

One assay, 242 genes

RainDance Technologies and Ambray Genetics launch new DNA sequencing panel for ADME research

BY LLOYD DUNLAP

LEXINGTON, Mass.—RainDance Technologies Inc. and Ambray Genetics have launched a comprehensive targeted sequencing panel to screen genes involved with drug absorption, distribution, metabolism and excretion (ADME) research.

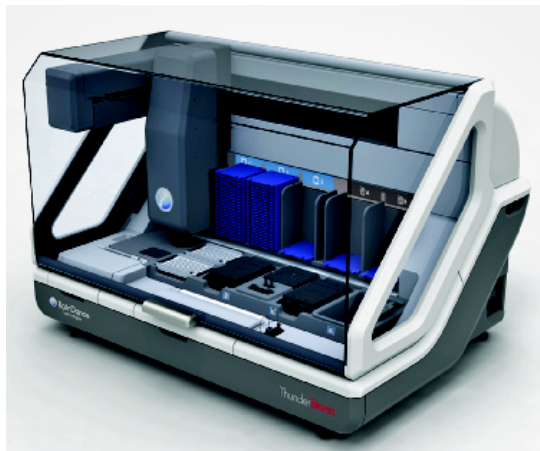
The ADMESeq Research Screening Panel enables researchers to simultaneously interrogate 242 known pharmacogenetic genes using next-generation sequencing (NGS) systems.

In recent years, biotechnology and pharmaceutical companies have been genotyping ADME genes earlier in the drug development pipeline to help reduce the significant costs associated with failed drug trials and hospitalizations due to adverse events. However, RainDance points out that current genotyping tools interrogate only a small number of known biomarkers and lack the genomic coverage to detect important variants across a wide range of genes implicated with ADME.

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ARDY ARIANPOUR, AMBRY'S VICE PRESIDENT OF BUSINESS DEVELOPMENT

The new panel includes pharmacokinetic and pharmacodynamic genes, as well as VIP genes and biomarkers associated with the FDA's top 25 approved drugs. “Pharmacokinetics can be defined as what the body does to the drug and pharmacodynamics as what the drug does to the body,” says Dr. Andy Watson, vice president and chief marketing officer at RainDance. “A PharmGKB (Pharmacogenomics Knowledge Base) VIP gene is defined as a gene that has well-documented information about its involvement in the pharmacodynamics or pharmacokinetics of a drug. There are a total of about 200 well-documented VIP genes that were selected by pharmacogenomics experts for Pharm-



According to RainDance Technologies, its ThunderStorm System is a fully automated, high-throughput targeted sequencing solution that enables researchers to process more samples and generate high-quality data faster and easier than ever before. The system will run a new comprehensive targeted sequencing panel to screen genes involved with drug ADME research as part of a partnership with Ambray Genetics.

GKB to annotate. Genetic screening of ADME genes can be important, as loss of function in any of these genes (or increased function through copy number increases) can lead to a number of undesirable outcomes, including reduced response or side effects.

“Furthermore,” Watson adds, “many of these mutations can be ‘rare’ in a population, which means that they aren’t detected using geno-

the phenotypic effects of mutations in these genes and reducing the significant costs associated with failed drug trials,” he says.

The new ADMESeq Research Screening Panel provides scientists with the capacity to perform sequence analysis of entire coding regions of 242 key drug metabolism-linked genes, including 44 membrane transporters, 42 VIP genes from the Pharmacogenomics Knowledge Base and 86 FDA-identified pharmacogenomics biomarker genes.

Ambray Genetics is a CAP-accredited and CLIA-certified commercial clinical laboratory with headquarters in Aliso Viejo, Calif. Since the company's inception in 1999, it has provided genetic services focused on clinical diagnostics and genomic services, particularly sequencing and array services.

“We are confident that our pharmaceutical, biotechnology and research customers will be eager to utilize this novel predictive toxicology tool to enhance their drug safety strategies and reduce the costs associated with performing ADME analysis,” says Ardy Arianpour, Ambray's vice president of business development.

The new panel, provided as part of the Ambray ADME sequencing service, leverages RainDance's proprietary primer design methods and single-molecule microdroplet-based PCR platform to allow high specificity, even amongst highly homologous genes. The panel runs on both the RainDance RDT 1000 and ThunderStorm Systems. The ThunderStorm System is a new, fully automated, high-throughput targeted sequencing solution that enables researchers to process more samples and generate high-quality data faster and easier than ever before, RainDance claims. **ddn**

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spots. When researchers involved in TCGA recently reported that 1,800 genes in the ovarian cancer genome are repeatedly amplified, the Project Achilles team harnessed the TCGA data to rapidly determine which of the genes are essential to ovarian tumor growth, says William Hahn, a senior associate member of the Broad and an associate professor at Dana-Farber, who noted at the time, “Not

highly useful adjuncts for next-generation DNA sequencing.”

Nearly two weeks after announcing the collaboration with the Broad Institute, Affymetrix inked another important ‘omics- and array-related deal, entering into an exclusive, worldwide licensing agreement with Genisphere LLC for RNA amplification and labeling technology to address challenging sample types, including formalin-fixed, paraffin-embedded (FFPE) samples. FFPE samples are often sought for cancer and transla-

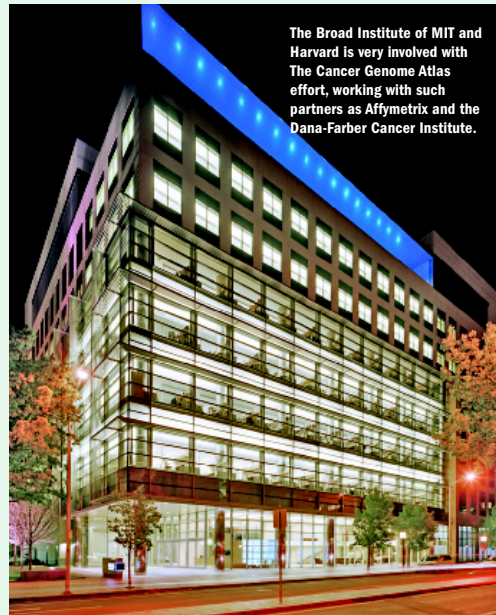


PHOTO BY ANDRZEJ GRASZ

only can we characterize what genes are mutated or altered, but we can also simultaneously assess which of those are important functionally.”

TCGA got its start in 2006 thanks to an investment of \$50 million each from the National Cancer Institute and National Human Genome Research Institute, and it was created as a three-year pilot. After early promising successes, the National Institutes of Health announced in September 2009 an investment of \$275 million over the following two years to extend the program.

By using technology like that of Affymetrix's, researchers are able to “map many types of changes in the cancer genome, including gains and losses of genetic material, at high resolution and in a cost-effective manner,” according to Matthew Meyerson, a senior associate member at the Broad Institute, a TCGA principal investigator and director of the Center for Cancer Genome Discovery at Dana-Farber Cancer Institute. “Furthermore, we are able to evaluate cancer specimen features, such as sample integrity and tumor cell purity, which are

tional research but remain a largely untapped source of valuable data for discovering biomarkers and clinically relevant gene expression profiles to advance the understanding of diseases.

“This agreement advances the Affymetrix vision of growing our microarray business within targeted applications where array-based approaches provide more cost-effective solutions, highly accurate data and the most relevant gene-expression content compared to competing technologies,” said Dr. Kevin Cannon, general manager of the Gene Expression Business Unit at Affymetrix, of the Genisphere deal. “In today's competitive market, it is critical to provide researchers with the right tool for the specific application. The strategic addition of Genisphere's RNA amplification and labeling solution for FFPE samples is a perfect complement to the Affymetrix microarray portfolio, providing researchers a complete workflow solution from whole-genome analysis of clinically challenging FFPE samples to validation of single genes.” **ddn**

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