TECHNOLOGY/BUSINESS OPPORTUNITY

PATHOGEN SPECIFIC DNA DIAGNOSTIC METHODS

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 pathogen specific DNA diagnostic methods technology.

Background

The Center for Disease Control and Prevention (CDC) has developed a list of pathogens. These are classified into three categories: A, B, and C. It is important from a national security perspective to develop a means of identifying these organisms. A key element in developing defenses against uses of such pathogens by rogue entities is the ability to quickly and accurately detect the presence of these organisms in samples or environment. DNA-based diagnostic methods are only valuable if they are highly specific to the target organism, otherwise, they may give rise to false positive results. False positives are particularly an issue when analyzing complex environmental samples where nontarget microbes cross-react with the target organism. A reliable and specific DNA-based diagnostic method is thus needed for the detection of these pathogens.

Description

LLNL researchers have discovered unique DNA signatures that can be used to identify, with high specificity, three such organisms, including *Yersinia pestis* and *Francisella tularensis* (both Category A agents), and *Brucella* species (Category B agent). The DNA sequence information of a desired region of an organism unique to that organism is recorded, a DNA primer is used to amplify the target fragment using the polymerase chain reaction (PCR), and then a hybridization probe is used to increase the specificity of the detection process by marking the target. Combined, this process uniquely identifies a DNA signature of an organism.

Advantages

- Simple and accurate DNA-based diagnostics
- Specific diagnostic results even with complex environmental samples

Potential Applications

- Accurate detection of select pathogens belonging to Category A (*Yersinia pestis* and *Francisella tularensis*) and category B (*Brucella* species) in environmental samples for surveillance purpose
- Identification of unique regions which may be targets for protein-based diagnostics and research

Development Status

LLNL currently holds patents 7,494,772 "Nucleotide sequences specific to Yersinia pestis and methods for the detection of Yersinia pestis," 7,494,778 "Nucleotide sequences specific to *Francisella tularensis* and methods for the detection of *Francisella tularensis*," and 7,494,773 "Nucleotide sequences specific to Brucella and methods for the detection of Brucella" for these methods (LLNL internal #s IL-11030, IL-11031, and IL-11032 respectively).

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 pathogen specific DNA diagnostic methods 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 433-19

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 pathogen specific DNA diagnostic methods technology.