

Akonni Wins \$300K NIH Grant to Combine Flow Strip with PCR Array for Respiratory Dx Panel

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By [Ben Butkus](#)

Akonni Biosystems has received a \$300,000 grant from the National Institutes of Health to integrate lateral flow strip technology with its PCR array-based respiratory pathogen assay, according to recently published grant information.

The eventual goal of the project, the company said, is to develop an automated point-of-care molecular testing device to identify hypervariable genomes across a panel of more than 30 common respiratory pathogens.

Akonni, based in Frederick, Md., has over the last few years been developing multiple platforms based on its TruDrop PCR technology, a low-density array of immobilized 3D 100-by-20-micron drops containing all probes and chemistry necessary for a PCR reaction. The company also has various imagers and thermal cyclers for use with its PCR arrays.

The new NIH grant, administered by the National Institute of Allergy and Infectious Diseases, will allow "flow cell technology [to be] built into our PCR array consumable," Kevin Banks, vice president for strategic development at Akonni, said in an e-mail to *PCR Insider*.

Flow strip technology has traditionally been used in immunoassays, but in recent years it has also been adopted by early-stage molecular diagnostic shops, particularly those interested in developing rapid, inexpensive, point-of-care platforms.

"This is the component that allows amplifiable material to flow from the consumables input port to the single chamber we use for PCR-based amplification, hybridization, and detection on a microarray," Banks said. "The result is a 'flow cell' consumable that provides lab technicians with the ability to perform high-multiplex assays in closed amplicon environments. This, of course, greatly reduces the risk for contamination caused by having high concentrations of amplicons present in an open container."

In its grant abstract, Akonni proposes to combine the flow-strip and TruDrop technologies into an "automated, sample-to-answer, point-of-care molecular device that identifies hypervariable genomes" in the following panel of respiratory pathogens: influenza A and B virus, human respiratory syncytial virus A/B, human adenovirus A/B/C/D/E/F, human coronavirus 229E/NL63/OC43, metapneumovirus, human rhinovirus A/B/C, human bocavirus 1/2/3/4, human parainfluenza virus 1/2/3/4, *Haemophilus influenzae*, *Streptococcus pneumoniae*, *Mycoplasma pneumoniae*, *Chlamydophila pneumoniae*, *Legionella pneumophila*, and *Bordetella pertussis*.

The ultimate goal is to develop a point-of-care test that identifies bacteria and viruses in this panel, including drug-resistant flu strains, from a single patient sample, Akonni said. "This test

could assist in the preparedness for global pandemics because of the ongoing availability of a test that can identify a broad panel of contagious respiratory pathogens," the company said. "This strategy has the potential to eliminate the burden of having to quickly develop and commercialize single-organism tests in response to an emerging pandemic."

Akonni has won multiple grants from the NIH and other government agencies to help it develop its technology for various diagnostic and biodefense applications. In 2009 it won \$3.2 million from the NIAID for early development of its TruDrop technology, particularly for influenza A and B detection ([PCR Insider, 12/3/2009](#)).

In July 2010 it won a \$435,000 grant from the National Institute of Biomedical Imaging and Bioengineering to evaluate its TruTip sample prep technology for purifying *Mycobacterium tuberculosis* samples, and to verify TB assays on its PCR array; and in September 2010 it won an additional \$3 million Challenge Grant from the NIH to further develop a test for multi-drug-resistant and extensively drug-resistant tuberculosis on the TruDrop platform ([PCR Insider 7/29/10](#) and [9/30/10](#)).

As reported in December by *PCR Insider* sister publication [BioArray News](#), Akonni that month won a \$150,000 grant from the National Science Foundation to evaluate a "lab-on-a-film" array-manufacturing method designed to lower the cost of a potential PCR array diagnostic test.

Akonni also said last May that it was collaborating with Seegene to explore the use of that company's Dual Priming Oligo multiplex PCR technology with the TruDrop platform to detect a wide variety of respiratory pathogens ([PCR Insider, 5/12/2011](#)).

This week, Banks noted that Akonni's most recent grant supports the integration of the flow strip technology into Akonni's own TB and influenza assays, but that "in the future there is the opportunity to leverage content from Seegene as well."
