

Monday, September 27, 2010, UCSF Today

UCSF Research Team Wins Grant to Detect Deadly Viruses



Charles Chiu

Researchers at UCSF have been awarded a grant from the National Institutes of Health to develop a rapid, pan-viral microarray diagnostic for detecting viruses of extreme outbreak and pandemic potential, including influenza, norovirus, and the deadly hemorrhagic fever viruses such as Ebola, Marburg, and Lassa.

Led by Charles Chiu, MD, PhD, the director of the UCSF-Abbott Viral Diagnostics and Discovery Center, the team hopes the one-year grant will help them develop a quick, affordable assay that will be deployed in public-health laboratories for disease surveillance.

Chiu, an assistant professor in the Department of Laboratory Medicine and Medicine and Infectious Diseases, and his colleagues were awarded a \$900K grant from the NIH to create an array-based portable pathogen detection system in collaboration with Akonni Biosystems, Inc. in Maryland, a Biosafety Level 4 laboratory at the Southwest Foundation for Biomedical Research, and the UCSF Clinical Microbiology Laboratory under the direction of Steve Miller, MD, PhD, an assistant professor at UCSF.

The assay will be BSL-4 (Biosafety Level 4) laboratory at the Southwest Foundation for Biomedical Research, and the UCSF Clinical Microbiology Laboratory under the direction of Steve Miller.



The test is based on the UCSF Virochip, a pan-viral, 60,000 probe microarray that covers more than 2,000 viruses and was originally developed in the laboratories of Joseph DeRisi, PhD, and Don Ganem, MD, a virologist at UCSF.

The ViroChip has proven to be a valuable experimental diagnostic tool in cases where serious infections stump experts. In January 2003, DeRisi and his then-postdoctoral fellow David Wang used his custom-built microarray designed to detect all known viruses—and even those never seen before—to provide the confirming evidence that SARS was a novel form of a coronavirus.

Funded in part through the American Recovery and Reinvestment Act of 2009, Chiu's project aims to condense the Virochip to a "portable, smaller format with a rapid turnaround time that can be selective for detecting biothreat agents," Chiu told BioArray News, a global weekly of biochips and microarrays on Genome Web.

The current version of the Virochip is manufactured by Agilent Technologies, costs between \$150 and \$200 per sample, and has a turnaround time of between 12 and 24 hours.

The microarray assay to be developed will be condensed to fewer than 500 probes and would be capable of detecting deadly viruses with a turnaround time of fewer than two hours and can be performed on a portable Akonni instrument for about \$15.