

Quantum.

Intelligent Tiered Storage for Life Sciences Workflows



DATA DATA EVERYWHERE

and each new life sciences discovery brings more. And more. And more.

You're facing a flood of data. Dramatic declines in the cost and run times for genome sequencing are enabling <u>you to do more, faster. Advances in</u> instrumentation and imaging technologies mean more data, too. Complex analysis software pushes the limits of your infrastructure, demanding ever-higher performance. Your teams need to collaborate on large data sets regardless of where they might be working. And good research takes time—your data needs to be kept available for decades, sometimes even indefinitely.

Managing today's genomics, bioinformatics, and medical imaging data calls for the right kind of tiered storage infrastructure. With the optimal balance of speed, scale, access, and cost, you can turn the flood of life sciences data into knowledge—knowledge that will ultimately change people's lives.

Learn more quantum.com/lifesciences

Quantum Tiered Storage Offerings—Including Object Storage

WORKFLOW STORAGE

Shared storage designed to accelerate complex information workflows

ARCHIVING

Storage that allows you to retain data longer and keep it accessible to users

DATA PROTECTION

Solutions that integrate innovative deduplication, replication & cloud technologies

CLOUD

Integrate the Cloud as an on-demand storage tier for your existing applications



LIFE SCIENCE DISCOVERIES ARE MADE EVERY DAY

IT teams at research organizations don't have it easy. While discoveries are made every day, scientists depend on your underlying storage infrastructure to make them happen. At Quantum, our mission is to help you transform the flood of life sciences data into innovative insights. With storage solutions that combine the economics of intelligent tiered storage and the massive scale of object storage, you can optimally balance performance, access, and cost to meet current requirements—with a solution that can also meet the extreme data growth of tomorrow's advances in bioinformatics and medical imaging.

Economics of Tiered Storage

You need a long-term approach to data that's as smart as your research. StorNext® policy-driven tiering helps you accelerate complex life sciences workflows by automatically moving data between tiers of storage—high-speed primary disk, object storage, tape archives, and cloud.

Proven in the world's most data-intensive industries—such as satellite imaging, highperformance computing, media and entertainment, and oil and gas—our high-speed tiered storage solutions are ideal for NGS and medical imaging data, with the flexibility to start small and scale out as needed—supporting tens, hundreds, or thousands of scientists.



Learn more about StorNext tiered storage quantum.com/stornext

Object Storage for Massive Scale

Science isn't always predictable, and neither is data. With object storage, you can scale capacity without breaking the budget. And keep data at the ready for researchers—wherever and whenever they need access.

Built on next-generation object storage, Lattus™ enables you to extend primary storage with a more cost-effective online storage tier—ideal for genomics data or medical imaging repositories that are often measured in petabytes. Lattus integrates easily into life sciences workflows, and its native cloud interface supports HTTP REST and S3 protocols. Unmatched levels of scale, data durability, and economy mean you can preserve data for the long term—even forever.

> Learn more about Lattus object storage quantum.com/lattus By combining high-speed data sharing and cost-effective content retention in a single solution, StorNext has enabled our researchers to access the data they need quickly and easily and eliminated the significant management overhead we incurred with our legacy system.

- A Director of Information Systems in Genomic Research

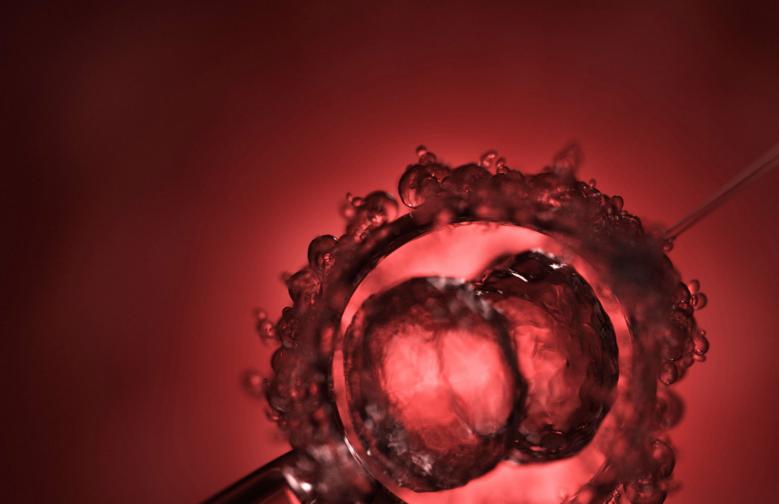
Storage Built for the Challenges of Genomics and Medical Imaging

Genomics and Bioinformatics

The first genome took 15 years to sequence—today's next-gen sequencers get it done in days. Lower costs mean more genomes are being sequenced than ever before, and more analysis means more downstream data. Despite "genomical" data growth, scientists need the ability to collaborate while keeping genomic data available over the long life span of research.

Medical Imaging

Faster, more precise, and less invasive medical imaging is changing healthcare. Breakthrough levels of detail in functional MRIs have even given researchers the ability to directly observe brain functions as they happen. Clinicians and researchers today expect high-speed access to their medical imaging repositories—even as the repositories reach petascale levels.



Genome Institute of Singapore

Genome Institute of Singapore (GIS) is a world-class institute and part of the country's Agency for Science, Technology and Research (A*STAR). GIS is using StorNext scale-out storage and archive to manage and protect sequence data, and to perform high throughput analysis and serve as a secondary analysis platform. Leveraging StorNext and Quantum's Scalar i6000 and Scalar i500 tape libraries, GIS has increased its sequencing and data transfer performance severalfold while reducing overall storage cost and preserving genomic data availability for future analysis. GIS also uses Quantum's DXi deduplication appliances as part of its data protection strategy for its non-scientific data. When it comes to efficient file sharing, transparent tiered storage, and costeffectiveness, StorNext has fulfilled all our requirements.

> Roberto Fabbretti, IT Manager, the Vital-IT Center, part of The Swiss Institute of Bioinformatics

Swiss Institute of Bioinformatics

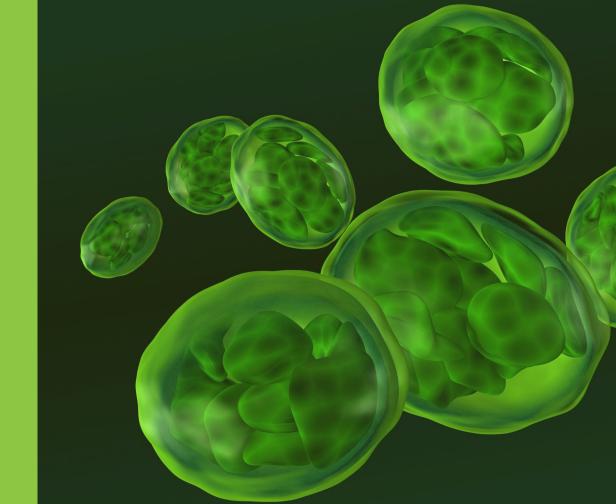
The Swiss Institute of Bioinformatics (SIB) is a federation of bioinformatics research and services groups from leading Swiss universities and the Swiss Federal Institutes of Technology. SIB uses a tiered storage solution centered on Quantum StorNext data management software to provide high-performance file sharing and data protection. StorNext has allowed researchers to keep the raw data that most other sequencing centers have to discard—saving 20% on sequence tags as new algorithms are run on original data. Additionally, SIB has reduced its total cost of storage by 50% from leveraging StorNext's tiered storage capabilities.

Scripps Research Institute

The Scripps Research Institute (TSRI) is one of the world's largest independent, non-profit biomedical research organizations with a highly distinguished faculty, including three Nobel laureates. The institute worked with Quantum and Datalink, a leading provider of data center infrastructure and services, to design and deploy a flexible and comprehensive data sharing, tiering and disaster recovery solution set that could scale to meet TSRI's data management and protection needs. The solutions that TSRI chose included the combination of Quantum's StorNext Scale-out Storage and a Scalar i6000 tape library to provide cost-effective data protection and long-term archive. Scripps is also using DXi-Series deduplication appliances to protect its non-genomic data.

StorNext manages TSRI's scientific data and provides resiliency and protection by copying and/or migrating it to multiple disk tiers or a tape library, depending on predetermined data management policies. The combination of StorNext and Quantum's Scalar i6000 tape library provides an added data integrity checking and migration capability using the library's EDLM (Extended Data Life Management) feature. EDLM checks the health of tape cartridges based on administrator-set policies, and then engages StorNext to automatically migrate data from a faulty tape to a new one without the need for any human intervention.

To protect non-genomics data, Scripps selected Quantum's DXi deduplication appliance with built-in replication, OST and path-to-tape capabilities to provide an efficient and cost-effective way to replicate data to another appliance for disaster recovery and maintain a copy on tape for long-term retention. Furthermore, Quantum's Vision[®] software provides a single point of management across the disk, tape and replication resources to deliver added cost-saving benefits to managing data.



Learn more at quantum.com/lifesciences

Advances in life sciences technologies are changing the world for the better—and this change depends on your ability to efficiently acquire, analyze, share, and preserve valuable data for decades. Quantum is dedicated to delivering innovations in tiered storage infrastructure that will speed up life sciences workflows and let you focus on what you do best the science.

ABOUT QUANTUM

Quantum is a leading expert in scale-out storage, archive and data protection, providing solutions for sharing, preserving and accessing digital assets over the entire data lifecycle. From small businesses to major enterprises, more than 100,000 customers have trusted Quantum to address their most demanding data workflow challenges. With Quantum, customers can be certain they have the end-to-end storage foundation to maximize the value of their data by making it accessible whenever and wherever needed, retaining it indefinitely and reducing total cost and complexity. See how at **www.quantum.com/customerstories**.

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