Posting Date: March 18, 2021

Closing Date: March 28, 2020 10:30 a.m. ET

Reference Number: 21-023836

To: NCI Bid Board

From: Tanika Crossen
NCI P-ARC Program Analyst
crossent@nih.gov

Subject: NCI Bid Board Posting – Nucleofector for electroporation experiments

Among the defining concepts of the Genetics Branch is one that underlies its basic research focus and others that form the foundation of its clinical and translational research activities. The concept that underlies basic research is that cancer is a genetic disease caused by genetic instability. That instability is a function of all the inherited and acquired effects that mediate plasticity and alterability at the level of DNA. The success of molecular genetics over the past two decades has been the identification of genes involved in pathways of growth and development, and the identification of the mechanisms by which the normal regulation and/or products of these genes are altered in cancer. The elucidation of the necessary and sufficient factors that govern genetic instability, the description of the common and disparate themes among different types of instability, and the cataloging of distinct patterns of gene expression in tumors compared to the normal tissues from which they arise are within the purview and distinct perspective of this branch. There is, in addition, a clinical/translational mantle that this branch is called upon to shoulder.

Mice that are hypomorphic (15-30% wild-type function) for the DNA replication factor Mcm2 develop a unique mutator phenotype that is characterized by 100-1000 kb interstitial deletions. These mice uniformly develop T cell leukemia, with deletions of key tumor suppressor genes, such as Pten, Cdkn1a, and Tcf3. In order to determine which regions of the Mcm2 gene are needed for this phenotype, we developed a tiling CRISPR library that covered the Mcm2 cDNA. This library of guideRNAs (gRNA) was cloned into a lentiviral based vector that expressed both the gRNA and the Cas9 protein. The library was then used to transduce hematopoietic stem cells (HSC), which in turn were transplanted into recipient mice. It is expected that recipient mice with decreased Mcm2 function will develop T cell leukemia. However, the lentiviral titre, and subsequent transduction efficiency is very low, likely due to inefficient packaging of the large lentiviral product, which expresses both a gRNA and Cas9 protein. A workaround that other investigators have found to be successful is to produce a smaller lentivirus that encodes only the gRNA and is packaged more efficiently, leading to higher titres. The successfully transduced HSC are then electroporated with a Cas9 protein to allow DNA cleavage by the gRNA/Cas9 complex.
Our lab has need for an instrument that will allow introduction and incorporation of DNA into primary hematopoietic stem cells. Although many cell lines are permissive in allowing introduction of DNA/RNA/protein, primary hematopoietic stem cells have been difficult to transfect. We require an instrument that uses a combination of specific electrical pulses, along with solutions of exact and specific ion combinations, to allow introduction of DNA directly into the nucleus of a cell. A wide variety of solutions of different ionic combinations allows optimization of DNA introduction into different cell types (i.e, hematopoietic stem cells, thymocytes, B-cells, etc). Moreover, the instrument must not release heavy metal ions (e.g., Al+3) during the process of introduction of DNA into the cell nucleus. Finally the instrument should be modular, allowing the addition of 96 well capability.

Sole Source Justification:

Lonza is the only company that provides all the salient characteristics of this requirement.

Attached Documents:
SF18
Statement of Work
FAR Clause 52.204-24 Representation Regarding Certain Telecommunications and Video Surveillance Services or Equipment.

FAR Clause 52.213-4 Simplified Acquisitions Terms and Conditions (AUG 2020) 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 NO.	2. DATE ISSUED	3. REQUISITION/PURCHASE REQUEST NO.	4. CERT. FOR NAT. DEF. UNDER BDSA REG. 2 AND/OR DMS REG. 1	RATING
21-023836	3/18/2021			

5a. ISSUED BY
NCI CCR Purchasing Administrative Resource Center

6. DELIVER BY *(Date)*

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

NAME	TELEPHONE NUMBER	
	AREA CODE	NUMBER
Tanika Crossen, Program Analyst	301	480-0602

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

9. DESTINATION

a. NAME OF CONSIGNEE
NIH, NCI

8. TO:

a. NAME	b. COMPANY	b. STREET ADDRESS
	Lonza	

c. STREET ADDRESS	c. CITY
	Bethesda

d.. CITY	e.. STATE	f.. ZIP CODE	d.. STATE	e. ZIP CODE
			MD	20892

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

11/6/2020 11:30 EST

IMPORTANT: This is a request for information, and quotations furnished are not offers. If you are unable to quote, please 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 services. Supplies are of domestic origin unless otherwise indicated by quoter. Any representations and/or certifications attached to this Request for Quotations must be completed by the quoter.

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

ITEM NO. (a)	SUPPLIES/SERVICES (b)	QUANTITY (c)	UNIT (d)	UNIT PRICE (e)	AMOUNT (f)
	4D- Nucleofector X Unit, FL 1 4D- Nucleofector Core Unit, FL 1 Notice of Intent: If submitting a capability statement, please e-mail only 1 copy of the technical capability statement to Tanika Crossen @ crossent.mail.nih.gov See attached statement of work This will be awarded as a Firm-Fixed Price Contract.				

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

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

STATEMENT OF NEED (SON)

1.0 TITLE

Nucleofector for electroporation experiments

2.0 BACKGROUND

Mice that are hypomorphic (15-30% wild-type function) for the DNA replication factor Mcm2 develop a unique mutator phenotype that is characterized by 100-1000 kb interstitial deletions. These mice uniformly develop T cell leukemia, with deletions of key tumor suppressor genes, such as Pten, Cdkn1a, and Tcf3. In order to determine which regions of the Mcm2 gene are needed for this phenotype, we developed a tiling CRISPR library that covered the Mcm2 cDNA. This library of guideRNAs (gRNA) was cloned into a lentiviral based vector that expressed both the gRNA and the Cas9 protein. The library was then used to transduce hematopoietic stem cells (HSC), which in turn were transplanted into recipient mice. It is expected that recipient mice with decreased Mcm2 function will develop T cell leukemia. However, the lentiviral titre, and subsequent transduction efficiency is very low, likely due to inefficient packaging of the large lentiviral product, which expresses both a gRNA and Cas9 protein. A workaround that other investigators have found to be successful is to produce a smaller lentivirus that encodes only the gRNA and is packaged more efficiently, leading to higher titres. The successfully transduced HSC are then electroporated with a Cas9 protein to allow DNA cleavage by the gRNA/Cas9 complex.

3.0 TYPE OF ORDER

This is a Firm Fixed-Price Purchase Order.

52.204-24 Representation Regarding Certain Telecommunications and Video Surveillance Services or Equipment.

As prescribed in 4.2105(a), insert the following provision:

REPRESENTATION REGARDING CERTAIN TELECOMMUNICATIONS AND VIDEO SURVEILLANCE SERVICES OR EQUIPMENT (AUG 2019)

(a) Definitions. As used in this provision—

Covered telecommunications equipment or services, Critical technology, and Substantial or essential component have the meanings provided in clause 52.204-25, Prohibition on Contracting for Certain Telecommunications and Video Surveillance Services or Equipment.

(b) Prohibition. Section 889(a)(1)(A) of the John S. McCain National Defense Authorization Act for Fiscal Year 2019 (Pub. L. 115-232) prohibits the head of an executive agency on or after August 13, 2019, from procuring or obtaining, or extending or renewing a contract to procure or obtain, any equipment, system, or service that uses covered telecommunications equipment or services as a substantial or essential component of any system, or as critical technology as part of any system. Contractors are not prohibited from providing—

(1) A service that connects to the facilities of a third-party, such as backhaul, roaming, or interconnection arrangements; or

(2) Telecommunications equipment that cannot route or redirect user data traffic or permit visibility into any user data or packets that such equipment transmits or otherwise handles.

(c) Representation. The Offeror represents that—

It [ ] will, [ ] will not provide covered telecommunications equipment or services to the Government in the performance of any contract, subcontract or other contractual instrument resulting from this solicitation.

(d) Disclosures. If the Offeror has responded affirmatively to the representation in paragraph (c) of this provision, the Offeror shall provide the following information as part of the offer—

(1) All covered telecommunications equipment and services offered (include brand; model number, such as original equipment manufacturer (OEM) number, manufacturer part number, or wholesaler number; and item description, as applicable);

(2) Explanation of the proposed use of covered telecommunications equipment and services and any factors relevant to determining if such use would be permissible under the prohibition in paragraph (b) of this provision;

(3) For services, the entity providing the covered telecommunications services (include entity name, unique entity identifier, and Commercial and Government Entity (CAGE) code, if known); and

(4) For equipment, the entity that produced the covered telecommunications equipment (include entity name, unique entity identifier, CAGE code, and whether the entity was the OEM or a distributor, if known).

(End of provision)