.2 Library Construction
  - 1.1.2.1 rRNA removal
  - 1.1.2.2 Fragmentation
  - 1.1.2.3 cDNA synthesis
  - 1.1.2.4 Adapter ligation
  - 1.1.2.5 Size selection
  - 1.1.2.6 PCR enrichment
- 1.1.3 Library Quality Control
  - 1.1.3.1 Qubit 2.0 fluorometer
  - 1.1.3.2 Agilent 2100
  - 1.1.3.3 Quantitative PCR
- 1.1.4 Sequencing of small RNA using Illumina platforms
- 1.1.5 Data Analysis
  - 1.1.5.1 Quality control
  - 1.1.5.2 Read mapping to reference genome

STATEMENT OF WORK (SOW)

5.0: This is a firm fixed price purchase order.

6.0 PERIOD OF PERFORMANCE
The period of performance shall be 12 months from the date of award. 3/4/2024- 3/3/2025

7.0 PLACE OF PERFORMANCE
2921 Stockton Blvd. Suite 1810, Sacramento CA 95817

8.0 REPORT(S)/DELIVERABLES AND DELIVERY SCHEDULE

DELIVERABLE	DELIVERABLE DESCRIPTION / FORMAT REQUIREMENTS	DUE DATE
#1	Sample Quality Analysis Report	Within 4 weeks after the award
#2	Whole genome microRNA sequencing analysis experiment	Within 12 weeks after award

9.0 PAYMENT

Payment shall be made according to testing need of lab____. Payment authorization requires submission and approval of invoices to the COR and NIH OFM, in accordance with the attached payment provisions listed below:

The following clause is applicable to all Purchase Orders, Task or Delivery Orders, and Blanket Purchase Agreement (BPA) Calls: PROMPT PAYMENT (JUL 2013) FAR 52.232-25. Highlights of this clause and NIH implementation requirements follow:

I. Invoice Requirements

A. An invoice is the Contractor's bill or written request for payment under the contract for supplies delivered or services performed. A proper invoice is an "Original" which must include the items listed in subdivisions 1 through 12, below, in addition to the requirements of FAR 32.9. If the invoice does not comply with these requirements, the Contractor will be notified of the defect within 7 days after the date the designated billing office received the invoice (3 days for meat, meat food products, or fish, and 5 days for perishable agricultural commodities, dairy products, edible fats, or oils) with a statement of the reasons why it is not a proper invoice. (See exceptions under II., below.) Untimely notification will be considered in the computation of any interest penalty owed the Contractor.

STATEMENT OF WORK (SOW)

1. Vendor/Contractor: Name, Address, Point of Contact for the invoice (Name, title, telephonenumber, e-mail and mailing address of point of contact).
2. Remit-to address (Name and complete mailing address to send payment).
3. Remittance name must match exactly with name on original order/contract. If the Remittance name differs from the Legal Business Name, then both names must appear onthe invoice.
4. Invoice date.
5. Unique invoice #s for all invoices per vendor regardless of site.
6. NBS document number formats must be included for awards created in the NBS: ContractNumber; Purchase Order Number; Task or Delivery Order Number and Source Award Number (e.g., Indefinite Delivery Contract number; General Services Administration number); or, BPA Call Number and BPA Parent Award Number.
7. Unique Entity Identifier (UEI) which is in the System for Award Management (SAM) and replaces the Dun & Bradstreet Data Universal Numbering System (DUNS) number.
8. Federal Taxpayer Identification Number (TIN). In those rare cases where a contractor does not have a UEI number or TIN, a Vendor Identification Number (VIN)must be referenced on the invoice. The VIN is the number that appears after the contractor's name on the face page of the award document.
9. Identify that payment is to be made using a three-way match.
10. Description of supplies/services **that match** the description on the award, by line billed.*
11. Freight or delivery charge must be billed as shown on the award. If it is included in the itemprice do not bill it separately. If identified in the award as a separate line item, it must be billed separately.
12. Quantity, Unit of Measure, Unit Price, Extended Price of supplies delivered or servicesperformed, as applicable, and that **match** the line items specified in the award.*

NOTE: If your invoice must differ from the line items on the award, please contact the Contracting Officer before submitting the invoice. A modification to the order or contract may be needed before the invoice can be submitted and paid.

Shipping costs will be reimbursed only if authorized by the Contract/Purchase Order. If authorized, shipping costs must be itemized. Where shipping costs exceed $100, the invoice must be supported by a bill of lading or a paid carrier's receipt.

B. The Contractor shall submit invoices to the Department of Treasury's Invoice Processing Platform (IPP) at https://www.ipp.gov with a copy to the approving official, as directed below.

The Contractor shall submit a copy of the electronic invoice to the following Approving Official (Contracting Officer) and Contracting Officer's Representative:

Approving Official: Contracting Officer
Name- Email Address-

Contracting Officer's Representative
Name- Email Address-

II. Invoice Payment

A. Except as indicated in paragraph B., below, the due date for making invoice payments by the designated payment office shall be the later of the following two events:

1. The 30th day after the designated billing office has received a proper invoice.
2. The 30th day after Government acceptance of supplies delivered or services performed.

B. The due date for making invoice payments for meat and meat food products, perishable agricultural commodities, dairy products, and edible fats or oils, shall be in accordance with the Prompt Payment Act, as amended.

III. Interest Penalties

A. An interest penalty shall be paid automatically, if payment is not made by the due date and the conditions listed below are met, if applicable.

1. A proper invoice was received by the designated billing office.
2. A receiving report or other Government documentation authorizing payment was processed and there was no disagreement over quantity, quality, or contractor compliance with a term or condition.
3. In the case of a final invoice for any balance of funds due the contractor for supplies delivered or services performed, the amount was not subject to further settlement actions between the Government and the Contractor.

B. Determination of interest and penalties due will be made in accordance with the provisions of the Prompt Payment Act, as amended, the Contract Disputes Act, and regulations issued by the Office of Management and Budget.

IV. PROVIDING ACCELERATED PAYMENT TO SMALL BUSINESS SUBCONTRACTORS, FAR 52.232-40 (November 2021)

(a) Upon receipt of accelerated payments from the Government, the Contractor shall make accelerated payments to its small business subcontractors under this contract, to the maximum extent practicable and prior to when such payment is otherwise required under the applicable contract or subcontract, after receipt of a proper invoice and all other required documentation from the small business subcontractor.

(b) The acceleration of payments under this clause does not provide any new rights under the Prompt Payment Act.
(c) Include the substance of this clause, including this paragraph (c), in all subcontracts with small business concerns, including subcontracts with small business concerns for the acquisition of commercial products or commercial services.

(End of Clause)

V. HHSAR 352.232-71 Electronic Submission of Payment Requests (February 2, 2022)

(a) Definitions. As used in this clause—
Payment request means a bill, voucher, invoice, or request for contract financing payment with associated supporting documentation. The payment request must comply with the requirements identified in FAR 32.905(b), ‘‘Content of Invoices’’ and the applicable Payment clause included in this contract.

(b) Except as provided in paragraph (c) of this clause, the Contractor shall submit payment requests electronically using the Department of Treasury Invoice Processing Platform (IPP) or successor system. Information regarding IPP, including IPP Customer Support contact information, is available at www.ipp.gov or any successor site.

(c) The Contractor may submit payment requests using other than IPP only when the Contracting Officer authorizes alternate procedures in writing in accordance with HHS procedures.

(d) If alternate payment procedures are authorized, the Contractor shall include a copy of the Contracting Officer’s written authorization with each payment request.

(End of Clause)