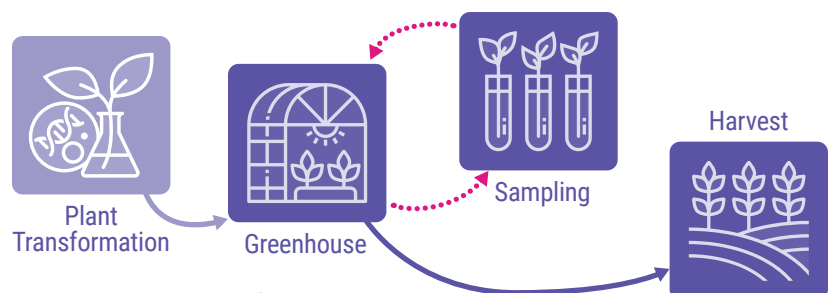


# Alpine \* Bio

## Supporting Alpine Bio in Their Mission to Transform Plants into the World's Most Regenerative Ingredient Factories

Alpine Bio is taking plant genetics to the next level by using plants as highly efficient protein production factories. They have developed an end-to-end biomanufacturing platform, currently validated with the proof-of-concept protein, bovine milk protein casein. The approach they are taking is using genetics to insert the gene of interest (e.g., the casein gene) into the plant's genome (e.g., the soybean plant) to overexpress the protein within the plant and harvest the product for cheese production. The overall goal is to create an animal-free cheese using the plant expressed protein that provides dairy products with their nutritional and functional properties. This includes the characteristics of a traditional dairy cheese product, with its stretch and melt features, while also tasting great, of course. This requires tracking the success of molecular modifications to screen and identify optimal promotor-casein constructs that deliver the best expression yields and cheese-like characteristics.

Implementing an efficient, sustainable, and scalable process that supports the tracking of thousands of plants during their growth stages, as well as tracking associated seeds, extracted material, and molecular constructs, is of critical importance. Even more so when 25 people, split across five different teams and two sites, are involved in collecting, summarizing, and researching all the data. While the data volume is not necessarily the challenge, maintaining the complex connectivity between the data points is. The Unified Platform L7|ESP®, with its Workflow Orchestration and Data Contextualization, was chosen as the central data platform to accommodate the data collection and connectivity requirements. L7|ESP provides real-time updates with all the results being linked back to the source plants so that team members know in "real time" which lineages to retain or discard for future experiments to deliver an optimized product. Lastly, L7|ESP provides calculations to set up molecular and protein analysis experiments.



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## L7|ESP HELPS ACHIEVE RESEARCH GOALS AND ADDRESSES DATA TRACKING AND LINKING CHALLENGES

Challenge	L7 ESP Provides the Solution
Cumbersome large Google sheets to track and aggregate data, complicating syncing data across all Master Data sheets	<ul style="list-style-type: none"> <li>• Collects, tracks, manages, and stores all samples, plants, lineages, experiments, data, and meta information across the entire organization within one platform                             <ul style="list-style-type: none"> <li>• Removes the requirement of manual sample tracking</li> <li>• Streamlines data access for anyone at the organization</li> </ul> </li> <li>• Tracks sample location via the fully integrated Container application</li> <li>• Creates transparency across research groups which results in enhanced, company-wide research efficiency</li> <li>• Enforces consistency for the lab users</li> <li>• Tracks the well-being of a plant</li> </ul>
Non-standardized data entry with data being stored in too many different places	<ul style="list-style-type: none"> <li>• Receives data once and links all entities to experiment information, location data, user (i.e., researcher) information, and more</li> <li>• Simplifies the data ingestion process</li> <li>• Updates information in real-time</li> <li>• Provides consistent data formats</li> <li>• Prevents individuals from accidentally changing column headers and introducing typos/errors</li> <li>• Allows users to extend and design their own data collection applets and reports</li> </ul>
Manual sample tracking and loss of samples	<ul style="list-style-type: none"> <li>• Automates sample registration, tracking, and information gathering                             <ul style="list-style-type: none"> <li>• Prevents sample loss</li> <li>• Standardizes data entry which in turn reduces errors through consistent naming schemas</li> </ul> </li> <li>• Integrates with label printing tools                             <ul style="list-style-type: none"> <li>• Matches read information across the entire database and populates fields accordingly</li> <li>• Custom workflow includes buttons for QR code generation, barcode printing, and for sample/process tracking</li> <li>• Removes manual label writing and reduces time and errors</li> </ul> </li> <li>• Supports easy upload of sample data and their information and dragging them into worksheets</li> <li>• Applies logic to evaluate plants and understand when plants are ready for the next set of experiment(s)</li> <li>• Ensures traceability and sample/data provenance</li> <li>• Provides an audit trail for each entity, whether a seed, a plant, or a lineage, including their specific locations                             <ul style="list-style-type: none"> <li>• Tracks experimental details, who performed the experiment, and when</li> </ul> </li> </ul>
Tracking and collecting all samples at scale	<ul style="list-style-type: none"> <li>• Flexible and fully featured LIMS software that captures all process information                             <ul style="list-style-type: none"> <li>• Associates all sample information with the workflow which is associated with the plant meta data or tags</li> <li>• Tracks seed entities, seed pods, seed/plant location, and seed/plant harvest status</li> </ul> </li> <li>• Takes advantage of integrated Inventory and Location applet                             <ul style="list-style-type: none"> <li>• Improves coordination between teams, sample tracking, and sample hand-off</li> </ul> </li> <li>• Simplifies internal workflows</li> <li>• Informs all teams of plant status and sampling</li> </ul>

L7|ESP brings consistency and efficiency to the Alpine Bio research processes – a 50% increase in sample throughput compared to legacy manual tracking and sample management processes. Facilitating, standardizing, and centralizing experiments, samples (e.g., seed, plant, and plant lineages), and data (e.g., sample location, sample processing details such as researcher and date/time), as well as preventing sample loss and ensuring traceability and sample/data provenance. The system not only offers the potential for accelerated development times, but also allows for better connectivity and communication between various research groups and team members.

*"At Alpine Bio, embracing innovation is essential for our journey. L7 Informatics' highly flexible Unified Platform L7|ESP revolutionizes how we track plants, samples, and lineages, empowering our R&D endeavors with a consistent process that has already resulted in a 50% increase in efficiency. We're excited to continue our partnership, leveraging L7 Informatics to modernize our digital infrastructure and shape the future of our industry."*

**- Magi Richani, CEO Alpine Bio**



L7INFORMATICS.com

1219 W 6th Street  
Austin TX 78703 USA  
+1 888 461 5227  
info@L7informatics.com

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.

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