



Freenome Announces Expanded Artificial Intelligence and Deep Learning Initiatives Accelerated by NVIDIA, to Advance Personalized Multi-Cancer Detection

January 12, 2026

– Collaboration is designed to improve analytical speed and accuracy of Freenome’s blood-based cancer screening tests –

Brisbane, CA (Jan. 12, 2026) — Freenome today announced an initiative to advance its blood-based early cancer screening program by leveraging NVIDIA deep learning technology and expertise to improve the recognition of cancer-specific patterns in the blood at the disease’s earliest stages. With NVIDIA accelerated computing, Freenome will scale up training of its proprietary cell-free DNA (cfDNA) fragment-level deep learning (FLDL) models, as well as build an open-source methylation foundational model.

Catching cancer early has been shown to lead to better clinical outcomes, but detection is challenging because the early biological signals of cancer in the blood can be subtle and hard to identify. Freenome’s multiomics platform profiles DNA methylation, RNA, protein and other analytes, and for each individual, generates billions of data points across different modalities. The use of AI/ML and deep learning is critical to determining which samples harbor cancer signals. For cfDNA, Freenome’s FLDL model outperforms the state-of-the-art ML method and shows improved performance with increases in training data volume, as presented at the 2025 AACR Special Conference in Cancer Research: Artificial Intelligence and Machine Learning.¹

“NVIDIA’s expertise in accelerated computing hardware and software has helped Freenome solve data loading and other training bottlenecks we experienced with our FLDL model,” said C. Jimmy Lin, M.D., Ph.D., MHS, chief scientific officer at Freenome. “In addition, NVIDIA has industry-leading frameworks for biomolecular data, such as BioNeMo and Parabricks, that could transform how we scale deep learning R&D and production infrastructure, expand our commercial testing processes, and develop foundation models that would benefit the broader genomic research community.”

The projects being announced as part of the collaboration include:

Fragment-level deep learning (FLDL) model: The companies are collaborating to train and optimize an FLDL model to address the challenge of the very large datasets – millions of tumor-derived cell-free DNA (cfDNA) fragments and billions of DNA base pairs – derived from a single blood draw. As Freenome scales commercial testing to reach the millions of people eligible for screening, the difficulty in training deep learning models with such large amounts of data will continue to grow. The speed and memory capabilities of NVIDIA accelerated computing will streamline how Freenome’s deep learning models learn cancer-specific patterns and navigate training and inference bottlenecks as test and data volume increase over time.

Open-source cell-free DNA foundation model: Freenome and NVIDIA are also working to build a foundation model that understands and contextualizes the specific methylation patterns seen in cfDNA, which then can be used for multiple applications including cancer signal detection. The NVIDIA BioNeMo Framework, specialized for biomolecular data, is well suited to accelerate development and training of this model. To build the model, Freenome will combine its proprietary cfDNA data with public research and plans to make the result open-source so that other cancer researchers can benefit from it as well.

Empowering healthcare organizations (HCOs) through AI: During initial clinical trials, Freenome engaged HCOs to incorporate real-world data (RWD) tokenization with the proper consents to enable the buildout of longitudinal multimodal data. Given the potential value of the population-level dataset, the company is committed to exploring how to provide HCOs with access to relevant, de-identified clinical and molecular data for research use. Freenome is working with NVIDIA to provide accelerated tooling to interrogate that data to augment their AI research objectives. Equipping HCOs with this capability would support research into potential future diagnostic, prognostic and other compatible applications that may benefit patients.

SimpleScreen™ CRC, Freenome’s first blood test for colorectal cancer, is currently under review by the U.S. Food and Drug Administration, with approval expected in the second half of 2026. In addition, the company plans to launch several other blood-based cancer detection tests in 2026, including lung and other indications, run through a common automated laboratory workflow.

About Freenome

Freenome is an early cancer detection company developing blood-based tests to detect cancer when it is most treatable. The company recognizes that no single technology can identify every cancer due to the disease’s inherent heterogeneity. Freenome’s approach combines a multiomics platform that analyzes multiple signals in the blood with artificial intelligence and machine learning to tune into cancer’s subtlest clues, even at the earliest stages of the disease.

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References

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