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CSIR - Central Drug Research Institute, Lucknow

Sub- Expression of Interest(EoI) for **"Bio-layer Interferometry machine for in-vitro assays development".**

CSIR-Central Drug Research Institute, Lucknow is a premier Research Institute of India pursuing a vision to strengthen and advance the field of drug discovery and development in the country. It is planning to procure the "**Bio-layer Interferometry machine for in-vitro assays development"** to enhance the capacity of the organisation for Drug Discovery and development **(The tentative Specifications of the proposed System is attached)**

Prospective bidders, those have the instruments are invited to give their suggestion/comparison on technology, features, Design, Utility, Parameters (technical) clientele etc through **Email at spo@cdri.res.in.** For more detail please refer to specification in the supporting document. However, the NIT / Tender will be open to all for bidding.

Neelambuj Shanker Prasad
(Stores & Purchase Officer)

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Bio-Layer Interferometry based Bio-molecular interaction system

1. The system should be an automated, flexible and biosensor based. It should provide real time kinetic data for bio-molecular interactions requiring no fluorescent tags or labeling of compounds or proteins.
2. The system should be based on Bio-layer interferometry technology using dip and read based method.
3. The system should be capable of simultaneously measuring at least 8 independent binding reactions.
4. The system should provide answers about the speed, strength and specificity of binding, resulting in accurate measurement of affinity (KD), association (ka) and dissociation (kd) rate constants.
5. The system must also determine active concentrations of components with high precision and accuracy.
6. The system should have an injection free simple mode of ligand macromolecule interaction so that the washing and equilibration require minimum amount of time and consumables. The system should be **Fluidics free and there should be no aspiration of the samples**.
7. The system should be capable of accommodating samples ranging from small organic molecules through to peptides, proteins and DNA **to crude extracts without the need of any clarification process**, lipid vesicles, particulates, viruses and cells. Same should be supported with relevant publications.
8. Specific methods for coupling through multiple modes amine coupling, His tag, biotin binding, anti-GST, anti-Human and Anti Mouse FC, Protein A, G and L, Anti-Fab(Human), Anti-CHO HCP Kit and Residual Protein A Leachate Kit must be available. Systems which cannot provide any of the above kits will not be considered.
9. The system should be Capable of performing Ligand Fishing directly in Mass Spec Compatible Buffer and should be able to collect more than 150uL of analyte in a single run.
10. System should be capable and should furnish published data for performing cell based assays by binding a whole cell on the biosensor tip and same should be supported with relevant publications.
11. The system should combine high sensitive protein/protein interaction studies with small molecule interactions down to a molecular weight as low as 150 Da or better to whole cell.
12. The instrument should provide referencing options for improved accuracy.
13. It should be possible to study the complete kinetic profile of any bio-molecular interaction without the need for regeneration, hence parallel processing of at least 8 concentrations simultaneously is required.
14. The system, chemistry and software must be ideal for multi-sample analysis and flexible for batch mode of data analysis in single window for the pool of samples from a single batch.
15. Suitable for sample measurement in 96 well plates with provision of shaking and user defined RPM.
16. Sample analysis should be non-destructive and recoverable. Post analysis the sample should not be diluted and can be stored for future application. Systems where samples cannot be recovered or gets diluted and is passed to waste will not be considered.

17. The system should be compatible to detect and quantitate all kind of samples from purified to crude (Lysate, tissues extracts, serum) and works for multiple applications like replace ELISA, Western blot, immunogenicity, host cell protein quantitation and protein A leachates analysis.
18. The system should be capable of providing real-time kinetic data. End Point Data systems will not be considered.
19. System should have fast acquisition rate of at least 10Hz or better.
20. System and Biosensors both should be compatible to perform assays in the pH range 2-9
21. Data analysis with capability to analyses kinetic and affinity analysis (kobs, ka, kd, KD), concentration monitoring, automated concentration determinations. Data presentation of plots displaying kinetic binding, equation fits and residuals of fits as well as tabulated kinetic data and data charts and the same can be exported in Excel or PDF.
22. The system should be capable of tolerating more than 5% of DMSO and Glycerol. The Software and system should be free of micro calibration and should not have the need of bulk effect corrections.
23. The system should be capable of immobilization and regeneration of biosensors offline and outside the system to increase system throughput.
24. System should be capable of performing CRISPR-Cas mediated gene expression through *in vitro* studies, supported by published data.
25. System should have well proven its capability in vaccine and nanoparticle research, supported by published data.
26. **System specifications:**

    1. Type of information: Detection (Yes / NO), Concentration, Kinetics and affinity data
    2. Number of simultaneous interactions - Minimum 8 interactions in parallel
    3. Data presentation - Real time monitoring of interactions
    4. Molecular weight detection limit - 150 Da to Mega Daltons and Cells.
    5. Sample usage - Non-destructive and Recoverable without dilution.
    6. Baseline noise - Typically < 5 pm (RMS)
    7. Quantitation range - 0.025-2000 µg/ml
    8. On-rate ka) Range ($M^{-1}s^{-1}$) $10^{1} - 10^{7}$
    9. Off-rate (kd) Range (s^{-1}) $10^{-6} - 10^{-1}$
    10. Affinity (KD) range 1mM – 10 pM
27. The system should include a suitable preconfigured computer with all appropriate software for acquisition and analysis. The Software should be license free and can be installed in multiple computers for post data analysis.
28. **GUARANTEE/WARRANTY PERIOD:** The system must be quoted with 1 year of standard comprehensive warranty (Including all spares, accessories, labor and preventive maintenance).