sapio sciences

Case Study

Sapio Sciences Helps a Biotech Prepare for "What Comes After Terabytes?"

The Sapio Platform Improves Sample Tracking Now and Fully Integrates Data Soon

About the Project

Client Application
Pre-clinical development of autologous induced-pluripotent stem cells

Product
Sapio Laboratory Platform

Industry
Biotechnology

Snapshot

A development stage biotechnology company focused on personalized cell therapies combines stem cell biology with the latest artificial intelligence and genomic approaches to investigate patient-specific, restorative treatments.

The biotech adopted the Sapio Platform in 2023, which incorporates the Sapio LIMS℠ and Sapio ELN℠ into a modern, unified informatics platform, and embarked on a 3-phase integration project to manage its exponential data growth.

- **Phase 1:** Configure and automate dynamic experimental workflows, track all sample information, and fully integrate data with ELNs.
- **Phase 2:** Enable the translational science department to record and track histology and data types and link them back to the original samples.
- **Phase 3:** Upload legacy data and integrate all sample data, historical assay data, and cell lines.

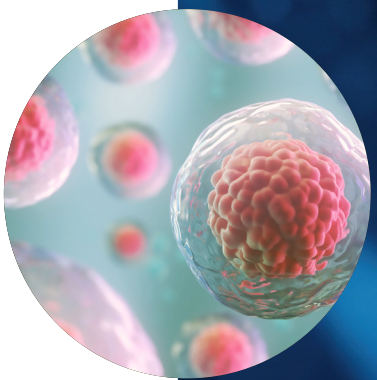
The Customer

In 2023, the biotech recognized that its unique R&D capabilities were producing exponential amounts of data. By 2025, it expects to generate about 500 Gigabytes (Gb) of data for each new patient as it quickly accelerates from 250 to 400 Terabytes (Tb) of total data storage. This led to the question, "What comes after Terabytes?" In addition, as it progresses from startup to mid-size clinical biotech, data types are expanding to include whole genome sequencing, RNA and scRNA sequencing, SNP arrays, multi-omics, histology and wet lab datasets, microscopy, and importation of public datasets.

The Solution

The subject matter expert for the project crowdsourced input from all stakeholders to understand the gaps in its present sample management system through an effective, albeit low-tech, method of color-coded post-it notes on flip chart pages. Armed with results of the analysis, the team defined a tangible, concise list of key components they wanted in a LIMS, highlighted by sample and project management, an easy to learn and use scientific data repository, data integration from diverse sources (legacy and newly generated), and security to keep trade secrets safe.

From the list, the team developed a quantitative assessment scorecard and used it to evaluate the three top competitors in the field. Sapio Sciences outscored the other two by large margins — 50% and 100%, respectively. Beyond the numbers, the team was impressed that Sapio integrated the laboratory information management system (LIMS), electronic laboratory notebook (ELN), and scientific data management system (SDMS) into a single, unified platform. According to the subject matter expert, “As an autologous cell therapy lab, we are very niche focused, so another important factor was the ease with which our subject matter experts could optimize the system for specific R&D projects.”



Results/Benefits

With Phase 1 implementation completed, the biotech has been able to identify specific sample management improvements. Previously, an experiment required cells to be manually identified in a lot tracking sheet, manually deleted from electronic storage, with cell identification physically documented in worksheets. Now cells are easily searched in the database, selected for experiment, automatically removed from the storage database, and cell line information is automatically populated in a new experiment. And samples shipped to the certified test lab that were previously tracked manually are now automatically tracked.

Before implementation, a great deal of information was entered manually into worksheets and lab notebooks. This was time consuming, increased the potential for manual data recording errors, and provided no systematic organization of sample information and data. Now, tracking and recording is quick and efficient — unique scannable barcodes reduce human error, data output is automatically linked to samples, and cell lines are mapped hierarchically.

Lessons learned from Phase 1 implementation include:

- Spend time to define and establish workflows and practices within your organization.
- Strong communication internally and externally (with Sapio) aligns everyone's expectations with actual outcomes.
- Be flexible: the way you are currently doing things may work, but after a short learning curve, something new may work more efficiently and effectively.
- Build dynamic and evolving workflows to enable growth.

These lessons will serve as a guidebook for Phase 2, scheduled to begin soon (Q2 2024), which will enable the translational science department to record and track histology and data types and link them back to the original samples. Finally, in Phase 3, the biotech will upload legacy data and integrate all sample data, historical assay data, and cell lines.

The subject matter expert uses the analogy of a "file cabinet" to describe the biotech's ultimate vision at project completion. "Our terabytes of data will be connected in Sapio, and our scientists will be able to quickly, easily drill down from an experimental result to the raw data for a more complete picture of what happened and why." And with a unified informatics platform, the biotech will be ready for what comes after terabytes.