Rna Diagnostics Aims for 2020 Clinical Launch of Breast Cancer Treatment Guidance Test

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NEW YORK (GenomeWeb) – Rna Diagnostics, a Canadian molecular diagnostics company, recently commenced a clinical trial to validate an assay it plans to commercialize that can be used to guide breast cancer treatment.

The trial, called Breast Cancer Response Evaluation for Individualized Therapy (BREVITY), involves investigators from five countries and aims to enroll over 700 patients from 40 centers over the next two years.

The goal of the trial is to assess the ability of Rna Diagnostics' RNA Disruption Assay (RDA) to determine, though a biomarker, which patients are responding to treatment for primary breast cancer. The company hopes the data from BREVITY will support the commercial launch of its test in North America and Europe.

According to CEO Jeremy Bridge-Cook, Rna Diagnostics is hoping to make its RDA assay available as a laboratory-developed test for research use next year before offering it to clinicians in 2020.

"It was time to do a pivotal clinical trial to prove the technology and demonstrate its performance characteristics," said Bridge-Cook of BREVITY, noting that Rna Diagnostics is now "one significant step away from global commercialization."

In terms of launching the test, Bridge-Cook said that Rna Diagnostics will offer it as an LDT in the US and Canada, as well as in Europe, where the firm hopes to obtain a CE-IVD mark for the assay by 2020. "It's our intention to have a commercial lab in each major market to perform the testing and provide results directly to doctors," he said.

Bridge-Cook, a former senior vice president of R&D at Luminex, took the helm of Rna Diagnostics two years ago, just as the company was beginning to transition from a discovery-stage firm to a commercial one. The firm was established in Toronto in 2010 to commercialize discoveries made by Amadeo Parissenti, a professor of chemistry and biochemistry at Laurentian University in Ontario who now serves as the firm's CSO.

"He along with his colleagues serendipitously discovered that patients who responded well to treatment were cleaving their ribosomal RNAs, and patients who were not responding well had normal pristine ribosomal RNAs," said Bridge-Cook. Rna Diagnostics' RDA test is able toquantify and score this phenomenon within tumors as they respond to various chemotherapeutic and targeted drugs.

The assay consists of two parts. First, a needle biopsy of the tumor is taken after treatment has started and the company uses an Agilent Bioanalyzer 2100 to assess the degradation of RNA in that sample. "The biomarkers we are looking at are essentially the 28S and 18S

ribosomal RNAs and various cleavage products of those ribosomal RNAs," said Bridge-Cook.

Data generated by the assay is then analyzed and scored using the company's software. The RDA divides patients into three groups: non-responders, responders, and partial responders. The objective of the BREVITY trial is to identify those who are not responding to treatment early, so that other therapies can be introduced. The company claims it can identify which patients are responding to cancer drugs within two weeks following the first cycle of treatment.

Rna Diagnostics last year tapped Palleos, a Wiesbaden, Germany-based contract research organization, to oversee the trial. For BREVITY, Palleos is liaising with other CROs in Canada, Ireland, Italy, and the US, as well as running the trial within Germany. The trial will involve patients with stage II and stage III invasive breast cancer who are receiving standard neoadjuvant chemotherapy and targeted drugs. The company hopes to predict the response of patients within a few weeks of starting therapy.

"We'll be demonstrating the predictive accuracy of RDA to indicate, in particular, non-response to a combination of chemotherapy drugs, depending on a patient's cancer subtype," said Bridge-Cook. "The particularly clinically useful aspect of RDA is for patients not receiving any benefit from drugs they have been given;" he said. "If a patient is not responding to a first drug, they can move on to the next best alternative."

Rna Diagnostics expects BREVITY to last through 2020. As part of the trial, the company will also measure other characteristics, such as the sensitivity, specificity, and positive predictive value of the test. They will also analyze disease-free survival of patients, following enrollees for five years. Bridge-Cook said that after the conclusion of BREVITY in 2020, the company and its partners will discuss the results at scientific meetings and will describe them in publications.

Rna Diagnostics is funding the trial on its own. The company is privately held and has raised about CAD 6.5 million ($5.1 million) to date, drawing on support from numerous, mostly Canadian investors. It intends to close a Series A round in the next few months to support its activities, Bridge-Cook said.

Cornelia Liedtke, a professor of gynecology at the Charité – Universitätsmedizin Berlin, is the principal investigator for the BREVITY trial. She also serves on the breast committee of the German Gynecological Oncology Group, which issues treatment guidelines to breast cancer specialists in Germany.

"We know that chemotherapy works well in a percentage of patients, depending on their breast cancer subtype. However, we also know that a small but relevant fraction of patients will not respond," Liedtke said.

According to Liedtke, no tests currently on the market produce the same results as RDA, which is why she decided to oversee the clinical trial. She noted that RDA is "one of the first" tests of its kind to be studied in such a trial. "As of today, there is no established test that helps us identify patients who are responding and who are not," she said.

Liedtke added that a successful outcome for BREVITY could lead to the broader use of RDA to guide breast cancer patient treatment.

"If the test could predict who will or will not benefit from therapy, this would allow a more personalized approach," said Liedtke. "For instance, a certain chemotherapy might be selected or omitted based on the result."

Rna Diagnostics' test is entering a market that is accustomed to new molecular approaches, led by offerings from Genomic Health, Agendia, and NanoString Technologies that focus on assessing breast cancer patients' risk of recurrence. Rna Diagnostics sees its niche as reporting back information on response to therapy in real time, allowing clinicians to adjust therapies during treatment.

"At the end of the day, most treatments wind up being less than 50 percent efficacious," said Bridge-Cook. "Having a marker that can predict response and non-response will be very valuable to patients, no matter how much tumor profiling they do beforehand."

In addition to Rna Diagnostics' work in breast cancer, the firm has collaborations underway with researchers in Europe, Canada, and the US that are focused on head and neck cancer and rectal cancer. Bridge-Cook said that Rna Diagnostics may commence similar trials in these areas in the future. "The idea will be to demonstrate proof-of-principle of RDA in other indications," he said.

"We believe that this is a ubiquitous marker of tumor response to therapy, meaning that it seems to be independent of which drug is being used to treat the patient," said Bridge-Cook. He added that Rna Diagnostics will continue to work to demonstrate that RDA can be used to measure response to other therapies, such as immuno-oncology drugs.