TECHNOLOGY/BUSINESS OPPORTUNITY

METHOD FOR GENETIC IDENTIFICATION OF UNKNOWN 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 method for genetic identification of unknown pathogens technology.

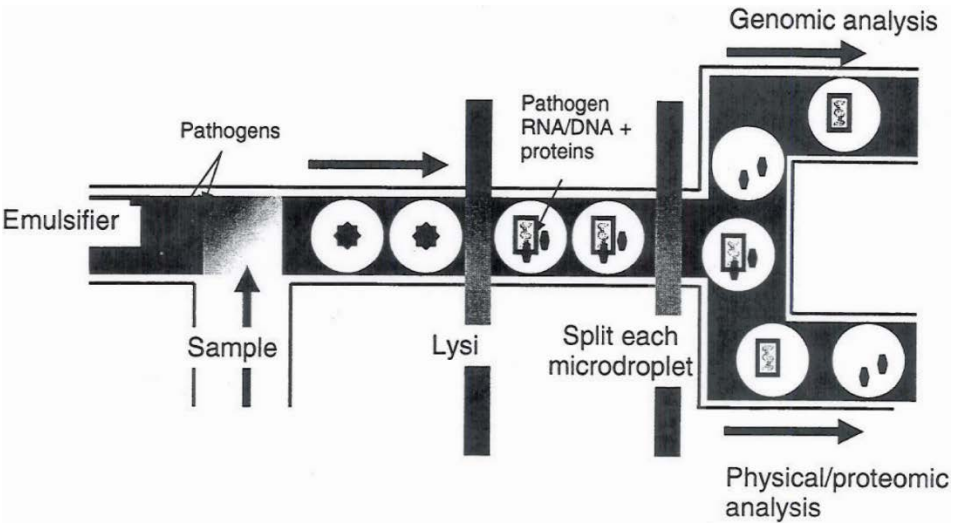
Background

Global and regional epidemics have progressed from rampant diseases which wipe out a quarter million of the population, as seen with the Bubonic plague in the 14th century Europe, to contained and short-lived health scares, such as the SARS outbreak in the early 2000s. Antibiotics and vaccine development have played an unmistakable role in curtailing a wide variety of infections and diseases, such as the plague and SARS, in that time. Contingent on treating and managing diseases, though, is the ability to rapidly isolate and genetically identify an unknown pathogen from an often convoluted clinical or environmental sample. With the constant threat of a new epidemiological event emerging from nature, the need for such a technology to provide fast and accurate identification of unknown pathogens is crucial.

Description

LLNL scientists have developed a rapid parallel genetic profiling technology that can be used to detect an array of pathogens from a small, complex sample. Detectable pathogens by the LLNL technology include viruses, bacteria, protozoa, and other microbes. The device works by first splitting a given sample into millions of emulsified, encapsulated microdroplets each of which are then split once more and run through a parallel analysis consisting of both a genomic and a proteomic assay. The droplets within the assays are first run through a PCR process which amplifies even the smallest quantities of DNA or RNA for analysis. Finally, the droplets, now with sufficient quantities of DNA or RNA for analysis after PCR, are dissolved and run on an agarose gel via electrophoresis. Analysis of the final gel electrophoresis product yields pertinent identifying information on the unknown pathogen.

The microdroplets split for physical/proteomic analysis contain DNA and RNA from the original emulsified sample. This allows the droplets to be subjected to *in vitro* transcription and translation to yield proteins which may then be analyzed by mass spectrometry, ELISA, and two-dimensional differential gel electrophoresis, and other proteomic assays. The combined proteomic and genomic analysis results from this LLNL invention allow for heightened specificity in identification of the unknown pathogen sample.



Advantages

- Rapid and accurate analysis of small clinical and environmental samples
- Parallel genomic and physical/proteomic assays for diversified information on the sample pathogen

Potential Applications

- Identification of emerging pathogens to curtail epidemiological threats
- Aid in clinical diagnosis by identifying pathogens in routine patient examinations
- Aid in forensic investigations via genomic and proteomic analysis of complex crime scene biological samples

Development Status

LLNL holds a patent 9,422,586 "Method for genetic identification of unknown organisms" for this invention (LLNL internal case # IL-11599)

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 method for genetic identification of unknown 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 437-19

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 method for genetic identification of unknown pathogens technology.