

TECHNOLOGY/BUSINESS OPPORTUNITY

MULTIPLEXED ASSAYS FOR DETECTION OF RESPIRATORY PATHOGENS

Opportunity

Lawrence Livermore National Laboratory (LLNL), operated by the Lawrence Livermore National Security (LLNS), LLC under contract no. DE-AC52-07NA27344 (Contract 44) with the U.S. Department of Energy (DOE), is offering the opportunity to secure a license to exercise patent rights for commercializing its multiplexed assays for detection of respiratory pathogens technology.

Background

Around half of all adult patients admitted to the emergency room with the flu have symptoms of respiratory distress. Additionally, other viral pathogens also may inhabit the respiratory tract in other illnesses and cause symptoms. Throat swabs and nasal samples are typically obtained clinically to assess for respiratory pathogens using viral culture, enzyme immunoassay, direct immunofluorescence antibody staining, or RT-PCR. These methods, including the current gold standard of viral culture, each have a unique limitation which prevents them from meeting all three criteria of being rapid, sensitive, and specific. Also, these tests are not able to simultaneously detect and identify multiple pathogens. These current diagnostic methods often require skilled technologists to conduct the test, raising the cost and manpower needed to complete the assays. A method is needed to detect and identify the many types of respiratory pathogens that may affect a patient admitted to a hospital, allowing them to be properly and quickly treated.

Description

This LLNL-developed invention is multiplexed and utilizes the Luminex bead-based liquid array, which contains 100 different unique beads. Oligonucleotide probes with sequences complementary to the target sequences are covalently coupled to these unique beads. These capture beads are mixed with viral samples obtained from the patient via cheek swabbing or a throat wash and subjected to PCR in a conventional thermocycler. The amplified target sequence is then hybridized to complementary capture oligonucleotide probes via forward biotinylated primers. If this bead-probe-amplicon unit contains the target nucleic acid, it will be bound by the reporter molecule and fluorescence will be detected by a flow cytometer. This multiplexed assay would thus be able to detect and identify respiratory pathogens present in hospital and clinical settings.

Advantages

- Rapid and accurate detection and identification of many common respiratory nosocomial pathogens
- Ability to conduct point-of-care testing rather than sending a patient or sample to a laboratory
- Multiplexed design allows for testing of multiple pathogens in a single sample

Potential Applications

- Rapid, accurate, and convenient point-of-care testing in hospitals and other clinical settings
- Amenable to high-throughput future applications and designs

Development status

LLNL currently holds a US patent [8,232,058](#) "Multiplex detection of respiratory pathogens" for this technology (LLNL internal # IL-11577).

Please visit the IPO website at <https://ipo.llnl.gov/resources> for more information on working with LLNL and the industrial partnering and technology transfer process.

Note: **THIS IS NOT A PROCUREMENT.** Companies interested in commercializing LLNL's multiplexed assays for detection of respiratory pathogens technology should provide a written statement of interest, which includes the following:

1. Company Name and address.
2. The name, address, and telephone number of a point of contact.
3. A description of corporate expertise and facilities relevant to commercializing this technology.

Written responses should be directed to:

Lawrence Livermore National Laboratory

Innovation and Partnerships Office

P.O. Box 808, L-795

Livermore, CA 94551-0808

Attention: FBO 435-19

Please provide your written statement within thirty (30) days from the date this announcement is published to ensure consideration of your interest in commercializing LLNL's multiplexed assays for detection of respiratory pathogens technology.