

Deployable Pathogen Diagnostic System

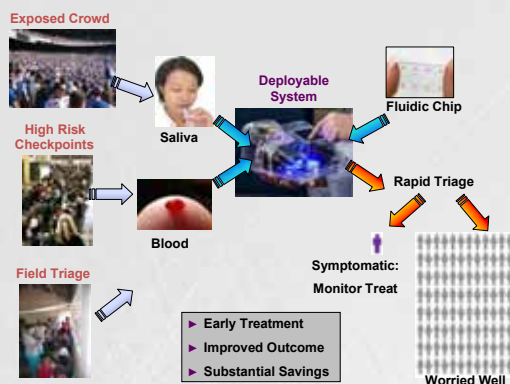


Sandia National Laboratories

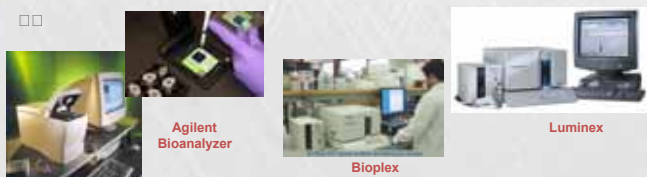
Anson V. Hatch, Ronald F. Renzi, Robert F. McCoy, James S. Brennan, James Van De Vreugde, Jim He, and Anup K. Singh

Problem

A number of priority pathogens are significant concerns as possible natural outbreaks or bioterrorism. Timely and specific diagnostics are needed at the point-of-incident to effectively manage outbreak/exposure scenarios. Currently, the healthcare system would be overwhelmed.

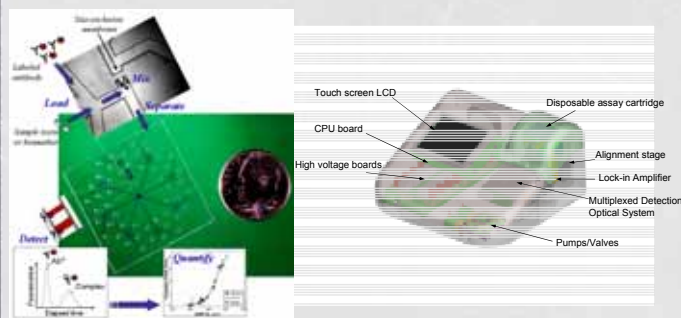


Microfluidic assay technologies offer rapid, sensitive multiplexed tests. However, engineering breakthroughs are needed to realize easy to use, deployable instrumentation.



Approach

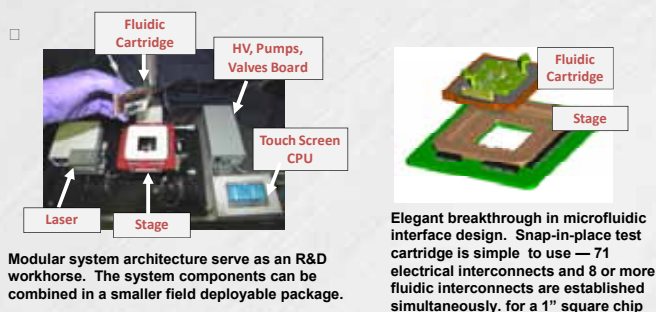
Novel platform with proprietary membrane-based microfluidics for extremely rapid, sensitive tests



Systems engineering breakthroughs enable easy to operate, portable device

Results

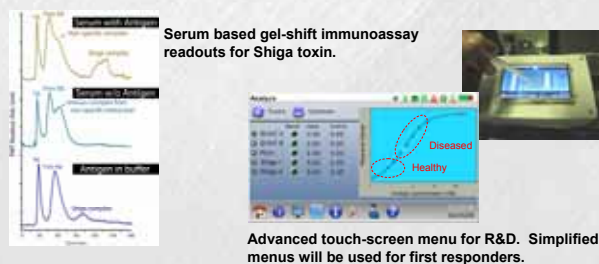
Advanced microfluidic interface and control architectures



Modular system architecture serve as an R&D workhorse. The system components can be combined in a smaller field deployable package.

Automated, multiplexed assays

The integrated system has proven success as a general immunoassay platform. Any traditional tests, e.g., ELISA, micro-array, bead-based, can be adapted to run on this platform.



Advanced touch-screen menu for R&D. Simplified menus will be used for first responders.

Significance

Disaster mitigation: Response to bioterrorism and outbreak incidents

•Dramatically improves outcomes, saving lives, conserves valuable health care resources



Emergency hospital in Fort Riley, Kan. 1918 Spanish Flu Pandemic

Facilitates R&D with priority pathogens



Meets demands for remote and resource-poor settings



NASA support targets use on the international space station

Joint Sandia AM Biotech Phase II SBIR awarded.

