



# Cancer Dx Firm On-Q-ity Debuts with \$21M Series A Financing Round

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**Byline:** Ben Butkus

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NEW YORK (GenomeWeb News) – Cancer diagnostics startup On-Q-ity said today that it has closed a \$21 million Series A financing round to support the development of a biomarker-based diagnostic for predicting and monitoring cancer treatment effectiveness.

MDV-Mohr Davidow Ventures led the financing round, which also included Bessemer Venture Partners, Physic Ventures, and Northgate Capital.

On-Q-ity, based in Waltham, Mass., is developing a cancer diagnostic platform that combines two technologies: DNA repair biomarkers that can be used to predict treatment response, and microfluidic chips that enable the capture, enumeration, and characterization of circulating tumor cells in a patient's bloodstream.

According to On-Q-ity President and CEO Mara Aspinall, researchers have identified several dozen biomarkers that are indicative of one of six major interrelated pathways in cellular DNA repair. Since most existing cancer therapeutics work by inducing DNA damage, which causes cell death, monitoring specific DNA repair biomarkers may indicate whether the therapeutic is indeed inducing tumor cell death.

"All solid tumors have at least two, if not three to five pathways implicated in the cancer itself," Aspinall told *GenomeWeb Daily News* this week. "And most chemotherapies, and all radiation therapy, work by damaging DNA. We look at proteomic markers within each of the pathways, and the pathways for breast cancer may be different than the pathways for head and neck cancer, or lung cancer, but they overlap."

Aspinall was unwilling to disclose how many or which biomarkers comprise On-Q-ity's diagnostic panels, but told *GWDN* that "it's a relatively manageable number. We're maximizing sensitivity and specificity with the appropriate number of proteomic markers."

Although the DNA repair biomarkers could allow physicians to monitor treatment effectiveness from solid tumor samples, On-Q-ity's goal is to eventually develop a platform that can monitor treatment response from a patient's blood sample by using the microfluidic-based circulating tumor cell technology, Aspinall said.

"On day one, a patient is diagnosed, the tumor is excised, and we have the tumor tissue,"

Aspinall said. "After that, the tumor tissue is gone; or, it's very difficult to go back in, for instance, lung cancer to do serial biopsies. That's when we use circulating tumor cells to see what's actually happening – how many cells are circulating, but more importantly, what is their molecular makeup?"

Sue Siegel, former president and director at Affymetrix, and now a partner at MDV, told *GWDN* that a non-invasive, blood-based biopsy for testing cancer therapeutic effectiveness was comparable to the effect that HIV viral load testing kits had on monitoring the progression of HIV patients.

"It really gives you the sense that you can detect it earlier; that you have the ability to monitor the stage of disease, and that it's much kinder and gentler to the patient," Siegel said. "Hopefully, it will also be less costly to the healthcare system because you're able to detect things earlier."

Siegel noted that another aspect of On-Q-ity's technology that sets it apart from that at most other emerging molecular diagnostics companies is that it is a "pan-cancer technology. Both of these technologies can go across multiple cancer types, whereas a number of diagnostic companies ... tend to look at things one at a time, in one cancer."

On-Q-ity said that it will initially develop its diagnostic platform for breast cancer and thoracic cancers, including lung cancer and head and neck cancer. "We've had a tremendous amount of interest because DNA repair is useful across multiple cancers," Aspinall said. "And circulating tumor cells are without question relevant for most, if not all, solid tumors."

The method for monitoring treatment effectiveness based on specific DNA repair biomarkers was originally developed by scientists at the Dana Farber Cancer Institute and the Massachusetts Institute of Technology, and became the basis for a startup company called DNA Repair, in which MDV-Mohr Davidow invested.

Meantime, researchers at Massachusetts General Hospital developed the circulating tumor cell characterization and enumeration technology. That technology laid the groundwork for startup Collective Dx, also an MDV portfolio company.

Both companies were attempting to corral a Series B financing round last summer when the global financial crisis unfolded, at which point "funding was not forthcoming," Siegel said.

"During that time, we started to realize that [although] the DNA Repair technology was very powerful, wouldn't it be great if we had circulating tumor cell technology, as well, so we could truly understand this on an individual cell basis," she added.

As a result, the two companies decided to merge this past May, and the new company, On-Q-ity, appointed Aspinall as CEO. On-Q-ity began raising money in June, moved its operations to Waltham, Mass., and closed the Series A financing late last month.

DNA Repair had an exclusive license to intellectual property from Dana Farber and MIT covering the use of specific DNA repair biomarkers to monitor cancer treatment, while Collective Dx likewise had an exclusive license to the circulating tumor cell technology from MGH. Last July, DNA Repair also licensed the exclusive North American rights to a test from Helsinki University Central Hospital that predicts how women with breast cancer will respond to an anthracycline-based chemotherapy.

As a result of the merger, On-Q-ity now holds the rights to those IP licenses. Aspinall and Siegel said that details of the original licensing agreements with the various research institutions are confidential, although Siegel told *GWDN* that none of them holds an equity position in On-Q-ity.

On-Q-ity will use the proceeds from its Series A financing to "advance R&D; complete large-scale clinical trials; move the technology closer to patients more quickly; and work with some key thought leaders in Boston and elsewhere to ensure that we have technology that meets the needs of physicians and their patients," Aspinall said.

In addition, the company is in the process of obtaining CLIA certification for its research laboratory in anticipation of offering the therapeutic-response diagnostic tests through its own facilities.

"Today our laboratory is operating under appropriate regulations, but it's in a research state, and we're moving very quickly toward CLIA certification," Aspinall said.

In conjunction with the financing, Siegel will join On-Q-ity's board of directors, as will Steve Kraus from Bessemer Venture Partners, and Dion Madsen of Physic Ventures, On-Q-ity said.

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