TECHNOLOGY/BUSINESS OPPORTUNITY

FLOW-CYTOMETRIC DETECTION FOR DNA SAMPLES

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 flow-cytometric detection for DNA samples technology.

Background

Current methods for DNA hybridization and multiplexed detection of PCR amplified products typically require multiple steps for hybridization and can take hours to perform. Additionally, these methods are not easily automated. Quickly and accurately detecting the presence of DNA in a sample can aid not only forensic operations, but clinical diagnostics as well. A short, automated, and simple multiplexed method for detecting DNA in a sample is thus needed.

Description

LNLL scientists have invented a method for multiplexed detection of PCR amplified products which can be completed in a single step. Highly validated species-specific primer sets are used to simultaneously amplify multiple diagnostic regions unique to each individual pathogen. Resolution of the mix of amplified products is achieved by PCR product hybridization to corresponding probe sequences, attached to unique sets of fluorescent beads in liquid. The hybridized beads are processed through a flow cytometer, which detects presence and quantity of each PCR product. The assay is optimized to allow for maximum sensitivity in a multiplexed format. A background PCR product is formed via background multiplex PCR amplification reaction using a control DNA sequence. Comparing the fluorescence of the sample hybridization product with the background product identifies the target DNA sequence.

Advantages

- Multiplexing allows high throughput
- All-in-one reactions save on labor, reagents, and consumable costs
- Quick and accurate detection of DNA in a sample
- Liquid bead array assay can accommodate up to 100 different diagnostic reactions
- Fluorophore tagging allows for easy visual detection of DNA

Potential applications

- Detection of DNA in convoluted samples in forensic or clinical settings
- Extrapolation of technology to include RNA and other types of nucleic acid detection
- Analyzing protein expression and protein interactions

Development Status

LLNL currently holds a patent 7,972,818 "*Flow cytometric detection method for DNA samples*" for this technology (LLNL internal # IL-11701).

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 flow-cytometric detection for DNA samples 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 439-19

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 flow-cytometric detection for DNA samples technology.