# Qubit Pharmaceuticals launches FeNNix-Bio1, a quantum AI model transforming drug discovery



Deeptech drug discovery company Qubit Pharmaceuticals has recently unveiled its groundbreaking quantum AI model, FeNNix-Bio1, which it claims to be the most advanced of its kind in the world. This innovation aims to streamline the development of new therapeutics, significantly reducing both time and costs associated with conventional drug discovery processes.

In collaboration with Sorbonne University, Qubit Pharmaceuticals has harnessed an unprecedented level of computational power to create this model. According to Jean-Philip Piquemal, a professor at Sorbonne University and the co-founder of Qubit Pharmaceuticals, the new quantum AI technology is capable of simulating molecular behaviours with a level of precision and speed previously unattainable. This leap in modelling accuracy is particularly crucial in predicting how drugs interact with proteins, DNA, or RNA—an inherently complex task given the vast expanse of potential drug candidates and targets, which the company estimates could reach trillions.

Qubit claims that the enhanced accuracy of FeNNix-Bio1 could dramatically lower the high costs and lengthy timelines typically involved in laboratory testing, allowing for rapid 'in silico' experimentation that filters out less promising candidates before they reach the costly lab phase. This approach represents a significant departure from traditional methodologies and aims to expedite the identification of viable drug candidates that can ultimately benefit patients.

FeNNix-Bio1 builds upon a foundation of millions of molecular simulations, leveraging the world's most accurate molecular chemistry database. This model doesn’t just stop at generating molecular structures; it also comprehensively understands molecular interactions, a feature crucial for accurately simulating biological environments. Particularly notable is FeNNix-Bio1's ability to simulate the behaviour of water—a key solvent in human biology—across various states, something other models have struggled to achieve.

Moreover, while existing tools like Google DeepMind's AlphaFold have transformed protein structure prediction, FeNNix-Bio1 is differentiated by its capacity to model dynamic protein interactions over time, offering deeper insights that could optimise drug design. Piquemal emphasised that this capability addresses significant limitations found with traditional models, which often overlook the evolving nature of proteins critical for effective drug interactions.

In practice, the performance of FeNNix-Bio1 stands out not only in terms of accuracy but also in efficiency. Whereas classical computational methods demand extensive time and resources, Qubit claims FeNNix-Bio1 can be trained rapidly in just a few hours on standard computing hardware. This scalability could herald a new era in pharmaceutical research, particularly for tackling complex diseases for which conventional solutions are lacking.

Current projects at Qubit Pharmaceuticals include programmes focusing on oncology and inflammatory diseases, with their most advanced work directed toward breast cancer therapies. This foundational model is versatile, capable of simulating a broad spectrum of systems by adjusting molecular building blocks. The potential applications extend beyond drug discovery; they encompass areas such as industrial enzyme design, membrane optimisation for desalination, next-generation battery development, and innovations in green chemistry.

In an era where the convergence of quantum computing and machine learning—termed quantum AI—is poised to reshape data generation in molecular simulations, Qubit Pharmaceuticals is already leveraging quantum data to amplify its models. This is seen as a significant milestone, especially considering that such advancements were previously projected to be a distant prospect.

As the company continues to push the boundaries of what's achievable in medical research, its collaborations with institutions such as Institut Curie and initiatives like the Quantum for Bio programme underscore its commitment to being at the forefront of scientific innovation, aiming to transform how therapeutics are discovered and developed.

In addition to its technological advancements, Qubit Pharmaceuticals has been recognised as one of the 100 Technology Pioneers for 2024 by the World Economic Forum, embedding the company within a prestigious network of disruptive innovations that promise to alter the landscape of healthcare delivery in the near future.

### Reference Map

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## Bibliography

1. <https://tech.eu/2025/05/20/qubit-pharmaceuticals-harnesses-quantum-ai-to-crack-chemistrys-greatest-challenges/> - Please view link - unable to able to access data
2. <https://www.sorbonne-universite.fr/en/presse/qubit-pharmaceuticals-and-sorbonne-university-achieve-major-scientific-breakthrough> - Qubit Pharmaceuticals and Sorbonne University have achieved a significant scientific breakthrough by simulating quantum calculations at over 40 qubits on conventional computers. This accomplishment was made possible through the development of the Hyperion-1 emulator, which can run accelerated and accurate quantum algorithms at this scale. The collaboration utilized high-performance computing resources, including the Jean Zay supercomputer, to perform these simulations in just a few hours. This advancement aims to halve the time required to select drug candidates, positioning Qubit Pharmaceuticals as a leader in molecular modeling-based drug discovery.
3. <https://www.pasqal.com/news/pasqal-and-qubit-pharmaceuticals-partnership/> - In September 2023, Pasqal, a leader in neutral atoms quantum computing, and Qubit Pharmaceuticals, a deep-tech company specializing in drug discovery through simulation and molecular modeling accelerated by hybrid HPC and quantum computing, announced their collaboration in the Quantum for Bio program. This program, launched by Wellcome Leap, aims to accelerate the use of quantum computing in healthcare by developing applications that will benefit from the arrival of quantum computers within 3-5 years. The partnership received $4.5 million in funding over 30 months to design an algorithm for drug discovery to be used with Unitary Fund software on Pasqal’s quantum computers.
4. <https://blogs.nvidia.com/blog/qubit-pharmaceuticals-accelerates-drug-discovery-quantum-computing/> - Qubit Pharmaceuticals is leveraging hybrid quantum computing to accelerate drug discovery processes. By combining classical and quantum computing, the company aims to significantly reduce the time and investment needed to identify promising treatments in oncology, inflammatory diseases, and antivirals. Utilizing NVIDIA's computational power and the QODA programming model for hybrid quantum-classical computers, Qubit Pharmaceuticals' Atlas software suite creates detailed simulations of physical molecules, accelerating calculations by a factor of 100,000 compared to traditional research methods. This collaboration is expected to enable pharmaceutical companies to begin testing their first drug candidates discovered through GPU-accelerated research next year.
5. <https://blog.qubit-pharmaceuticals.com/high-performance-computing-simulations-and-ai-qubit-pharmaceuticals-institut-curie-and-the-university-of-bordeaux-team-up-to-advance-the-development-of-novel-cancer-therapies> - Qubit Pharmaceuticals, Institut Curie, and the University of Bordeaux have partnered to advance the development of novel cancer therapies. The collaboration aims to identify drug candidates that modulate the immune response of cancer patients and block the development of metastases. Qubit Pharmaceuticals will utilize its Atlas platform to generate new molecules optimized to inhibit specific targets, which will then be biologically validated by Institut Curie and biochemically characterized by the University of Bordeaux. This approach combines simulation, AI, and biological expertise to identify safer and more effective drug candidates.
6. <https://blog.qubit-pharmaceuticals.com/qubit-pharmaceuticals-selected-as-one-of-the-100-technology-pioneers-2024-by-the-world-economic-forum> - Qubit Pharmaceuticals has been selected as one of the 100 Technology Pioneers for 2024 by the World Economic Forum. This recognition places the company among a prestigious community of disruptive technology startups deploying technologies likely to have a major impact in the future. Over the next two years, Qubit Pharmaceuticals will participate in various events and have opportunities to meet with key decision-makers in business, politics, and academia. The company is also invited to the “Summer Davos” event in Dalian, China, from June 25 to 27.
7. <https://blog.qubit-pharmaceuticals.com/qubit-pharmaceuticals-joins-pinq2-to-advance-quantum-drug-research> - Qubit Pharmaceuticals has partnered with the Platform for Digital and Quantum Innovation (PINQ²) to advance pharmaceutical research through quantum computing. This collaboration marks a new era in the exploration of quantum computing applied to drug discovery, utilizing the HPC and quantum infrastructures operated by PINQ², including the IBM Quantum System One computer. As part of its expansion in North America, Qubit Pharmaceuticals is setting up facilities in Sherbrooke at Espace Quantique 1 (EQ1 - Quantum Space 1), a 50,000 square feet area dedicated to the quantum technology industry within DistriQ – Quantum Innovation Zone.