Healthcare and Life Sciences Leaders Build on NVIDIA to Advance Drug Discovery and Expand Patient Care

News Summary:

- NVIDIA and the UW Medicine Institute for Protein Design debut RFD4-Proteina, a new open model that combines programmable protein design with search capabilities, unlocking new frontiers in biology.
- Siemens Healthineers is advancing the next generation of adaptive radiotherapy, using NVIDIA intelligence to increase access to life-saving cancer care with agentic co-planning, patient-specific simulation and robotic control.
- Automata, Benchling, Biolevate, Boltz, Danaher, Hologen and Therna Biosciences are using the NVIDIA BioNeMo open platform to develop scientific agents that connect drug design, autonomous laboratories and biological discovery, helping researchers move from hypothesis to experiments faster.

GTC Berlin--NVIDIA today announced collaborations with leading global healthcare and research organizations to advance protein design -- including through a newly released open model, RFD4-Proteina -- accelerate drug discovery and bring greater precision to cancer care.

Life sciences researchers must search vast biological design spaces and aim to shorten the cycle between computational design and laboratory testing to discover new medicines. Cancer care teams face a different challenge: translating complex imaging and treatment data into precise plans for each patient.

NVIDIA open models, accelerated computing and physical intelligence can help experts evaluate more possibilities faster, from designing new proteins to planning adaptive radiotherapy.

“Agentic and physical AI are opening new possibilities across medicine, from designing proteins and powering autonomous laboratories to improving personalized cancer care," said Kimberly Powell, vice president of healthcare at NVIDIA. “Together with healthcare and life science leaders, we're accelerating scientific discovery and advancing more precise, accessible care around the world."

NVIDIA and the UW Institute for Protein Design Introduce RFD4-Proteina
Proteins are molecular tools that perform many of life's essential tasks, and designing new versions could open paths to new medicines, diagnostics and industrial applications. But finding a protein capable of performing a designed function requires searching an immense range of possible designs.

NVIDIA and the UW Medicine Institute for Protein Design are debuting RFD4-Proteina, a new NVIDIA BioNeMo™ open model that combines programmable protein design with search capabilities.

The model generates targeted protein designs, enabling scientists and agents to search and refine designs using molecular inputs, constraints and scoring objectives. Potential applications include designing proteins to interrupt disease processes or detect signs of disease in diagnostic tests.

In testing reported in the research draft, RFD4-Proteina achieved higher computational design success rates and generation throughput than the evaluated baselines across four benchmark suites: protein binding, small-molecule binding, enzyme scaffolding and DNA binding. The model helps researchers explore and prioritize candidates for laboratory testing, where experiments establish how a design performs under tested conditions.

“We are moving from an era of discovering the proteins nature has made to one in which we can design entirely new ones," said David Baker, 2024 Nobel Laureate in chemistry and director of the Institute for Protein Design at the University of Washington. “RFD4-Proteina expands what scientists can create, from proteins that could advance drug discovery to enzymes that break down pesticides. Making the model open will allow researchers around the world to build on these capabilities and pursue solutions once beyond the reach."

RFD4-Proteina is available today through partners including Amazon Bio Discovery, Anthropic's Claude Science, Benchling, Databricks, Google Cloud, Hugging Face, Nebius, OpenAI and Tamarind Bio, enabling researchers and developers to integrate the open protein design model into agent, cloud and scientific computing workflows.

Siemens Healthineers Advances Cancer Care With NVIDIA
Siemens Healthineers and NVIDIA are collaborating to develop the next generation of adaptive radiotherapy with agentic and robotic intelligence, combining imaging and oncology expertise with accelerated computing and simulation to simplify workflows and expand access to care.

By 2050, approximately 35 million people worldwide are projected to be diagnosed with cancer each year. Care teams face growing pressure to deliver precise, personalized treatment while managing limited specialist capacity. Greater efficiency

can help expand access to care while maintaining the precision needed to deliver prescribed doses to tumors and protect surrounding healthy tissue.

Siemens Healthineers is working with NVIDIA to further develop adaptive radiotherapy through agentic co-planning, patient-specific simulation and real-time computing. NVIDIA Nemotron™ open foundation models are being explored to power agentic co-planning, with the aim of helping oncologists evaluate and refine personalized treatment strategies. The models could then be combined with NVIDIA CUDA®-accelerated dose calculation for rapid patient-specific simulation and the NVIDIA Holoscan platform to connect live sensor data with AI and simulation to support adaptive treatment.

“Adaptive radiotherapy is built on a single principle: treatment should adapt to the patient, not the other way around," said Arthur Kaindl, head of Varian, the Siemens Healthineers cancer-care business. “We've made important advances in precision and adaptation -- most recently, with the launch of the Accela system. Our collaboration with NVIDIA builds on that progress, exploring how AI and real-time computing could give clinicians greater speed and insight to make informed decisions, adapt treatment with greater confidence and deliver personalized care to more patients."

Scientific Agents Advance Drug Discovery and Development
Life sciences is one of the world's most important scientific frontiers, with global scientific R&D reaching $3.8 trillion and annual pharmaceutical budgets approaching $300 billion.

Scientific agents and autonomous laboratories can help turn more of that investment into evidence, insight and, ultimately, new treatments by connecting design, experimentation and learning in a continuous cycle.

To accelerate discovery and free up scientists for work only they can do, research and laboratory technology companies are using NVIDIA BioNeMo -- an open development platform that enables AI-driven biology and drug discovery -- alongside Nemotron and other NVIDIA technologies to develop scientific agents and the specialized models and tools that connect drug design, scientific data and laboratory workflows:

- **Benchling** is grounding agents in experimental data, research context and connected scientific workflows.
- **Biolevate** is connecting biological data, specialized scientific tools and agentic reasoning across drug discovery and development.
- **Boltz** is developing specialized models and tools that scientific agents can use to predict molecular structures and design and evaluate candidates. It is also previewing a scientific agent to plan workflows, apply the right models and interpret results to guide the next experiment.
- **Automata** is connecting scientific agents with automated laboratory infrastructure so they can initiate experiments and capture structured, contextualized results through workflows.
- **Genedata's** AI co-scientist will coordinate protein design and testing in the protein design foundry within **Danaher**'s autonomous lab. The workflow will incorporate RFD4-Proteina, helping scientists use experimental results to guide the next round of designs.
- **Hologen** is combining its large medicine models with NVIDIA Nemotron to build AI clinical scientists that help researchers turn imaging and clinical data into insights about patient outcomes to inform clinical trial design.
- **Therna Biosciences** is using large language model reasoning to connect experimental evidence and RNA medicine design, helping scientists turn biological insights into therapeutic candidates.

NVIDIA Open Models Streamline Hospital Operations, Expand Access to Specialized Care
Healthcare systems across Europe are working to expand access to specialized care while reducing the administrative demands on already-stretched care teams.

Avelios, Corti, Dedalus, Dawn Health and Sword are also building on NVIDIA Nemotron, powering everything from AI scribes and AI-assisted clinical care to personalized patient support services.

PolyAI is building on NVIDIA Agent Toolkit to speed the path to care through its multilingual dialog deployment with medical software provider Corilus, which has a network spanning more than 70,000 healthcare professionals across Belgium and France.

Apian and VitVio are extending this into the physical world, using NVIDIA Cosmos™ world models and NVIDIA Omniverse™ libraries to build digital twins that monitor and improve hospital operations.

Watch the GTC Berlin keynote from NVIDIA founder and CEO Jensen Huang and explore sessions.

About NVIDIA
NVIDIA (NASDAQ: NVDA) is the world leader in AI and accelerated computing.

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Janette Ciborowski
Corporate Communications
NVIDIA Corporation
press@nvidia.com