# Endotoxin Testing via LAL Assay - Biosensor Technology

## Technology description

### Invention Description

Detection of endotoxin via LAL test is a part of the standard operating procedures for a large and increasing number of industries. Pharmaceutical companies have been testing for Endotoxin for decades. Recent EU and OSHA environmental endotoxin standards will increase its need in industrial farming and lumber production. The Centers for Medicare and Medicaid Services just listed Sepsis identification and prevention as one of the core measures, which drastically increases the importance of early identification of systemic infections in hospital patients.

However, limited by the detection mechanisms of the LAL assays currently used in industry, further improvement in their performance is challenging. To address the growing demand on optimizing LAL assays for increased test sensitivity and reduced assay time, we have developed a new LAL assay approach based on a detection mechanism different from those being used in industry, namely, gel-clot, turbidimetric, and chromogenic detection. By using a unique open-microcavity photonic-crystal biosensor, we have demonstrated that this new approach allows for over two orders of magnitude improvement in LAL test sensitivity, reducing the time needed for the assay by half, and eliminating the necessity to incubate the test samples. This new approach opens up the possibility of using the significantly improved LAL assays for a wide range of applications.

### Application area

• Real time monitoring of bacterial contamination in drug production
• Monitor compliance with EU and OSHA environmental endotoxin levels
• Blood plasma test for early stage infection

### Advantages

Able to be miniaturized/cartridgeized
200 times more sensitive than commercial alternatives
Works at room temperature
Test results in as little as 5 minutes

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