

## Microfluidics: RainDance Readies to Ship Early-Access Version of Droplet Platform

If all goes according to plan, RainDance Technologies aims to get its droplet-based microfluidics tool into the hands of early-access researchers this fall, says Steve Becker, vice president of commercial operations.

Becker says that the main challenges in high-throughput biology today are miniaturization, automation, and multiplexing — all issues that he believes the company's RainStorm technology addresses head-on. "Doing research in droplets allows people to go back to what I'll call simplicity," he says. "Each droplet is the functional equivalent of a test tube or a well." The droplets can be processed at speeds of 3,000 per second, or more than 10 million samples in an hour. "Having that kind of throughput allows you to do ultimately single-cell or single-molecule [experiments]," he adds.

The technology will first be launched for the targeted resequencing market. Becker says that while next-generation sequencing is "growing at an unprecedented rate,"

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scientists have not yet had an efficient way to perform genome enrichment for resequencing. Using RainDance's tool, scientists would have one primer pair per droplet for as many regions as desired, and then they'd perform "good old-fashioned PCR" in emulsions within those droplets. Becker contends that

recent approaches of doing this with arrays or in solution "create bias" but that "using a very well-referenced PCR" would lead to a far less biased product.



STEVE BECKER

They'll work to show evidence of that in a partnership with Scripps, where scientists will use the RainStorm technology for targeted resequencing.

The droplets can be used to perform "just about every general lab application," Becker says; they're thermostable and biocompatible, as well as consistent at the picoliter size. "We're able to pack many of these droplets next to each other and they will not coalesce" — unless, that is, you want them to. The droplets can be merged on demand, or sorted "using [a] soluble fluorescent protein marker and a laser," Becker adds.

RainDance was founded in 2004, in part by 454 Life Sciences' Jonathan Rothberg, who is now chairman of the board. The company is currently developing and manufacturing the droplet platform that will go out to cus-

tomers. According to Becker, scientists will send RainDance their list of loci of interest; the company will create a library of droplets with the corresponding primers; and then the library will be shipped to the customers for use in their labs.

— Meredith Salisbury