Ohio Institute for Quantum Computing
House Bill 96 Proponent Testimony
House Finance Committee
March 13, 2025

Chair Stewart, Vice Chair Dovilla, Ranking Member Sweeney and members of the House Finance Committee, thank you for the opportunity to speak before the committee today. I am Gregory P. Crawford, I have the honor and privilege of serving Ohio and her citizens as the 22nd President of Miami University. Joining me today to field questions is Beena Sukumaran, Miami University Dean of the College of Engineering and Computing.

Miami University and Cleveland Clinic formed a partnership to create the Ohio Institute for Quantum Computing (the Institute). The Institute will strengthen Ohio's unfair competitive advantage by leveraging the world's most powerful operating quantum computer focused on medical research. While a few other quantum computers exist worldwide that match the capabilities of the one housed at Cleveland Clinic, none surpass it.

Thank you to Governor DeWine for supporting the vision of making Ohio the global epicenter of quantum computing medical research, workforce and talent development, and commercialization. The $14 million of one-time funding in HB 96 will fund the first two years of the Institute, leading-edge healthcare research, and establish a quantum talent pipeline in Ohio.

Imagine a future where life-saving treatments are developed at an unprecedented pace. This is the potential of quantum computing when applied to healthcare. By leveraging the principles of quantum mechanics, such as superposition and entanglement, these machines can solve problems with remarkable speed and accuracy. Quantum computers solve complex problems more efficiently, cost-effectively, and accurately than classical computers. One significant application is in drug discovery and testing. Traditional drug development is a lengthy and expensive process, often taking 10-15 years and costing billions of dollars before a new drug reaches the market. Quantum computing, however, could reduce early-stage drug discovery timelines by up to 90% (*Pharma's Almanac*), significantly accelerating the development of new treatments. This technology can also allow for better-targeted therapies, personalized medicine, and advancing medical research on diseases like Alzheimer's and Parkinson's. Quantum computing has the potential to not only save time and money but to save lives.

To put the anticipated economic impact of the quantum sector into perspective, quantum computing is estimated to generate 250,000 new jobs by 2030, and 840,000 by 2035. Quantum computing jobs will span a range of industries, from software development and systems integration to research and development (*The Quantum Insider*). Together, the Institute will advance Ohio as the epicenter of developing the global quantum industry and workforce.

The Institute will leverage Cleveland Clinic's renowned medical research and Miami University's #3 ranking for quality of undergraduate education to conduct world-class medical research, create the talent workforce of the future, and develop intellectual property and new businesses in the field of quantum computing.

Working with Cleveland Clinic, Miami has developed a continuum of quantum computing degrees. The bachelor's degree, the first in Ohio, will begin this Fall, August 2025. The master's and doctoral programs are in process with anticipated start dates of August 2025 as well.

These degree offerings place Ohio among the first to prepare the future quantum workforce. Ohio's focus will be on training people on using a quantum computer versus other institutions' degree offerings focused on building quantum computers. If you Google "quantum computing" your result will bring up terms like quantum mechanics, quantum technology, and quantum information science. These terms reflect the current research focus in the United States and globally on the hardware aspects of quantum.

Students will undertake at least one year of hands-on quantum computing research alongside Clinic scientists, participate in entrepreneurial experiences, and be encouraged to become co-authors of peer-reviewed publications and presenters at high-level conferences – strengthening Cleveland's growing quantum computing landscape and solidifying Ohio's position as quantum leaders on the world stage with graduates who add value to their employers on day one of employment.

This groundbreaking collaboration will advance Ohio's economy by delivering innovative, comprehensive educational offerings in quantum computing and its healthcare applications to meet the accelerating talent and workforce demands of the quantum computing industry – to make Ohio the global epicenter of quantum computing.

The quantum technology race is on as neighboring states and countries make bold investments in quantum computing. The race among nations to achieve dominance in quantum technology is especially important and something we should be mindful of in terms of national security and future competitiveness.

China's Investment in Quantum

One example of this is China's announcement just last week of a $138 billion investment in emerging technologies, including quantum computing, underscoring its commitment to gaining a competitive edge. This investment, which includes a government-backed venture capital fund, builds upon years of significant funding for practical quantum applications. With Chinese universities and tech firms developing quantum prototypes, as reported by The Quantum Insider, China's focus on harnessing quantum technology is clear.

Illinois' Investment in Quantum

Illinois has secured at least $2.27 billion to build a quantum computer and foster its commercial applications.

This substantial investment is a blend of public and private funding. Specifically, $1.18 billion originates from government sources. This includes $280 million from federal funding, $700

million from the state of Illinois and $200 million in state of Illinois incentive packages directed towards PsiQuantum Corp, encompassing capital grants, workforce development assistance, and a low-interest loan.

The remaining $1.09 billion is a commitment from PsiQuantum, the anchor tenant at Illinois's quantum and microelectronics park, located at a former US Steel plant in Chicago.

Michigan's Investment in Quantum

The University of Michigan invested $55 million to launch a quantum research institute to address global quantum challenges and prepare a new generation of researchers to drive groundbreaking discoveries. It is a joint venture within the university, aiming to strengthen research collaborations among the University of Michigan faculty, industry partners, and government agencies.

Ohio's Quantum Competitive Advantage

Ohio's competitive advantage is that we already have an operating quantum computer. China, Illinois, and Michigan are spending billions to build what Ohio has. The investment in the Cleveland Clinic and Miami University partnership will keep Ohio at the forefront of a rapidly growing industry and will attract, retain, and anchor quantum computing talent in the state.

The Institute will attract researchers, graduates, and students from higher education and industry to work, live, and learn in Cleveland. The Clinic has already seen an increased interest among industry experts to work with Cleveland Clinic and gain hands-on quantum experience. The Institute will leverage the quantum computer to attract undergraduate and graduate students as well as working professionals to Ohio.

To cement this strategic alliance, Miami University will establish a physical presence near the Clinic for optimal collaboration and connectivity to the Cleveland Innovation District. This expansion will bring Miami's exceptional talent — students, graduates, faculty, and staff — to Cleveland with a focus on shared strengths through education and research in quantum computing, as well as in-demand fields such as entrepreneurship, cybersecurity, data analytics, nursing, physician associates, gerontology, and supply chain management. With respect to students and graduates, 53% of interns turn into full-time hires, according to the National Association of Colleges and Employers. A physical presence supports Miami's aim to deliver a talented and skilled workforce to Ohio communities by building rural and urban "bridges" across the state.

Further, the Cleveland Clinic and Miami University partnership will be the first to promote a K-12 and undergraduate quantum talent pipeline. To date, no university is investing in the education and training of undergraduate or K-12 students in quantum computing (i.e., how to use a quantum computer). The Institute advances Ohio's competitive advantage with its focus on undergraduate and K-12 quantum training, internships, co-ops, and research opportunities.

By working together, Cleveland Clinic and Miami University will develop the medical research, workforce, and entrepreneurial talent needed in the field of quantum computing. An added benefit will be that students who complete an undergraduate degree in quantum computing will also be suited for cybersecurity fields because of the emphasis on post quantum cryptography. This partnership will equip a new generation of talented students with expertise across a spectrum of computing platforms, from classical computing to high-performance computing and quantum computing.

Cleveland Clinic, at the forefront of modern medicine, is internationally recognized as a pioneer in medical treatment and medical research. Established in 1921, the vision of the founders remains Cleveland Clinic's mission: caring for life, researching for health, and educating those who serve. With more than 65,000 caregivers worldwide, Cleveland Clinic has almost 6 million patient visits per year at more than 200 locations.

Miami University is proud to produce more than 5,000 graduates annually to fuel Ohio's employment needs. Our students are well-prepared for the Ohio workforce, as is evident in the fact that 99% of our 2021-22 graduates were employed, serving in the military, in a service program, or enrolled in additional studies within six months of graduation. Miami is ranked #1 by Payscale among Ohio public universities for the students' return on investment.

Along with quantum computing, Miami University plans to elevate innovation and entrepreneurship in the Cleveland region. Miami is currently ranked #7 internationally among entrepreneurship programs by the Princeton Review. Miami students, faculty, and alumni created a $1.1 billion impact on the State of Ohio (of $1.7 billion total from all Ohio public universities) through entrepreneurial activities, according to a 2021-22 economic impact report conducted by ECSI Lightcast.

Both organizations are committed to excellence as a habit, not only an aspiration, achieved by consistent effort, high-quality standards, and continuous improvement. This excellence involves a commitment to integrity, diligence, and a sense of purpose. Miami University and the Cleveland Clinic both aim to be the best in our fields, education, and healthcare, for one reason: making life better for people.

Conclusion

This funding will leverage Miami University's renowned educational excellence with Cleveland Clinic's world-class healthcare, to elevate the well-being of Ohio's citizens and communities, develop a talented and skilled workforce, and boost the state's economy.

Thank you for the opportunity to testify before the House Finance Committee today.