

Delfi aims for a cheaper liquid biopsy



[Elizabeth Cairns](#)



With a fresh \$225m in the bank, Delfi works towards a cut-price, next-generation lung cancer screen.

Blood tests for solid tumours having been around for several years now, any new entrant into the liquid biopsy space is going to need a new angle. Fortunately for its generous venture backers, Delfi Diagnostics has one: the group believes it can price its cancer test well below those already on the market.

“When we’ve looked at the health economics of screening, testing pricing needs to likely be between \$250 to \$500 per test. We can fit within those constraints,” Doug Schenkel, Delfi’s chief financial officer, says. Other cancer blood tests cost between \$950 and \$6,800, albeit in different settings.

This keen pricing is enabled by a technology known as fragmentomics. Cancer DNA breaks apart into fragment patterns that are subtly different from normal DNA, the company says. Analysing the fragments of cell-free DNA in a person’s blood using computational approaches, including machine learning, can identify cancers while using far less sequencing power than traditional techniques.

“Compared to other approaches, which are focused on mutations or methylation markers of interest, our approach requires fewer sample prep steps and a lot less sequencing,” Mr Schenkel says. Delfi uses sequencing at one or two times depth across the whole genome. Sequencing depth, also known as read depth, describes the number of times that a given nucleotide in the genome has been read.

Traditional next-generation sequencing, on which most liquid biopsies rely, reads a few target areas of DNA over and over – some of what Mr Schenkel calls “the first generation” of cancer blood tests involve sequencing at 130 times depth or more. Analysing DNA fragments can “get the same result with a much better signal,” he says, far more cheaply.

First up: lung

Investors seem to be convinced. Last month Delfi closed a \$225m series B round – a notable increase on [the \\$100m series A it scored last year](#) – and intends to plough the cash into bringing a suite of assays to market. First up is a lung cancer screen. This is currently in two clinical trials: [L-101](#), which will support launch in the US as a lab-developed test “in the next year or so”, and [Cascade-Lung](#), a 15,000-subject trial intended to support a PMA submission a few years later.

But Delfi has other irons in the fire, with Mr Schenkel saying that the company’s approach has promise in areas like multi-cancer screening, other single cancer screening, and monitoring. Next time the company raises

money, which he says might be in two years or so, it hopes to be readying the launch of additional assays.

Launch is one thing; commercial success is another. Delfi is well aware of the clinical benchmarks the tests will have to hit in their trials if they are going to appeal to clinicians.

“Sensitivity across all cancers needs to be in at least in the mid to high 80s, and in early stage cancer, ideally, you’re at least 80%,” Mr Schenkel says. This is the range seen with other cancer screens, blood-based or otherwise, he adds.

He contends that high sensitivity is more important than high specificity. If Delfi’s test comes back positive, patients are given a low-dose CT scan, which would “improve the combined specificity”. This is the same argument [cancer testing companies have been making for years](#), the obvious counterpoint being that there seems little point using a test like this if a considerable proportion of those tested go on to the next diagnostic stage anyway.

Still, if Delfi’s test improves screening compliance, as the group hopes it will, it could allow more cancers to be caught than are caught at the moment. Mr Schenkel says that in the US, around 15 million people should be screened for lung cancer every year with low-dose CT – but only 5% of this population actually undergoes screening.

Competition

Both Guardant Health and Freenome are working towards blood-based lung cancer screens. But the only liquid biopsy that can screen for lung cancer is Galleri, a pan-cancer screen [launched last summer by Illumina’s subsidiary Grail](#).

Mr Schenkel feels that Galleri is not a rival to Delfi’s assay since it is “a very high specificity, low sensitivity test [which] doesn’t, in our opinion, fit the need for a primary screening tool for common cancers.”

Galleri is believed to be the cheapest liquid biopsy on sale in the US, priced at just under \$1,000. Perhaps even Illumina believes this is too expensive – the company has participated in every one of Delfi’s funding rounds.

Is this a prelude to an acquisition, and would Delfi be interested if it were? Mr Schenkel says Delfi has an aggressive plan to reach profitability in five years, and is excited about succeeding on its own. Still, he says, “that’s not to say we wouldn’t partner up with somebody, or get acquired, if the right opportunity presented itself.”

Delfi Diagnostics' VC funding

Date	Round	Investment (\$m)	Investors
Jul 18, 2022	B	225.0	DFJ Growth; Eli Lilly; Point72; Brown Advisory; Point Field Partners; Initiate Ventures; Open Field Capital; PTX Capital; Cowen; Foresite Capital; Menlo Ventures; Orbimed; T. Rowe Price; Northpond Ventures; Samsara Biocapital; Rock Springs Capital; AV8 Ventures; Illumina; Osage University Partners; Windham Venture
Jan 12, 2021	A	100.0	AV8; Cowen; Foresite Capital; Illumina; Menlo Ventures; Northpond Ventures; Orbimed Advisors; Rock Springs Capital; Samsara BioCapital; T. Rowe Price; Windham Venture
2019	Seed Capital	5.5	AV8; Illumina; Menlo Ventures; Samsara Biocapital; Windham Venture

Source: Evaluate Medtech.

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