NORTH-EASTERN HILL UNIVERSITY

DBT, GoI-sponsored project: "Purification and characterisation of glycerol kinase and glycerol-3-phosphate dehydrogenase (cytosolic and mitochondrial) from *Homo sapiens* for their critical role in type 2 diabetes" (Order no. BT/PR31051/MED/30/2100/2019 dated 05/08/2020)

Dr. Bidyadhar Das, Principal Investigator
Department of Zoology, NEHU, Shillong-793022, India

Dated: October 05, 2020

Tender Notice

Sealed quotations/proforma invoices are hereby invited from manufacturers/authorized dealers (sole distributor certificate to be enclosed) for the following equipment to be procured under a DBT, GoI-sponsored research project: **"Purification and characterisation of glycerol kinase and glycerol-3-phosphate dehydrogenase (cytosolic and mitochondrial) from *Homo sapiens* for their critical role in type 2 diabetes" (Order no. BT/PR31051/MED/30/2100/2019 dated 05/08/2020)** sanctioned to the undersigned Principal Investigator, DBT-Project:

1. Protein Purification System (Automated Fast Protein Liquid Chromatography (FPLC)) (1 unit) with following technical specifications:

i. The automated protein purification system should be able to purify proteins from microgram to gram scale.
ii. Operating flow rate preferably between 0.001 ml/min to 25 ml/min or better without need for changing pump-heads for the entire flow range and pressure limit of 20 MPa. The system should pause if the pressure exceeds the set limit.
iii. The protein purification system should be capable to run an accurate, automatic gradient (0 to 100% gradient) over the entire flow rate range with an accuracy of ± 5%.
iv. The system should be capable for direct and continuous UV monitoring at 280 nm or with multi-wavelength detector module with absorbance range of -0.5 to +1.5AU or better.
v. The system should have the ability to monitor conductivity in the range of 0.01 mS/cm - 999 mS/cm or better within built temperature sensor to correct variation due to temperature.
vi. The system should have options for loading the sample such as directly using the pump, using a loop (25 µl to 5 ml) or super loop (10 ml to 150 ml) through injection valve using syringe.
vii. The system should collect UV-Visible absorbance data for 2 mm as well as 10 mm flow cell path length so that end user can choose any length of flow cell as per the protein concentration or should be able to do software driven normalization of 2 mm flow cell path length data to derive the 10 mm path length absorbance data.
viii. The system should have manual provision to individually purge each of the four pump heads.
ix. The system should have the capability of running with automatic pressure control option enabling to modulate the flow rate upon reaching the set pressure and continue the run without pausing the system.
x. The system should be equipped with a column control device, which allows connection of one or more columns. The flow in column could be changed to up and down directions through software without changing the orientation of the column. During system washing, it should be possible to bypass the column using software.
xi. The system should have the 3-outlet port valve with the capability to direct the flow to the fraction collector, waste or to another independent outlet port for large volume collection.
xii. The system should have the capability to be integrated with third party Detectors like Fluorescence detectors and Autosamplers simultaneously for increased application flexibility at the time of purchase or post-purchase.

E-mail: dasbidyadhar@gmail.com/ dasbidyadhar@nehu.ac.in
☎: + 91 364 272 2346 (O); + 91 364 272 6403 (R); + 91 94361 01698 (M)
Fax: + 91 364 2550108

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xiii. **Fraction collector** should be equipped with drop Synchronization function for reducing sample spill during fractionation. Fraction Tubes with the following diameters should be used with Fraction collector: 12 mm, 18 mm and 30 mm, capable of taking up to 175 fractions per fraction collector. The fraction collector should be able to support using following 4 different tubes for collection 1.5ml/ 2.0 ml Micro Centrifuge, 5 ml, 12 ml and 15 ml tubes. Fractionation options should be based on either fixed volume fractionation or Peak fractionation.

xiv. System Control Software:
Data based software must be 2I CFR COMPLIED for audit purpose for technology transfer to industrial scale

a) Should have intuitive user interface with an interactive process picture and simplified evaluation modules.
b) Built in templates for all the existing columns with option to develop method for third party.
c) Sharing of methods and results along with remote access capabilities to systems to save valuable time and resources.
d) Scouting of up to 99 runs with individual parameters in single method.
e) Method Queues for combining of different purification techniques.
f) Software should perform real time control, data evaluation, watch commands, Scouting parameters, method queue, method wizard for easy programming, column library, with report generation option.
g) Automatic data recovery after run is over should be possible.
h) The system should be capable of being installed with Design of Experiment (DOE) software integrated with the System control software as a tool for experimental design for generating precise data in fewer experiments for time and cost-efficient method development.
i) In case of emergency the FPLC system should have an option of real time monitoring/ controlling through instrument screen display for the following: UV, Conductivity, Pressure & Tube No., Pause, Hold, Continue & End run.

xv. The system should be easy for self-servicing maintenance on routine basis, calibration of modules, diagnosis tests with step-by-step guidance to the user available on system itself. The system should be capable of performing the purification runs at temperatures between +4°C to +35°C.

xvi. The FPLC system must be supplied with GSTrap High Performance 5 x 1 mL pack of five columns each 1 ml bed volume with binding capacity at least 7 mg/ml.

xvii. Sample loops of the following volumes: 50 µl, 100 µl, 200 µl, 500 µl, 1 ml, 2 ml and 5 ml (two numbers each) should be supplied.

xviii. The FPLC system must be supplied with suitable computer, printer and software to operate the FPLC and an UPS for power back up.

xix. Any other accessories for the system may be included.

xx. One-Year Warranty. (Please quote Two/Three Year Warranty as optional item).

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2. Cold Chamber for FPLC with following technical specifications:

i. About 1300 L capacity cold chamber designed for chromatography (FPLC) applications
ii. Temperature range of 2°C to 8°C
iii. GMP clean room class A / ISO 6 (ISO EN 14644-1) compatible
iv. Whisper quiet with a sound level of less 53 dBA
v. Microprocessor display
vi. Automatic defrost with R290 refrigerant
vii. Double sliding glass doors with 4 full shelves and 2 half shelves (bright LED interior lighting)
viii. Compatible with external monitoring devices
ix. CE, cUL, ENERGYSTAR Certifications/Compliance would be preferred
x. Minimum 2 years overall warranty plus additional warranty on Compressor (minimum 8 years)

Each quotation/proforma invoice must be valid for at least 60 days, and indicate all terms and conditions, warranty period etc. The prices should be inclusive of all taxes, insurance, handling charges, transportation charges etc. for door delivery to the Department of Zoology, North Eastern Hill University, NEHU Permanent Campus, Shillong-793022.

The quotation/proforma invoices must reach the undersigned latest by **26th October 2020 (up to 5:00 pm) or within 3 weeks of the tender notification in the NEHU website,** failing which the quotations/ proforma invoices will be treated as rejected.

Please enclose relevant brochures and other documents.

Bidyadhar Das
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DBT-Project

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