

VERNE

CUSTOMER SUCCESS STUDY

Peptone accelerates protein-based drug discovery at Verne's NVIDIA DGX Campus

Protein structures and their various conformations are dynamic and complex. Proteins such as receptors, antibodies, growth factors, and hormones have a vast number of potential variations in structure and their molecular behaviour can be varied. Proteins can aggregate, or stick together, altering their characteristics, and one protein's interaction with another can change its shape and functionality. Understanding how proteins act, knowing their size, and visualising how they look is a fundamental key to creating protein-based drugs and vaccines.

UK-headquartered Peptone is at the very forefront of this research. Artificial intelligence methods are used to analyse the anomalous behaviour of proteins and the most desirable protein variants are identified for further drug development research. This approach helps scientists identify the right proteins quickly and is a more time and cost-effective method over wet lab approaches.



Cutting edge research is hard to handle

To build its repository of proteins, Peptone must capture, store and analyse huge amounts of data, orchestrated and supervised by reinforcement learning algorithms. Reinforcement learning is the training of machine learning models to make a sequence of decisions. The agent learns to achieve a goal in an uncertain, potentially complex environment.

Peptone approached Scan – the fully-managed infrastructure specialist – to help it find a solution. Taking advantage of its long-standing relationship with NVIDIA, Scan helped Peptone unlock the potential of its research by running its deep neural network models on an NVIDIA DGX A100 system. As the world-leading AI platform, this NVIDIA supercomputer accelerates and dramatically improves the accuracy of Peptone's AI-driven research programmes at scale.

With Scan on hand to ensure Peptone's NVIDIA infrastructure could support its high-throughput workflows, the next task was to find a data center facility equipped to host and support this highly specialised equipment. In addition, with privacy and security top-of-mind for Peptone's pharmaceutical customers, there was a reluctance to place this valuable, proprietary data in the cloud.

Hosting Peptone's supercomputer in a secure, renewable environment

Peptone selected Verne's HPC-optimised data center campus as the ideal location to host, train and optimise its drug development research for protein supercomputing. As one of a small number of data centers around the world that is NVIDIA DGX-Ready, it is a natural destination for Scan clients. Furthermore, Verne shares Scan's laser-sharp focus on customer success, which allows Peptone to run its infrastructure in an optimised environment designed to support high density, high performance compute, all backed up with an expert onsite team.

Fuelled by Iceland's reliable and sustainably-powered modern power grid, the data center is also the only NVIDIA DGX-Ready colocation provider running on 100 percent renewable energy sources. Verne's facility is a secure, low-risk, and reliable environment in which Peptone can house and scale its compute.

Powerful
Sustainable
Secure

Supernatural results



Unparalleled potential to scale

Peptone's research is changing the world, and a hybrid supercomputing cloud solution creates the perfect environment for Peptone to push the boundaries of its AI-driven engineering of protein therapeutics. Its PeOS platform has been developed to handle massively parallel simulations and Peptone's high throughput workflows are deployed on NVIDIA's DGX A100 supercomputer nodes in Verne's Icelandic facility, providing uninterrupted and reliable access to the best in-class AI and supercomputing hardware, along with ongoing onsite support to ensure the technology is running optimally.

Locating its compute with Verne allows Peptone the freedom to focus on its ground-breaking research – without limits. Installed in a specialised, highly-optimised data center environment, with 5 petaFLOPS of AI performance in a 6U form factor, and a single platform for every AI workload, Peptone has the flexibility to scale its AI-driven protein engineering system on-demand, while maintaining full visibility of operations and keeping the data in sight at all times.



Innovation doesn't mean you have to play it safe

Peptone's mission critical infrastructure and highly sensitive customer data is housed in Verne's data center campus built upon a highly secure former NATO base. Physical security is prioritised, with more than eight challenge points between the outside and the servers, wide-scale use of CCTV cameras and analytics, routine physical patrols, and staff on site 24/7.



Changing the world, not exhausting it

Operating an on-premise HPC system can often come at a large financial cost, while it can also have a detrimental effect on the environment. However, locating its compute with Verne means the financial and carbon costs of its high-throughput workflows are not barriers to either Peptone or its pharmaceutical industry customers. At Verne, Peptone is harnessing the Earth's own superpowers by running its compute on one of the most reliable and affordable modern power grids in the world, which is in turn powered by 100 percent hydroelectric and geothermal renewable energy sources. Iceland's temperate climate ensures the facility has access to ambient air cooling, lowering operational energy costs further. By plugging into the Earth via Verne's data center campus, Peptone has decreased its carbon footprint and total cost of ownership while maintaining industry-leading levels of electrical efficiency.

100%

Renewables-powered data center campus plus year-round free cooling has dramatically lowered Peptone's carbon footprint.



Verne is the ideal partner for our hybrid supercomputing cloud approach due to its foundation in sustainability, global connectivity and reassuring ability to keep our world-leading practical research completely secure.

Dr. Kamil Tamiola
Founder & CEO, Peptone



**Make an impact
from the ground up.**

info@verneglobal.com | verneglobal.com