

# A Blueprint for Scaling Population Genomics to Advance Precision Health

## OVERVIEW

Population health has become a strategic imperative for health systems, which are launching genomics programs to improve patient outcomes, accelerate research, and ensure financial vitality. By combining genomic and clinical data at scale, these initiatives create powerful "living laboratories." The value of large-scale human genetic data is now understood to be a critical asset for biological discovery and improved health management.

## The Core Challenge: Data Integration at Scale

The rise of population genomics has revealed a myriad of new ways for health systems to advance discovery, patient outcomes, and clinical operations. Population genomics is a multidisciplinary endeavor, requiring clinical, technical, scientific, operational, and informatics expertise in equal parts. Standing up and scaling population health programs requires overcoming significant hurdles, any of which can imperil the massive investment in time and organizational resources required for success.

Too often, health systems find that the informatics infrastructure used to support the data requires uncomfortable design tradeoffs: security vs. access, cost vs. scale, usability vs. governance. Overly simplistic or general IT solutions lack the built-for-purpose features and functionality that enable return on investment for all stakeholders. At scale, these programs and their resulting datasets can become overly constrained, turning what should be a crown jewel data asset that supports insights, discovery, and quality in patient care into an expensive and narrow resource available only to a subset of users.

## The Solution: A Unified, Cloud-Based Platform

Leading initiatives like the UK Biobank and Geisinger MyCode demonstrate that a unified, cloud-native platform is the foundational solution. This approach breaks down data silos by creating a single, integrated data asset, which enables dynamic querying, analysis, and collaboration. By centralizing data, researchers are brought to the data, which eliminates risky large-scale transfers and ensures everyone works on the same curated datasets.

## Five Core Lessons from Pioneering Programs

1

### Adopt a Unified, Cloud-Native Platform Strategy

Consolidate data in a secure research environment and partner with expert providers to accelerate timelines and ensure future-proof scalability

2

### Embed Governance and Trust as the Foundation

Prioritize clear participant consent and establish robust oversight with transparent data-use policies to ensure the program's long-term sustainability.

3

### Think Big, Start Small, and Plan in Advance

Pair a grand vision with a practical, iterative rollout. Secure early wins with a pilot phase to build stakeholder support and justify expansion.

4

### Invest in People, Training, and Culture Change

The most sophisticated platform will fail if users are not trained or motivated to use it. Provide continuous training and support to drive adoption.

5

### Design for an Evolving Scientific Landscape

The pace of genomic innovation is relentless. Choose a flexible platform built on open standards that can easily incorporate new tools, methods, and data types.

# The DNAnexus Platform Solution

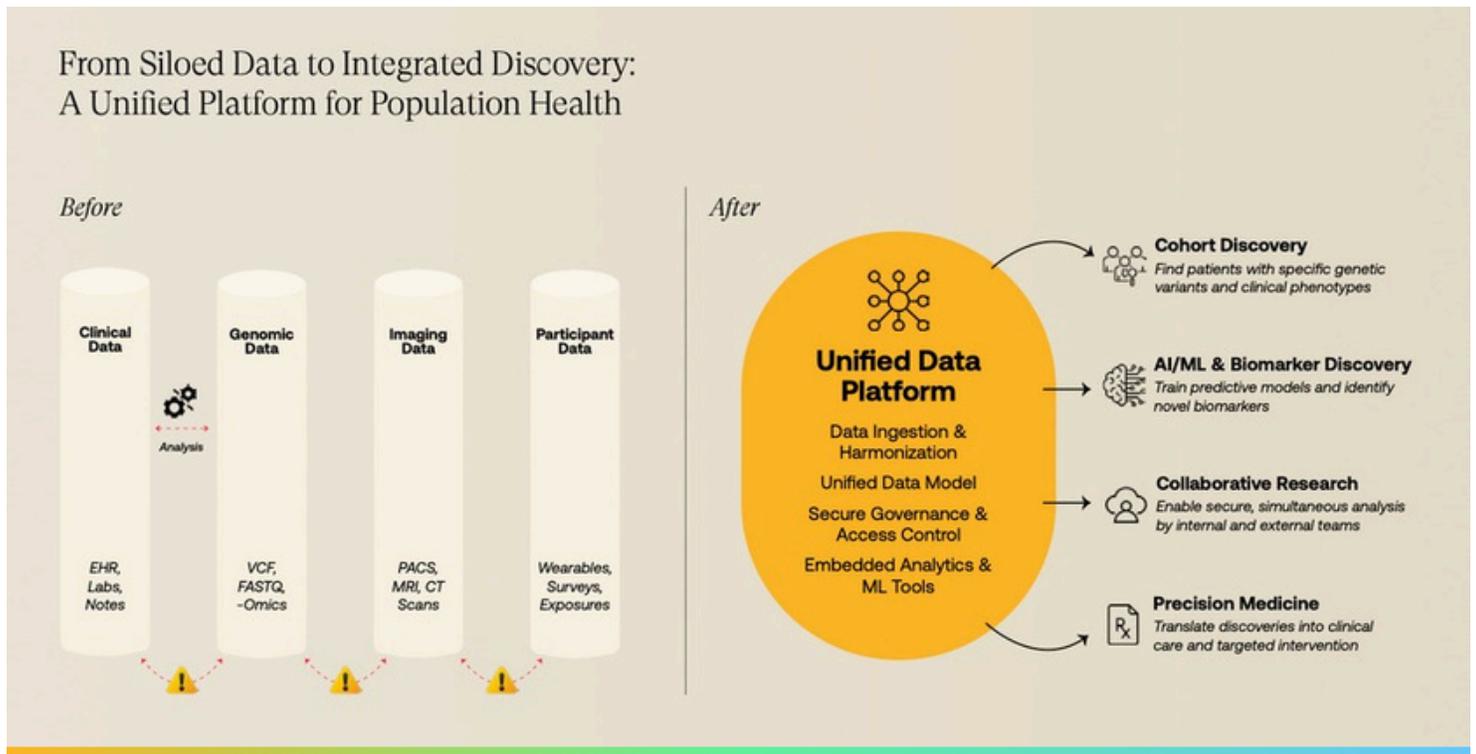


Figure 1: DNAnexus unified data platform

**DNAnexus provides a cloud-based multiomic and biomedical data platform that directly addresses these challenges. It has been battle-tested by leading national projects like the UK Biobank.**

- **Unified Data Integration:** Combines genomic, clinical, and other data into a single source of truth with an intuitive cohort browser.
- **Scalable Analytics:** Provides high-throughput, on-demand compute for complex analyses, supporting major workflow languages and AI/ML tools.
- **Robust Security and Compliance:** Built with industry-leading security, including end-to-end encryption, fine-grained access controls, and complete audit trails to meet standards like HIPAA and GDPR.
- **Secure Collaboration:** Enables a "bring the user to the data" model where internal and external teams can collaborate securely without duplicating data.

*Cloud platforms like DNAnexus have made launching a population-scale genomics program a financially viable goal.*

This model lowers the cost of entry by shifting from prohibitive upfront capital expenditures to a scalable operating expense. By leveraging a proven platform like DNAnexus, health systems can reduce operational costs, accelerate discovery, and build a sustainable program that integrates genomic insights into everyday healthcare.

**Ready to learn more? Contact us today to schedule a platform demo: [DNAnexus.com/contact](https://dnanexus.com/contact)**