

Cleveland Clinic and IBM Unveil First Quantum Computer Dedicated to Healthcare Research

IBM Quantum System One deployed at Cleveland Clinic as part of landmark 10-year partnership



CLEVELAND and ARMONK, N.Y., March 20, 2023 /PRNewswire/ -- Today, [Cleveland Clinic](#) and IBM (NYSE: [IBM](#)) officially unveiled the first deployment of an onsite private sector IBM-managed quantum computer in the United States. The IBM Quantum System One installed at Cleveland Clinic will be the first quantum computer in the world to be uniquely dedicated to healthcare research with an aim to help Cleveland Clinic accelerate biomedical discoveries.



Ruoyi Zhou, Director, The IBM Discovery Accelerator at the Cleveland Clinic, Dr. Lara Jehi, Chief Research Information Officer, Cleveland Clinic, Congresswoman Shontel Brown (OH-11), Dario Gil, IBM SVP and Director, Research, Gary Cohn, IBM Vice Chairman, Lt. Governor of Ohio Jon Husted, Dr. Serpil Erzurum, Chief Research and Academic Officer, Cleveland Clinic, Susan Monarez, Ph.D., Deputy Director, Advanced Research Projects Agency for Health (ARPA-H), Tom Mihaljevic, M.D., Cleveland Clinic CEO and President, and Mayor of Cleveland Justin M. Bibb, in front of IBM Quantum System One at Cleveland Clinic Main Campus

Quantum computing is a rapidly emerging technology that harnesses the laws of quantum mechanics to solve problems that today's most powerful supercomputers cannot practically solve. The ability to tap into these new computational spaces could help researchers identify new medicines and treatments more quickly.

"This is a pivotal milestone in our innovative partnership with IBM, as we explore new ways to apply the power

of quantum computing to healthcare," said Tom Mihaljevic, M.D., Cleveland Clinic CEO and President and Morton L. Mandel CEO Chair. "This technology holds tremendous promise in revolutionizing healthcare and expediting progress toward new cares, cures and solutions for patients. Quantum and other advanced computing technologies will help researchers tackle historic scientific bottlenecks and potentially find new treatments for patients with diseases like cancer, Alzheimer's and diabetes."

"With the unveiling of IBM Quantum System One at Cleveland Clinic, their team of world-class researchers can now explore and uncover new scientific advancements in biomedical research," said Arvind Krishna, IBM Chairman and CEO. "By combining the power of quantum computing, artificial intelligence and other next-generation technologies with Cleveland Clinic's world-renowned leadership in healthcare and life sciences, we hope to ignite a new era of accelerated discovery."

In addition to quantum computing, the Cleveland Clinic-IBM Discovery Accelerator draws upon a variety of IBM's latest advancements in computing technologies, including high performance computing via the hybrid cloud and artificial intelligence. Researchers from both organizations are collaborating closely on a robust portfolio of projects with these advanced technologies to generate and analyze massive amounts of data to enhance research.

The Cleveland Clinic-IBM Discovery Accelerator has generated multiple projects that leverage the latest in quantum computing, AI and hybrid cloud to help expedite discoveries in biomedical research. These include:

- Development of quantum computing pipelines to screen and optimize drugs targeted to specific proteins;
- Improvement of a quantum-enhanced prediction model for cardiovascular risk following non-cardiac surgery; and
- Application of artificial intelligence to search genome sequencing findings and large drug-target databases to find effective, existing drugs that could help patients with Alzheimer's and other diseases.

The Discovery Accelerator also serves as the technology foundation for Cleveland Clinic's [Global Center for Pathogen & Human Health Research](#), part of the [Cleveland Innovation District](#). The center, supported by a \$500 million investment from the State of Ohio, Jobs Ohio and Cleveland Clinic, brings together a team focused on studying, preparing and protecting against emerging pathogens and virus-related diseases. Through the Discovery Accelerator, researchers are leveraging advanced computational technology to expedite critical research into treatments and vaccines.

A significant part of the collaboration is a focus on educating the workforce of the future and creating jobs to grow the economy. [An innovative educational curriculum](#) is being designed for participants from high school to the professional level, offering training and certification programs in data science, machine learning and quantum computing to build the skilled workforce needed for cutting-edge computational research of the future.

Additionally, the two organizations are hosting research symposia, seminars and workshops intended for academia, industry, government and the public with a goal of building a critical mass of computing specialists in Cleveland.

About Cleveland Clinic

[Cleveland Clinic](#) is a nonprofit multispecialty academic medical center that integrates clinical and hospital care with research and education. Located in Cleveland, Ohio, it was founded in 1921 by four renowned physicians with a vision of providing outstanding patient care based upon the principles of cooperation, compassion and innovation. Cleveland Clinic has pioneered many [medical breakthroughs](#), including coronary artery bypass surgery and the first face transplant in the United States. *U.S. News & World Report* consistently names Cleveland Clinic as one of the nation's best hospitals in its annual "America's Best Hospitals" survey. Among Cleveland Clinic's 77,000 employees worldwide are more than 5,658 salaried physicians and researchers, and 19,000 registered nurses and advanced practice providers, representing 140 medical specialties and subspecialties. Cleveland Clinic is a 6,665-bed health system that includes a 173-acre main campus near downtown Cleveland, 22 hospitals, more than 275 outpatient facilities, including locations in northeast Ohio; southeast Florida; Las Vegas, Nevada; Toronto, Canada; Abu Dhabi, UAE; and London, England. In 2022, there were 12.8 million outpatient encounters, 303,000 hospital admissions and observations, and 270,000 surgeries and procedures throughout Cleveland Clinic's health system. Patients came for treatment from every state and 185 countries.

Visit us at clevelandclinic.org. Follow us at twitter.com/ClevelandClinic. News and resources available at newsroom.clevelandclinic.org.

About IBM

IBM is a leading global hybrid cloud and AI, and business services provider, helping clients in more than 175 countries capitalize on insights from their data, streamline business processes, reduce costs and gain the competitive edge in their industries. Nearly 3,800 government and corporate entities in critical infrastructure areas such as financial services, telecommunications and healthcare rely on IBM's hybrid cloud platform and Red Hat OpenShift to affect their digital transformations quickly, efficiently and securely. IBM's breakthrough innovations in AI, quantum computing, industry-specific cloud solutions and business services deliver open and flexible options to our clients. All of this is backed by IBM's legendary commitment to trust, transparency, responsibility, inclusivity and service. For more information, visit <https://research.ibm.com>.

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