

SOLUTION BRIEF

Accelerate Genomics Analytics for Precision Medicine

Implement next-generation genomics sequencing with solutions from Pure Storage®.

Genomics data is a critical tool in understanding and diagnosing diseases and designing individualized treatment plans in modern medical practice. Technologies like next-generation sequencing generate exponential amounts of omics data to help diagnose and define treatments in a fraction of the time, but only if their storage and compute infrastructure perform. To keep up with data growth and support concurrent sequencing workflows, pharma and biotech research firms are upgrading their high-performance compute environments to deliver a quantum leap in speed, scale, and agility.

The Key to Modern Sequencing and Analytics

Genomic sequencing workflows start with the production of base-pair sequencing reads, and a single sequencer can produce 20 to 48 sequence reads per day, resulting in terabytes of data. Because large life-sciences organizations employ fleets of sequencing instruments, it is not uncommon to quickly accumulate petabytes of reads that are then assembled into whole genomes for biological data mining, visualization, and interpretation.

Assembling, mining, and interpreting sequences (called secondary and tertiary analysis) requires an HPC environment built on a storage architecture that delivers low-latency IOPS and high throughput. In particular, secondary analysis demands high-performance storage to support metadata access and concurrency requirements. As the number of sequencing reads grows, you need non-disruptive capacity scaling to prevent interruption during sequencing runs and scientific analysis.

Pure provides a range of solutions designed to help your teams meet their unique requirements for speed, scale, and even purchasing agility—buy, lease, or use as a service—with unmatched simplicity and reliability.



Accelerate Analysis

Improve end-to-end sequencing performance and lower data latency—even up to hundreds of millions of files. Load genome sequence indexes in one-third the time and speed analyses by up to 24x.



Deliver Peace of Mind

Minimize downtime and disruption with snapshots, non-disruptive scaling, predictive support, and ransomware protection.



Increase Efficiency

Utility consumption pricing allows you to pay for only what you need, then scale on-demand for agility with greater budget control.

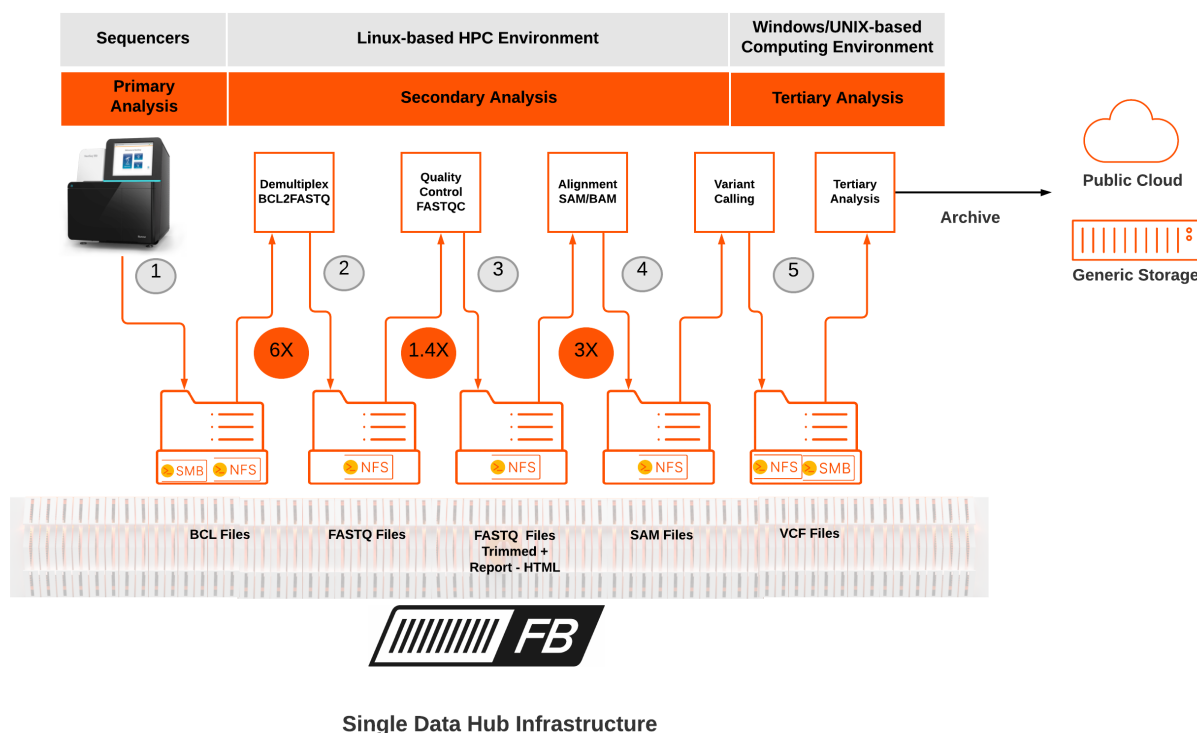


Figure 1. Next-generation sequencing workflow with Pure FlashBlade® and AIRI®

A Unified Data Experience for Genomics

At Pure, we believe the best way to empower your researchers is through a modern omics infrastructure that not only supports your current workflow and archival needs, but provides the flexibility of futureproofing. Our advanced, all-flash solutions enable IT teams with a comprehensive strategy that eliminates disconnected HPC approaches and incompatible platforms—and reduce costs and complexity that make maintenance a challenge.

- Unprecedented Performance:** The genomic sequencing and analysis workflows that drive biomedical discoveries demand high performance and low latency storage. Built on a custom, engineered flash architecture with independent performance and capacity scaling, [Pure FlashBlade®](#) can deliver petabytes of throughput and low latency access to hundreds of millions of files. For secondary and tertiary analytics processes—including genome alignment and variant calling—FlashBlade architecture can accelerate processes by up to 24 times, which can make a world of difference in patient outcomes or lab ROI.
- Ease of Use:** As concurrency increases and the amount of omics data grows exponentially, ease of use becomes paramount. To help, FlashBlade automates internal network configuration and dynamically manages load balancing for better ongoing performance. Pure also offers AI-driven, proactive support as well as easiest-in-industry data protection functions like always-on encryption, snapshots, disaster recovery, and ransomware protection. Combined, these functions identify issues before they are outages and protect you from business-crippling outages.
- Cloud-Ready:** The applications and processes used in life sciences are constantly evolving and IT infrastructures must evolve with them. To this end, Pure solutions are designed to provide cloud-like economics and support containerized

workloads with Portworx. With [Pure-as-a-Service™](#), you can consume Pure Storage offerings via a true utility model for increased budget optimization and on-demand scaling. Support for containers, orchestration, and hybrid cloud configurations—via managed service providers and co-location providers—gives IT leaders the agility to change workflow design, resources provisioning, and where applications live without being locked into a specific location.

- **Evergreen Innovation:** Pure Storage has consistently led the industry in our approach to customer relationships. With [Pure Evergreen Storage™](#), Pure includes controller upgrades, array software, and even flash storage upgrades so that you aren't burdened with hidden costs that might prevent needed upgrades to support the business. This ensures you have the most up-to-date tools you need to protect your genomics data and keep sequencing workflows running. And with a proven track record of non-disruptive upgrades, you can choose to update whenever you need without disrupting sequencing runs or disrupting time-sensitive, tertiary analysis.

Case Studies

- Barcelona's [Centre for Research in Agricultural Genomics](#) improved speed, scalability, and stability of its environment.
- Scientists at Canada's [McMaster University](#) power research into infectious disease and COVID-19.
- [Chang Gung Memorial Hospital](#) accelerated its AI-driven analysis and genetic research to improve patient care.
- [Nanyang Technological Institute's](#) researchers sequence hundreds of genomes to catalog botanical biodiversity.

Additional Resources

- Learn more about [life sciences solutions](#) from Pure.
- Explore Pure's [modern data protection](#) solutions and [Pure Professional Services](#).

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