

Powering Prelude's Discovery Platform

CASE STUDY

TASKS TAKE SECONDS, NOT HOURS, BY ELIMINATING MANUAL DATA PROCESSING

Prelude Therapeutics (PTx), a clinical-stage biopharmaceutical company, approached TetraScience to upgrade a highly manual workflow, with the goal to significantly reduce the multiple hours of scientist time each week spent on manual work, and redirect that time to higher-value activities. Scientists were moving raw data in .csv format to desktop computers from Envision plate readers and Tecan software, processing it locally, opening in GraphPad for analysis, and finally uploading the data to Dotmatics. In just under 7 months, TetraScience built a cloud-based data processing solution to automate Dotmatics, Tecan, Titian, and PerkinElmer Envision workflows with downstream data science applications. PTx now has direct access to a previously unconnected part of their instrument landscape.

SUCCESS METRICS

Saved Time	Reduced Complexity
<ul style="list-style-type: none"> Save 1 hour/run for data aggregation, shifting ~3 FTEs to higher-value work Provide structured and clean data integration for other systems to use PTx Small Molecule Discovery Platform 4X compounds screened per week 	<ul style="list-style-type: none"> Reduce manual errors; results are directly calculated and derived from raw data Automation allows centralized compound management Versatile pipelines are configurable and extensible to handle new instruments and data formats.
Accelerated Insight	Improved Transparency and Future-Proofing
<ul style="list-style-type: none"> Improved data-driven decision making (Results are calculated and generated much faster) 	<ul style="list-style-type: none"> Streamlined reporting and transparency across the PTx organization

Who Should Read this Study?

Bench researchers, data scientists & engineers, oncology specialists, R&D IT professionals, lab operations professionals, instrument specialists, R&D leaders



Company Profile

- Prelude Therapeutics (NASDAQ: PRLD) is a clinical-stage biopharmaceutical company designing and developing a pipeline of novel, orally-bioavailable, small-molecule therapeutics that target key drivers of cancer cell growth, survival and resistance. PTx treats emergent resistance resulting from primary resistance to the drug targets, acquired resistance through signaling pathway alterations, or alternative pathways that bypass a drug target's primary mechanism of action.

Product Focus

- Orally bioavailable, small molecule therapies targeting cancer cell growth, survival and resistance

Industry

- Biopharmaceuticals

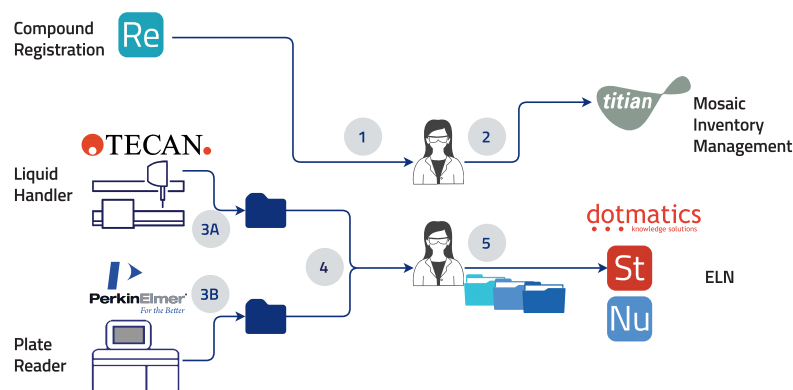
Therapeutic Areas

- Oncology, Advanced Solid Tumors & Hematologic Malignancies

SIGNIFICANCE

Prelude Tx's intense focus on oncology drug resistance requires an in-depth data strategy. Their discovery programs are focused on the identification of novel small-molecule inhibitors targeting key signaling and gene transcription pathway proteins. New data sources and targets can now easily be added to the Tetra Data Platform to support PTx's discovery needs. By ensuring that scientists can tackle higher-value activities, PTx realizes higher data quality and increases efficiency at multiple levels within its Discovery Research operations. Going forward, the Tetra Data Platform will augment sample and high-throughput screening (HTS) databases, enabling—not hampering—new scientific discoveries.

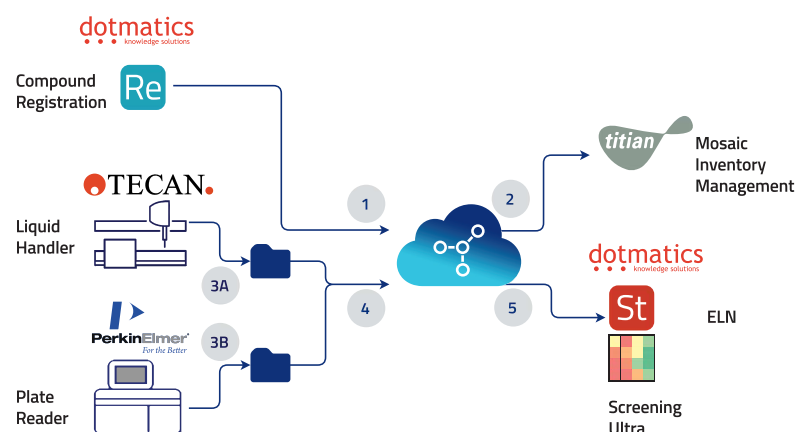
Scheme 1 - Prelude's Manual Process in 2019



1 2 Compound management is done manually by scientists.

3A 3B 4 5 Scientists aggregate incoming data manually and transform it for use with analytics software.

Scheme 2 - The Tetra-enabled automated process in 2020



1 2 Compound management automated.

3A 3B 4 5 Data aggregated automatically and made available for analytics.

VALUE

- 1 hour per run saved for data aggregation (3 FTEs shifted to higher value work)
- 4X compounds screened per week
- Centralized compound management

WHY CHANGE AND REPLatform?

Many of PTx's current datasets, while interrelated from a scientific perspective, were operationally independent of one another, indicating a need for centralization and harmonization. PTx's scientists and informatics team relied heavily on the manual collection, transfer, and manipulation of data.

OUTCOMES

The Tetra Data Platform (TDP) ensures that that scientists at Prelude Therapeutics recover precious time to dedicate to higher-value activities. These benefits enable Dotmatics' Informatics Suite, Tecan, and Titian's Mosaic SampleBank processes to create value instead of costing scientists manual data processing time.

SYSTEM INTEROPERABILITY

Challenge:

- Need for integration of PTx instruments and software
- Manual processes are used in place of automation and data integration

The TetraScience Solution:

- Tetra Data Platform provides PTx with a data management solution that is tailored to its business processes and needs; system now occupies 3x FTE value
 - HTS instruments and software systems easily connect, which solves vendor integration and interoperability issue
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DATA STANDARDIZATION

Challenge:

- Instrument data are stored in vendor-specific formats
- Analysis and manipulation are cumbersome outside of vendor provided tools
- Manual conversion to Dotmatics' format required

The TetraScience Solution:

- The Tetra Dotmatics connector automatically detects new or modified compounds in the Dotmatics Register and triggers a pipeline to push the information to the inventory management software
 - Tetra File-Log Agent automatically detects files produced and moves raw instrument files into the data lake which triggers pipelines to parse, merge, and push to Dotmatics Studies
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ACQUISITION & VERSION

Challenge:

- Scientists and internal informatics leads must manually move and update files from multiple locations
- Metadata from the plate-mapping software are not captured

The TetraScience Solution:

- TetraScience offers a user interface and REST API to search, categorize and download processed data
- JDBC connector to access structured data via SQL and prepare it for tools such as Spotfire and Tableau

"With the implementation of TetraScience TDP, Prelude's Discovery platform has its scalability issues resolved. Many tasks that once took hours are now completed in seconds."

- William Gowen-MacDonald, Senior Research Scientist, Prelude Therapeutics

To learn more how to optimize processes and accelerate discovery, visit tetrascience.com



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