tetrascience

Data Automation and Near Real-Time Data Capture

CASE STUDY

With Tetra Data Platform (TDP), Jounce Therapeutics saw a significant reduction in manual data intervention while enjoying easier, faster search. Benefits include improved data integrity and shifting scientists' focus back to developing therapeutics

EXECUTIVE SUMMARY

Jounce Therapeutics aims to transform the treatment of cancer by developing immunotherapies that can restore, enhance, or mimic the immune system's attack on target cells. This approach prioritizes targets and identifies related biomarkers to match the right immunotherapy to the right patients for meaningful and long-lasting benefit.

To maximize the value of data generated from a wide array of scientific lab instruments and software systems, Jounce needed to take a data-centric approach to their data management. With end-to-end data automation that includes capturing, centralizing, and harmonizing data in the cloud, scientists at Jounce can effectively access, manage, search, and retrieve their scientific data while simultaneously reducing the need for manual intervention and increasing data integrity.

When considering various data solution vendors, Jounce's goal was to find an option that would liberate their scientists from the manual mechanics of data processing, improve protein purification and production data capture and management in a centralized data warehouse, and automatically integrate the data with their LIMS. To do so, Jounce's Head of IT and Head of Protein Production identified the following requisite solution features:

- Automated ingestion and storage of raw experimental data into their internal LIMS to enable data capture, analysis, and documentation efficiencies

- Standardized data capture through end-to-end data for the product development teams and provide programmatic data access

- Modern search tool for scientists to search and retrieve production, purification, and analytical data

JOUNCE THERAPEUTICS

Company Goal

- Jounce's goal was to liberate their scientists from the manual mechanics of data processing and provide near real-time data capture.

- Promote data access with a centralized data repository

- Enable programmatic access to data

- Provide limitless scalability of data processing and storage

- Improve data capture with end-to-end automation

CHALLENGES AND SIGNIFICANCE

Jounce needed a way to efficiently manage their scientific data across lab instruments, including ÄKTA Unicorn and ELN/LIMS systems, in a centralized location in the cloud, and to eliminate data wrangling to improve outcomes.

Their scientists were spending a disproportionate amount of time using analog methods for tracking large amounts of data generated before transcribing results from PDFs into Excel spreadsheets. This was no small task, as the team did roughly 250 experimental runs/month and scientists spent days manually searching for, downloading, and pasting chromatogram images into their lab notebooks. Before moving forward with new experiments, scientists needed to document all the necessary information, quickly resulting in a bottleneck that took their time away from the lab. This level of manual intervention increased the likelihood of potential errors made during data transcription, thus increasing the risk to data integrity. A review process was required once scientists completed data transcription to ensure no mistakes were made before entering the information into their ELN/LIMS to address this added risk.

The scientists at Jounce found that they were losing significant time searching and processing data from instruments to their ELN/LIMS, which sometimes resulted in the need to repeat experiments, increasing cost, delaying decision-making, and decreasing the ability to spot data trends due to inconsistent data capture and processing. The challenge was exacerbated when scientists needed to locate historical data from previous years.

JOUNCE TACKLES DATA COMPLEXITY WITH TETRA DATA PLATFORM (TDP)

In 2017, Jounce engaged with TetraScience to better manage data generated by lab instruments and provide their scientists with a "hands-free" way to:

- Capture, catalog, and search data whenever and wherever scientists need to do so

- Integrate experimental data across ELN data warehouse and LIMS

- Shift scientists' focus away from manual data intervention and experiment documentation back to the science

Jounce quickly realized that TDP automatically integrated the ÄKTA Unicorn chromatography pipeline with their ELN data warehouse and then automatically ingested the data into their internal LIMS in a standardized way. Scientists monitored experimental runs as the data streamed from the pipelines, allowing them to track pipeline status and quickly determine whether a run was completed successfully. This allowed scientists to programmatically access and interact with the data, build dashboards, and run reports for analysis. Another benefit was that they could easily search the data warehouse for old and new data.

TDP eliminated the need for manual data transcription and provided "near real-time" data capture in the data warehouse. It provided Jounceaccess to the data from which scientists built dashboards to better interrogate the data and let them expose data across teams faster.

> *"Integrating lab instrument data with data management tools is a challenge faced by many scientific organizations, including Jounce. Leveraging Tetra Data Platform enabled Jounce to implement a vendor-supported, LIMS-agnostic solution for this problem, thus alleviating the need for custom integration solutions to be developed, maintained, and supported in-house."*
>
> - Shannon McCabe, Principle Informatics Analyst, Research Informatics, Jounce Therapeutics

OUTCOMES

TDP automated data capture, harmonization, and integration, thereby eliminating the high level of manual data intervention (location, curation, and transcription) previously required. Data are automatically captured, harmonized, and available directly in the data warehouse once the experiment finishes. The data are subsequently integrated automatically integrity. Jounce scientists can see in near real-time when the ÄKTA Unicorn data are generated and captured, when the run completed, and whether there were any issues.

Implementation of TDP has eliminated multiple analog processes, improving experimental efficiency through automation and a streamlined data review process. Additionally, internal stakeholders have the ability to self-serve when looking for data, further reducing the time spent on locating data.

Today, the scientists at Jounce focus on higher-value work, avoid repeating experiments, and time spent on rectifying inconsistent data that could impact the ability to gain valuable insights. They easily locate and retrieve production, purification, and analytical data for query and analytics. Most importantly, Jounce moves more rapidly towards its mission of developing novel immunotherapies to help patients.

KEY BENEFITS

Data are automatically available and accessible

- Near real-time data capture in data warehouse & LIMS

- End-to-end data automation across instruments

- Streamlined data access and search for easier query

Increased data integrity

- Reduction in errors introduced via manual data processes

- Streamlined data QC/review process

- A complete experimental audit trail through capture of metadata with scientific context

Enable scientists to accelerate research

- Shift focus away from manual tasks back to the science

- Increase productivity due to automation Interrogate data much more efficiently

- Collaborate easily with improved data access and sharing

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