Emory Researchers Identify Blood Protein Signature That Detects ALS With 98% Accuracy Using Alamar Technology

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Published in Nature Communications, the study found a 10-protein signature that outperformed a leading individual ALS biomarker, including in some patients with difficult-to-diagnose presentations

Fremont, Calif., Oct. 28, 2026 (GLOBE NEWSWIRE) -- Alamar Biosciences, Inc. (Nasdaq: ALMR), a leader in precision proteomics dedicated to enabling the earliest detection of disease, today announced researchers at Emory University have identified a 10-protein blood signature that distinguished patients with amyotrophic lateral sclerosis (ALS) from healthy controls with 98.3% balanced accuracy in an independent validation cohort. The **study**, published in *Nature Communications*, used Alamar Biosciences' NULISA™ technology to measure more than 300 neurological and inflammatory proteins in each blood sample.

ALS can be difficult to diagnose, particularly early in the disease or when symptoms resemble those of other neurological conditions. Researchers are investigating whether blood-based biomarkers could eventually help clinicians identify patients who need specialist evaluation sooner. The newly reported signature remains a research finding, not a clinically validated screening or diagnostic test.

"We saw the proteins we expected, like neurofilament and phosphorylated tau, but we also found differences in proteins that hadn't been linked to ALS in blood before," said Eleanor Varian Thomas, MD, assistant professor at Emory University School of Medicine. "The combination of established and new biomarkers into a single protein signature, identified ALS far more accurately than neurofilament alone. Several of these new proteins may also tell us something about ALS biology itself, which we plan to explore as we test the protein signature in larger and more diverse patient groups."

"ALS patients and their families often wait far too long for answers," said Yuling Luo, PhD, founder, CEO and chair of Alamar Biosciences. "We built NULISA to measure low-abundance proteins in blood that other technologies struggle to see, and to measure many of them at once. This study shows why that matters. By profiling brain-derived and inflammatory proteins together, the Emory team identified a multi-protein signature that outperformed single marker testing.

The Emory University Center for Neurodegenerative Diseases and Emory ALS Center researchers initially profiled plasma from 632 ALS patients and 160 healthy controls using NULISAseq™ CNS and Inflammation panels. They developed a 10-protein signature and evaluated it in a separate validation cohort of 144 ALS patients and 37 controls.

In that validation cohort, the 10-protein signature achieved 98.3% balanced accuracy (AUC 0.992), compared with 89.9% (AUC 0.916) for neurofilament light chain (NFL) alone, an established blood biomarker of axonal damage. The model also identified some ALS patients missed by NFL alone, including patients with relatively little disability, a group that can present diagnostic challenges.

The protein signature combines the established neurofilament markers NFL and NEFH with pTau-181 and VEGFA, which have prior links to ALS, and six proteins not previously reported as ALS blood biomarkers: CALCA, NRGN, PTX3, TREM1, FOLR1 and LAMP3. Some of these proteins help the signature identify people who do not have ALS, which is important for distinguishing ALS from other conditions. One protein, FOLR1, was especially useful in correctly classifying people without ALS whose NFL levels were elevated, which reduced false positive results compared with NFL alone. Its performance illustrates the potential value of measuring multiple neurological and inflammatory proteins together rather than relying on one marker.

About Alamar Biosciences
Alamar is a commercial-stage proteomics company establishing a gold standard in protein detection and analysis. Leveraging our proprietary NULISA™ technology and the ARGO® HT System, our platform is designed to detect protein biomarkers at extremely low concentrations in blood with ultra-high sensitivity, high specificity, flexible multiplexing, broad dynamic range and seamless automation. We refer to this combination of features as "Precision Proteomics," and believe it fills a critical gap in the field of advanced proteomics, helping researchers unlock the full spectrum of protein biomarkers across disease states. Learn more at alamarbio.com.

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