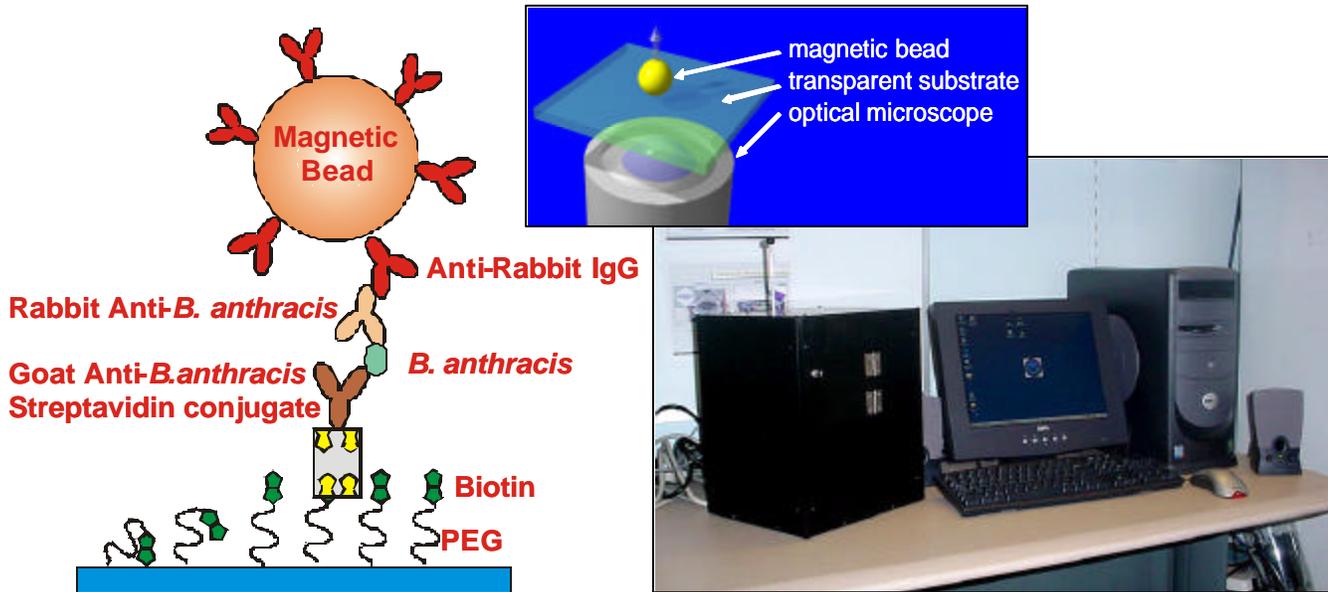


FORCE DISCRIMINATION BIOSENSOR



The Naval Research Laboratory (NRL) has developed the highly sensitive and specific Force Discrimination Biosensor (FDB) based on an advanced magnetic bead immunoassay for detecting biomolecules (e.g., proteins or nucleic acids). The assay is performed in an indirect sandwich format (see figure above). The microbeads serve both as reporter labels and as force transducers to allow “force discrimination”, a technique developed at NRL that greatly reduces the background signal. The concentration of the analyte is determined by optically monitoring the position and number of beads on a transparent substrate. For beads with an approximate diameter of 1 micrometer, optical microscopy can be used for rapid bead counting.

Features and advantages include:

- **Sensitivity:** 1000 times more sensitive than other immunoassays.
- **Specificity:** Greater than 99% specificity.
- **Speed:** Assay time less than 20 minutes.
- **Analytes:** Demonstrated assays for
 - **proteins:** SEB (1 pg/ml), Ovalbumin (10 pg/ml), Ricin (100 pg/ml).
 - **bacteria:** *Bacillus globigili* (300 cfu/ml), *Bacillus anthracis* (10^3 cfu/ml), *Francisella tularensis* (10^4 cfu/ml), *Erwinia herbicola* (10^4 cfu/ml).
 - **viruses:** MS2 (10^3 pfu/ml).

Applications include:

- Healthcare, including clinical diagnostics.
- Agricultural testing, including veterinary diagnostics.
- Environmental monitoring, including food and water testing.
- Forensics.

Licenses are available to companies with commercial interest.

Points of Contact

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