Freenome Expands Into Biomarker Discovery While Maintaining Early Detection Goals

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NEW YORK – Blood-based cancer early detection firm Freenome announced a biomarker discovery deal with ADC Therapeutics this week, marking a significant shift to its business. The partners will use Freenome’s multi-omics platform to develop methods to identify diffuse large B-cell lymphoma patients (DLBCL) most likely to respond to treatment with the pharma firm’s antibody-drug conjugate loncastuximab tesirine (ADCT-402).

Although pharmaceutical partnerships are common among providers of various tissue- and blood-based ‘omics platforms, the ADC project is Freenome’s first publicly announced deal of this kind. The company had previously presented itself with a much narrower focus on cancer early detection and screening.

Gabe Otte, Freenome’s CEO, maintained that the firm’s shift into the broader world of biomarker discovery would not hinder its early detection plans, though he said that the ADC deal will not be the only one of its kind that Freenome plans to announce in the coming year.

"It was always our intention to do this, but only at the right time … so while it’s always been a part of our plan, we knew we needed to build a foundation for it … and really that foundation is our multi-omics platform [and the ability] to characterize DNA, RNA, proteins in the blood that are both tumor- and immune-driven," Otte said.

"We have gotten very good at controlling variability, as well as understanding and combining immune signatures with tumor signatures to understand various aspects [of cancer],” he added.

With ADC, Freenome will be addressing a cancer type that hasn’t been much of a poster child for biomarker and companion diagnostic efforts. The pharma firm is currently evaluating ADCT-402 in a pivotal Phase II clinical trial in patients with relapsed or refractory DLBCL. This area doesn’t offer any direct synergy with Freenome’s early detection efforts, Otte said, but it does provide what the company believes is a good venue to demonstrate the power of its platform.

Some other efforts to stratify patient response in DLBCL have had disappointing results recently. A partnership between Celgene and NanoString, for example — using that company’s gene expression platform to subtype patients based on a cell-of-origin signature for treatment with lenalidomide (Revlimid) — failed to meet its primary endpoint late last year.

That said, ADC’s antibody-drug conjugate is in a different class than Celgene’s compound, and although Otte didn’t describe in detail what signals Freenome plans to capture to stratify patient response to ADCT-402, he did say that the company believes its technology has unique potential.

According to Otte, Freenome has developed strategies that he said involve measuring "molecular biology changes in immune cells as they come in contact with a tumor," which the firm believes lend themselves especially well to answer the questions that ADC hopes to address.
Despite branching out in this way into the world of precision oncology for later-stage cancers, Freenome still plans to maintain its momentum in the early detection race, Otte added. As stated previously, the company is targeting colorectal cancer initially, though it believes that its technology can eventually support screening for multiple cancer types.

Freenome is not the only company of its kind zeroing in on colorectal cancer. Guardant Health, for example, has also staked a claim, saying this May that it would begin a prospective trial of 10,000 individuals. Others have also been collecting CRC-specific datasets, even as they maintain a pan-cancer focus.

According to Otte, the $160 million that Freenome raised last month in a Series B round has set it up to conduct its own prospective trial, which will gird a submission for parallel review by the US Food and Drug Administration and Centers for Medicare and Medicaid Services.

This study will look a lot like the Deep-P-C trial that supported FDA approval of Exact Sciences' Cologuard, a stool-based screening assay that Freenome and others now hope to supplant with blood tests.

"The outcome of the blood test will be compared to the outcome of colonoscopy to assess the sensitivity and specificity," Otte said.

Although full data on the company's multi-omic approach won't be published till next year, Otte said a publication in *BMC Cancer* last week illustrates the power that the company’s machine learning discovery methodology has to define both tumor- and immune-associated signals that can mark the emergence of early-stage tumors, Otte said.

With its focus on CRC early detection Freenome had been facing the development of a single assay. In applying its platform to drug development, the firm has now opened the possibility of various companion diagnostic applications.

Unlike companies that enter biomarker development studies with defined assay kits or instruments already in place, Freenome doesn’t market or sell specific diagnostics tools, and so it has an open-ended path ahead.

According to Otte, Freenome doesn’t see CDx development as being much different from its early-detection work. "The platform doesn’t care if it’s a companion diagnostic or a screening application. It’s really about solving the problem … the optimal combination of sensitivity, specificity, cost, and frequency of testing," he said.

"In either case, with a multi-omics engine, you can throw a bunch of different analytes at a particular problem, but if you don’t have a route to how to make that cost effective … you don’t have a solution."

"Once you know what you are looking for … whether it’s through PCR or ELISAs or a number of assays that can be done … there are a lot of ways to solve the problem downstream," Otte said. "We don’t underestimate how difficult that is, though," he added. "We know it’s a long road."