



**INDIAN INSTITUTE OF TECHNOLOGY BOMBAY
MATERIALS MANAGEMENT DIVISION
POWAI, MUMBAI – 400076**

Reference No. (PR No. 1000019717)

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TECHNICAL SPECIFICATIONS

Biomarkers & Interaction Screening using HT Bilayer Interferometry Label-free System

1. System should be High-throughput, label-free platform for screening biomarkers on hundreds of malarial and other infectious disease samples like plasma/serum, biofluids, crude extracts without the need of any clarification process.
2. The system should be an automated, flexible and biosensor based to provide real-time kinetic data [affinity (KD), association (k_a) and dissociation (k_d) rate constants] for screening, requiring no fluorescent tags or labeling of compounds or proteins. Affinity (KD) range should be within 1 mM – 10 pM.
3. Sample analysis should be non-destructive and recoverable. Post-analysis of plasma and serum samples, it should not be diluted and can be stored for future application like ligand fishing and mass spectroscopy for biomarkers selection. Systems where samples cannot be recovered or gets diluted and is passed to waste will not be considered. Baseline noise should be < 5 pm (RMS).
4. The system should be capable of performing rapid screening and real-time kinetic binding experiments for clinical samples (≤ 30 minutes for 96 samples). For better resolution of data acquisition, the system should have fast acquisition rate of at least 10Hz or better.
5. For large number of samples screening, the system should be capable of offline immobilization of biosensors, outside the system to increase system throughput. To get unbiased biomarker screening data the system should be free of micro calibrations (to remove bulk effect corrections).
6. System should be designed to avoid blockage of capillary or microfluidics with no aspiration of the plasma/serum samples. It should be suitable for screening biomarkers in 96 well plates with provision of shaking at user defined RPM. It should also be capable of simultaneously measuring at least 8 independent binding reactions.



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7. The project demands highly sensitive protein-protein interaction studies with small molecule interactions down to a molecular weight as low as 150 Da or better to whole cell-based assays. To ensure smooth and error free data the following kits/ biosensors must be available with the supplier. Amine coupling, His tag, biotin binding, anti-GST, anti-Human and Anti Mouse Fc, Protein A, G and L, Anti-Fab (Human) must be available.

8. **Data Analysis:** To manage large pool of sample data the software must be ideal for multi-sample analysis and flexible for batch mode of data analysis in single window. The software should be capable to overlay data from multiple experiments, plates and biosensor lots. Data analysis with capability to analyses kinetic and affinity analysis (k_o , k_a , k_d , 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.

9. **System specifications:**

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.

10. **GUARANTEE/WARRANTY PERIOD:** The system must be quoted with 1 year of standard comprehensive warranty (Including all spares, accessories, labor and preventive maintenance).