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Quanterix sees a bright future for blood biomarkers

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A new dawn breaks for blood tests in neurological diseases, though future data remain important.

Qalsody, Biogen's therapy for a specific form of amyotrophic lateral sclerosis, in April became the first neurological drug whose accelerated approval was based on a levels of a surrogate biomarker in patients' blood. This is great news for Quanterix, maker of the leading blood test for the biomarker in question, neurofilament light chain.

"Blood is a great proxy for whether the drug is working the way you'd like it to work," says Masoud Toloue, chief executive of Quanterix. The group hopes that Qalsody's approval will presage the use of more blood biomarkers for approval decisions and other applications. But some clinical data have been questionable, and much will depend on Qalsody's confirmatory trial.

Known generically as tofersen and initially developed by Ionis, Qalsody was approved by the FDA in April for ALS patients who have a mutation in the superoxide dismutase 1 gene. The approval was based on the drug's proven ability to reduce blood levels of neurofilament light chain (NfL). NfL is a rod-like protein that functions as an internal scaffold for neurons, Toloue explains, and when neurons become damaged or die, as happens in ALS and other brain disorders, they shed NfL into the cerebrospinal fluid and blood.

Qalsody's ability to reduce the severity of ALS remains unproven. Indeed the pivotal trial of the asset, Valor, found no clinical benefit despite a reduction in NfL. A trial that began in 2021, Atlas, is intended to confirm whether the antisense oligonucleotide can actually delay disease onset in presymptomatic people with Sod1 mutations.

Approval of the drug, which would only be suitable for around 2% of the ALS population, will not vastly increase sales of Quanterix's test, Toloue says. "It's less that this is going to have a big commercial impact – it's more this shifting, the FDA ruling being a validation point for how this biomarker can be accelerative for a neurodegeneration therapy."

In other words, the FDA's decision to approve based on a blood biomarker might be the first of many in the neuro field. According to Nature – as quoted in Quanterix's most recent investor presentation – industry-led trials of agents intended to treat multiple sclerosis, Alzheimer's, Huntington's and Parkinson's are increasingly using NfL as a marker of efficacy.

It might have utility even beyond the neuro realm. “With Car-T therapy and immunotherapies for cancer, one of the questions is, ‘what’s happening in the brain?’” Toloue says. “There’s a lot of research that’s happening now where NfL is a proxy for that health, even in cancer therapy.”

Alzheimer’s

For now, though, Alzheimer’s is the subject of much of Quanterix’s work. Surrogate biomarker approvals are established here: Biogen’s Aduhelm and Eisai’s Leqembi are both approved based on their ability to cut amyloid plaque levels. But amyloid must be measured using PET imaging.

Quanterix is aiming to move biomarker detection to the blood, and is investigating tau rather than amyloid. The Trailblazer-Alz 2 trial of Lilly’s donanemab stratified patients by tau levels using one of Quanterix’s tests, in addition to PET scans.

Blood biomarkers like this also hold significant potential for monitoring and screening for Alzheimer’s, since PET imaging is limited and expensive. Aiding diagnosis is likely a more lucrative use for Quanterix’s technology than testing in clinical trials.

The group already has a lab-developed test for one form of tau, P-tau181. Last year the group licensed Lilly’s P-tau217 antibody technology which it will use to develop a test for this form of tau.

“The 181, up until now, had been a very important test in Alzheimer’s disease,” Toloue says. “[But] 217 is maybe even more effective than P-tau181 for screening Alzheimer’s patients.”

SVB analysts write that Roche is a “formidable competitor” here thanks to its Elecsys Amyloid Plasma blood panel which combines the detection of P-tau181 and apolipoprotein E4. However, they write that Quanterix’s ability to test for P-tau217 still places it ahead.

Ultimately using blood tests for neuro biomarkers to diagnose diseases, rather than to aid drug approvals, might be a safer bet, as well as a more commercially valuable one, for Quanterix. If Qalsody’s confirmatory trial ends up showing the drug to be a dud, the often-controversial use of surrogate markers as the basis for accelerated approvals could be set back yet again.