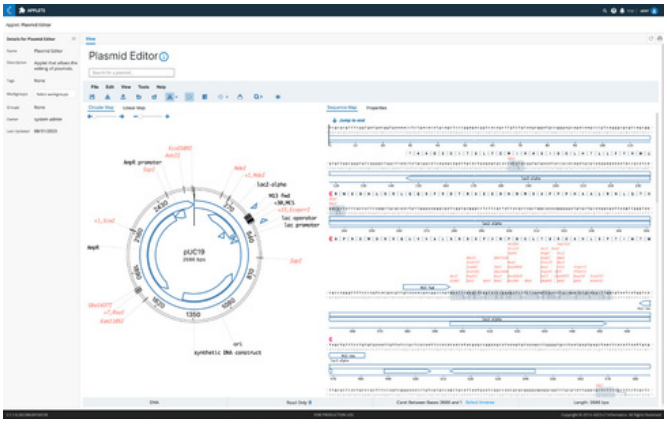
L7|ESP Enterprise Science Platform™ CASE STUDY

Creating an Efficient and Transparent Laboratory and Data Management Process to Expedite the Formalization of Internal R&D Standard Operating Procedures (SOPs)

Developing new medicines for traditionally difficult protein targets requires new approaches that can easily be compared to building an airplane from scratch and learning to fly it. Think Bioscience is exactly at this stage. They are utilizing synthetic biology to both identify new natural products that can act as starting points for new therapeutic development, and also help screen through those newly identified, natural products in an efficient way. Think Bioscience's approach is unique, in that they are optimizing their entire laboratory and data management processes while also formalizing their internal R&D Standard Operating Procedure (SOP). In other words, they are trying to fly the plane while still building it.



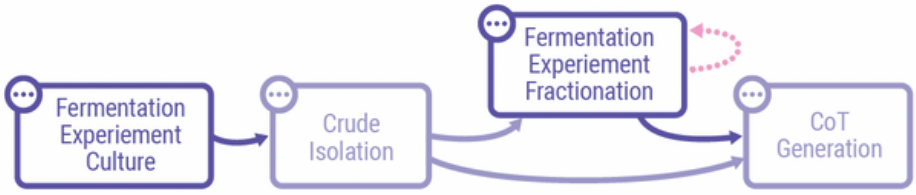
To scale and standardize their proof-of-concept (PoC) processes and ensure all data collected follows a rigorously established SOP, all disparate data points (including metadata) collected are tracked and linked back to each specific experiment available within a centralized database. Think Bioscience needed to modernize, adapt, and improve their internal excel spreadsheet-based processes to accommodate their need to manage all entities and data in one single source of truth. The Unified Platform L7|ESP™, with its Workflow Orchestration system, was identified as the perfect solution to bring organization, efficiency, and scalability to this process while formalizing the internal SOP process. Furthermore, to identify new protein targets using plasmid libraries and ensure efficient screening and identification of sequences of interest, and to be able to search through existing libraries in bulk, Think Bioscience took advantage of the plasmid editor, data ingest app, and search capabilities available as open-source components in the L7|HUB to create an efficient and transparent process.

Challenge	L7|ESP Provides the Solution

Tracking and Collecting Large Disparate Data at Scale	• Flexible and fully featured LIMS software that captures all process information
	• Integrates sample specific information to inform all business processes
	• Collects, tracks, manages, and stores all disparate data types for all experiments
	  • Stores gigabytes of data, including sequence, chemical structure, and *in vitro* assay data
	  • Links disparate data collected to central experiment
	• Tracks all processes, instruments, and samples, including location

Formalizing SOPs While Developing the Experimental Details	• Quickly reflects SOP rewrites • Provides the plasmid editor to generate and track plasmids with DNA variants to be used for screening purposes • Streamlines library screening and data generation
Understanding Process Efficiencies and Inefficiencies	• Functions as an organizational data hub which support easy data retrieval • Supports querying and mining the large data to inform process details • Saves downstream analytics time
Managing Data Integrity Risk	• Organizes data and makes them accessible, following FAIR data principles • Improves data reporting and transparency • Removes the need to work with many different tools • Centralizes library generation, data collection and tracking, and data querying • Registers all libraries, samples, and experimental details • Functions as the single source of truth
Maintaining all Plasmid Data	• Uploads scale level modifications via the ingest app • Stores high-throughput plasmid data • Integrates plasmid database (DB)
Managing the Many Relationships Between DNA and Chemical Products	• Uses the plasmid as the pivotal entity and assigns children and sibling relationships to plasmid libraries • Creates a seamless integration and experience to relate plasmid design, modification, and creation to LIMS features and business processes • Creates plasmid samples and libraries, assigns the plasmid to a library, and associates it with all metadata
Scaling the PoC	• Integrates, tracks, and manages all laboratory instruments/equipment, robotics, supplies, and other resources
Ensuring Adherence to Data Provenance	• Ensures highest standards of compliance, traceability, and data provenance • Provides an audit trail for each entity from sample to screening, including field changes

The Unified Platform L7|ESP, with its Workflow Orchestration system, brings organization and efficiency to Think Bioscience's R&D SOP implementation process, facilitating disparate data collection, tracking, and storing. L7|ESP streamlines library screening and data generation, integration of a plasmid editor, plasmid libraries with associated metadata, and efficient data mining and retrieval of its organizational data hub. Lastly, the system enables scalability, transparency, and connectivity between team members involved in formalizing their SOPs.



The Unified L7|ESP Platform, with its Workflow Orchestration system, is the ideal solution for us to modernize, adapt, and improve our internal Excel spreadsheet-based processes to formalize our SOPs and to manage all entities and data in one single source of truth.

- Joel Krajl, Director Platform Innovation, Think Bioscience

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L7 Informatics reimagines data intelligence for modern life sciences and healthcare organizations. Beyond simple data management, L7 provides tools that optimize the flow of information between processes and people, unlocking innovation at every stage of the clinical, research, and manufacturing value chains.