Culture

PRODUCT OVERVIEW

Accelerate Bioprocess Development with Culture Console

Design Smarter. Execute Seamlessly. Learn Faster.

DESIGN SMARTER	EXECUTE CONSISTENTLY	STAY CONNECTED	LEARN FASTER
AI-guided DoE	Recipes + automation	Real-time remote monitoring & control	Analytics + AI

Overview

Bioprocess development works better when everything works together. Culture Console is a cloud-connected software platform that brings experimental design, bioreactor execution, data, analytics, and AI into one integrated environment.

Instead of moving between disconnected tools, spreadsheets, instruments, and datasets, scientists can manage the development workflow from a single platform, reducing manual work, improving consistency, and accelerating the path from experiment to insight.

One connected environment

Console connects directly with Culture's Stratyx™ 250 bioreactor platform and broader bioprocess ecosystem, helping teams carry experimental intent, execution data, analysis, and carrying subsequent learnings forward without rebuilding context at every step.

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Connect the Entire Development Cycle

Move from experimental intent to execution, insight, and scale-up in one connected environment.
Console is built around the bioprocess development workflow rather than a single task. Experimental intent can move directly into recipes and run configuration; execution data stays connected to the conditions that produced it; analysis and decisions remain linked to the experiment record.

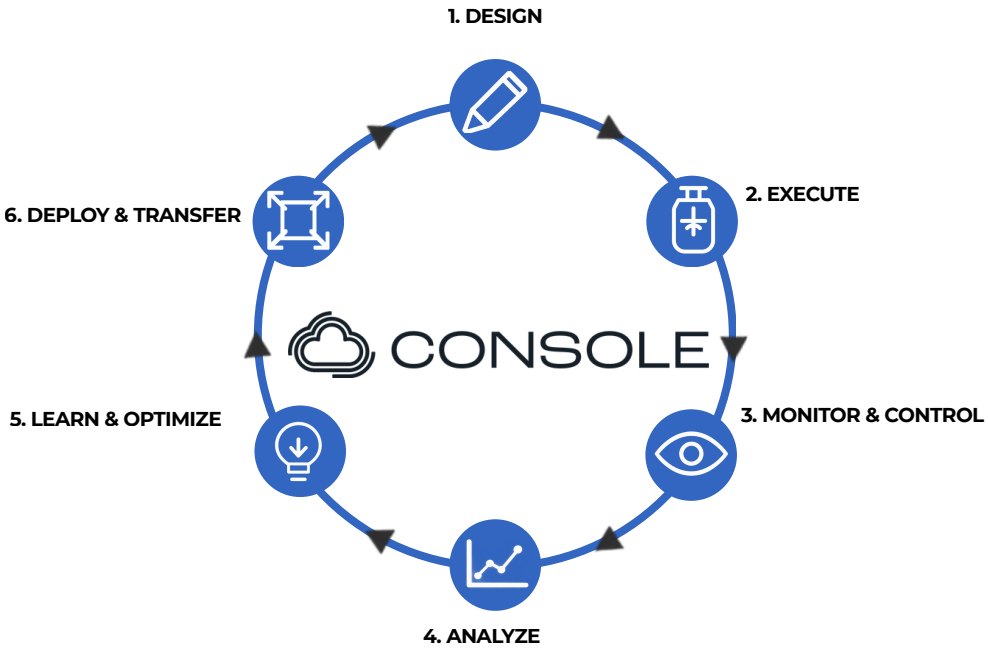

Figure 1. Closed-loop bioprocess development workflow within Console. Console provides a single connected environment for the full experimental cycle, enabling scientists to design experiments, execute bioreactor runs, monitor and control performance in real time, analyze results, learn and optimize from generated data, and support scale-up and transfer. By keeping each step within Console, insights from every run feed directly into the next decision, creating a continuous closed-loop workflow for faster, more consistent process development.

- **Reduce manual handoffs**. Move less information between spreadsheets, instruments, analysis tools, and separate records.
- **Standardize how work gets done.** Reusable recipes and workflows make study execution more consistent across runs and teams.
- **Keep context attached to data**. Process signals, conditions, events, and analytical results stay connected to the experiment.
- **Scale without changing the workflow**. Use the same software environment for a few reactors or larger parallel studies.

Designed for the full learning cycle

Planning, execution, analysis, iteration, and scale-up stay connected so each run can contribute to a growing, reusable process-development data layer.

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Design Experiments with ChatDoE™

Bring bioprocess-aware experimental design into the same connected development environment.

ChatDoE helps scientists move from a process question to a statistically grounded experimental designs in a single conversation, making design tradeoffs and statistical power easier to understand before runs are committed to the bench.

Describe
Provide the objective, factors, run budget, and relevant constraints. ChatDoE asks targeted questions about noise, blocking, and design goals.

Receive
Review candidate designs generated in parallel, including a recommended option and clear explanations of tradeoffs.

Execute
Use a run-by-run table with actual factor values plus a power summary showing the minimum detectable effect for model terms.

Why it matters

- **Compress design timelines.** Move from process question to experimental design in minutes rather than days.
- **Understand your run budget.** Automatic power analysis shows what effect sizes the experiment can detect before execution.
- **Reduce experimental waste.** Match the design to real constraints rather than over-engineering the study.
- **Make rigorous DoE more accessible.** Scientists can receive design guidance without requiring formal DoE training.
- **Preserve design rationale.** An exportable session record captures the design conversation and decisions.
- **Support diverse studies**. Design types include Full Factorial, CCD, Box-Behnken, Plackett-Burman, Definitive Screening, D-Optimal, and Fractional Factorial..

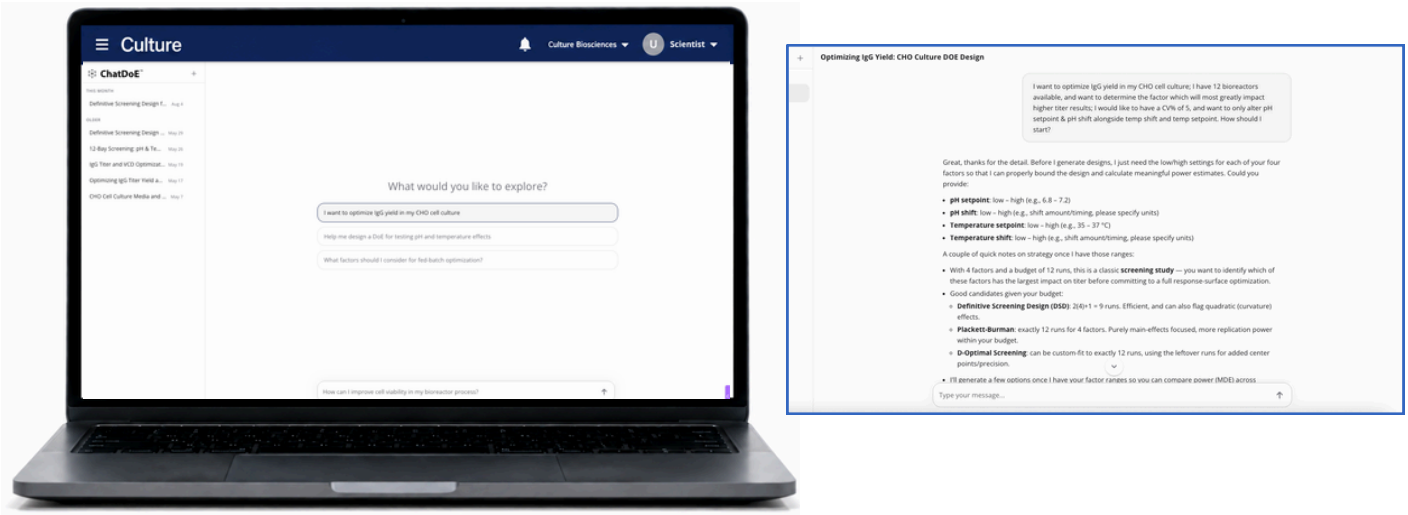

Figure 2 and 3. ChatDoE experimental design workflow. Example screenshots showing how ChatDoE helps users define experimental objectives, generate structured DoE designs, explore parameter combinations, and streamline experiment planning through an intuitive conversational workflow.

Built for bioprocess questions

Use cases include upstream process optimization, viral vector process development, media component screening, and constrained or blocked experiments.

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Move from Design to Executable Recipes

Translate experimental intent into standardized, reusable run configuration.

Console closes the gap between planning an experiment and running it. Visual recipes, parameter configuration, and workflow automation make it easier to convert a study plan into a repeatable execution package while keeping the design context attached to the run.

Design and Build

- **Create visual recipes.** Build clear, step-by-step workflows.
- **Configure parameters.** Set targets, conditions, and experiment-specific values.
- **Reuse workflows.** Adapt prebuilt protocols and actions and adapt as needed.
- **Extend automation.** Add custom scripts as needed.

Standardize and Collaborate

- **Reduce variability.** Standardize study setup and execution.
- **Keep changes traceable.** Maintain aligned, version-controlled workflows.
- **Work in one interface.** Design, run, monitor, and analyze Stratyx 250 data within Console.
- **Scale seamlessly.** Expand from small studies to larger parallel experiments.

From Plan to Run

Study >>>>> Design Recipe >>>>> Executable Run Recipes

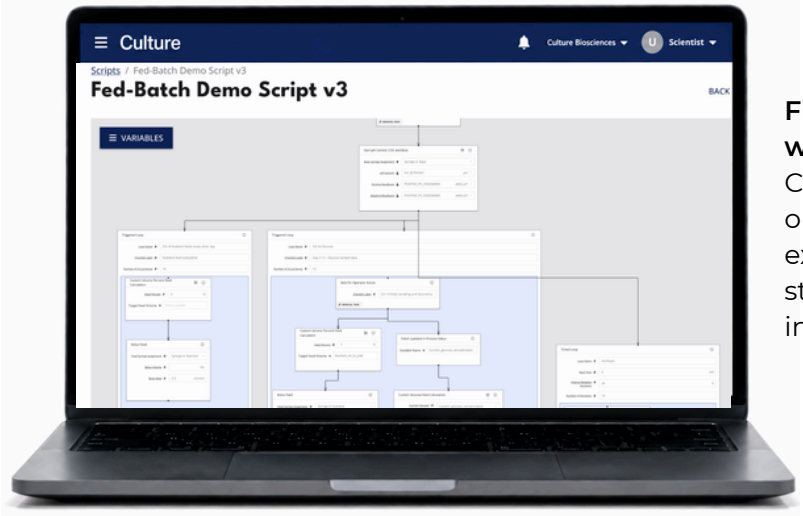

Figure 4. ChatDoE experimental design workflow. Example screenshots showing how ChatDoE helps users define experimental objectives, generate structured DoE designs, explore parameter combinations, and streamline experiment planning through an intuitive conversational workflow.

From planning to execution without the handoff

A connected recipe workflow keeps process intent, configured conditions, and resulting data in the same software environment, making studies easier to reproduce, review, and iterate.

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Monitor and Control Every Run in Real Time

Stay connected to experiments as they execute, from a single reactor to a parallel study. Console provides cloud-based visibility into your active bioreactor runs, allowing teams to track process behavior, respond to events, and keep a structured record of what happened during execution. Remote access helps scientists stay close to the run without being physically tied to the instrument.

Design and Build

Run Status	In Progress
Process view	Live time series
Events	Alerts + annotations
Access	Remote monitoring & control

Execution Capabilities

- Live process data monitoring
- Real-time dashboards
- Remote monitoring and control
- Alerts and response workflows
- Manual interventions and controls
- Experiment annotations and notes
- Equipment and real-time sensor management

See the process, not just the endpoint

Because live data, configured setpoints, interventions, annotations, and sensor context can be viewed together, teams can understand not only what the result was, but how the run evolved and what changed along the way.

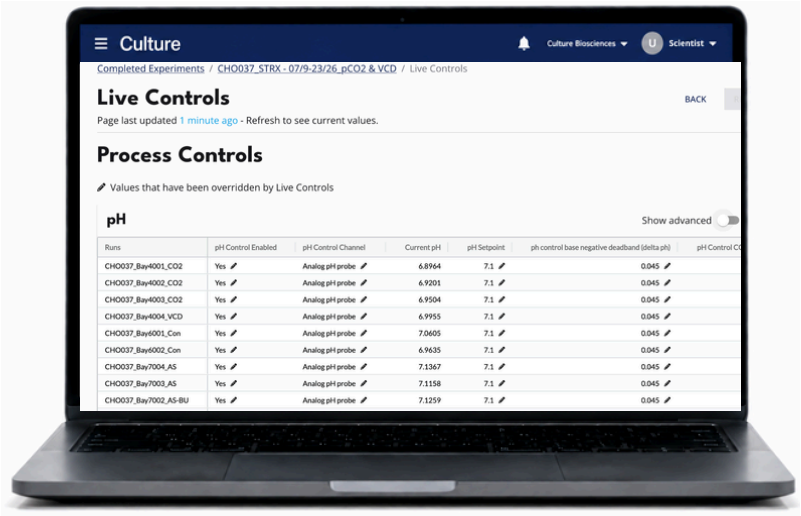

Figure 5. Real-time process monitoring and control within Console. Console provides a centralized view of live bioreactor controls across parallel runs, allowing users to monitor current process values and adjust parameters such as pH, temperature, and control settings directly within the platform. This connected interface enables rapid intervention, consistent execution, and streamlined management of ongoing experiments.

Anywhere, anytime visibility

Cloud-native access is designed to keep scientists connected to their studies and support faster troubleshooting, collaboration, and decision-making across locations.

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Bring Every Run into Context

Make data easier to find, compare, interpret, and trust.

Bioprocess data is most useful when it carries the context of the experiment that produced it. Console brings live process data, offline measurements, events, annotations, and derived information into a common analysis environment so teams can evaluate experiments without rebuilding context by hand.

ONLINE PROCESS DATA

Stream real-time reactor signals and process trends into the experiment record.

OFFLINE ANALYTICS

Integrate and monitor analytical results alongside process data for more complete interpretation.

EVENT CONTEXT

Capture manual interventions, observations, additions, removals, and other run events that explain what happened.

GROUP + FILTER

Organize runs and conditions so comparisons can be made across experiments, batches, and study groups.

Use data quality signals to support review

Culture has used Console to publish run-level mass balance information at the conclusion of bioreactor experiments. This gives scientists direct access to a data-quality view that can support confidence in results and help flag runs that fall outside expected ranges for further investigation.

Fast, complete, contextualized data

The goal is not simply to collect more data. It is to keep the right experimental context attached so scientists can spend less time reconstructing datasets and more time interpreting results.

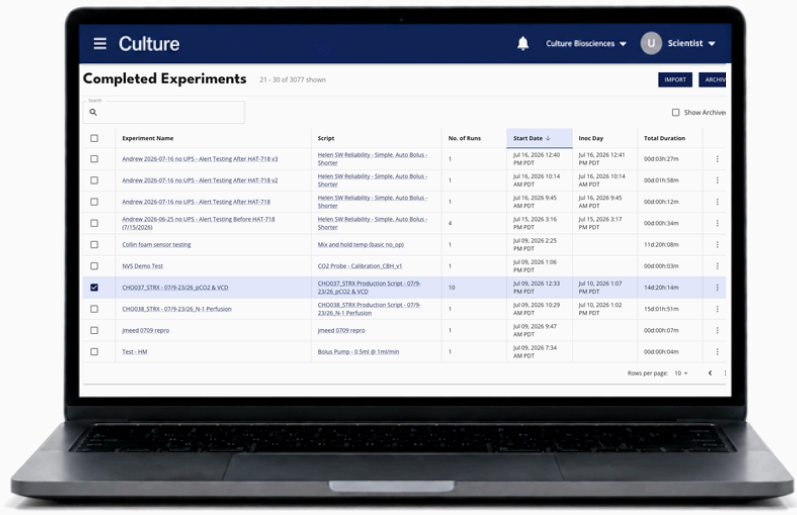

Figure 6. Centralized experiment history within Console. The Completed Experiments view gives teams a single, searchable record of finished bioreactor runs, making it easy to access past experiments, review results, and compare performance across studies. By keeping experimental history connected in Console, teams can quickly build on prior work and turn accumulated data into faster, more informed development decisions.

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Analyze, Learn, and Act Faster

Turn experimental data into trends, KPIs, models, and the next development decision.

Console is designed to keep analysis close to execution. Scientists can explore trends and patterns, compare conditions, use derived metrics, and connect results to broader analytics or modeling workflows without losing the experiment context that makes the data meaningful.

Analyze in context

- Visualize trends. See changes across time and conditions.
- Compare runs. Group and filter to focus on key results.
- Use derived KPIs. Calculate growth rates and other critical metrics with integrated KPIs.
- Optimize processes. Carry insights directly into the next experiment.

Extend the data layer

- Connect external systems. API-driven architecture supports integration of LIMS, ELN, and other data sources.
- Enable advanced analytics. Support statistical, AI, ML, and predictive models with connected data as input.
- Support closed-loop workflows. Connect live data can connect models back to decisions and bioreactor actions.
- Collaborate from one record. Keep teams aligned with shared, versioned context

From Data to the Next Decision

Data >>>>> Insight >>>>> Next Experiment/Decision

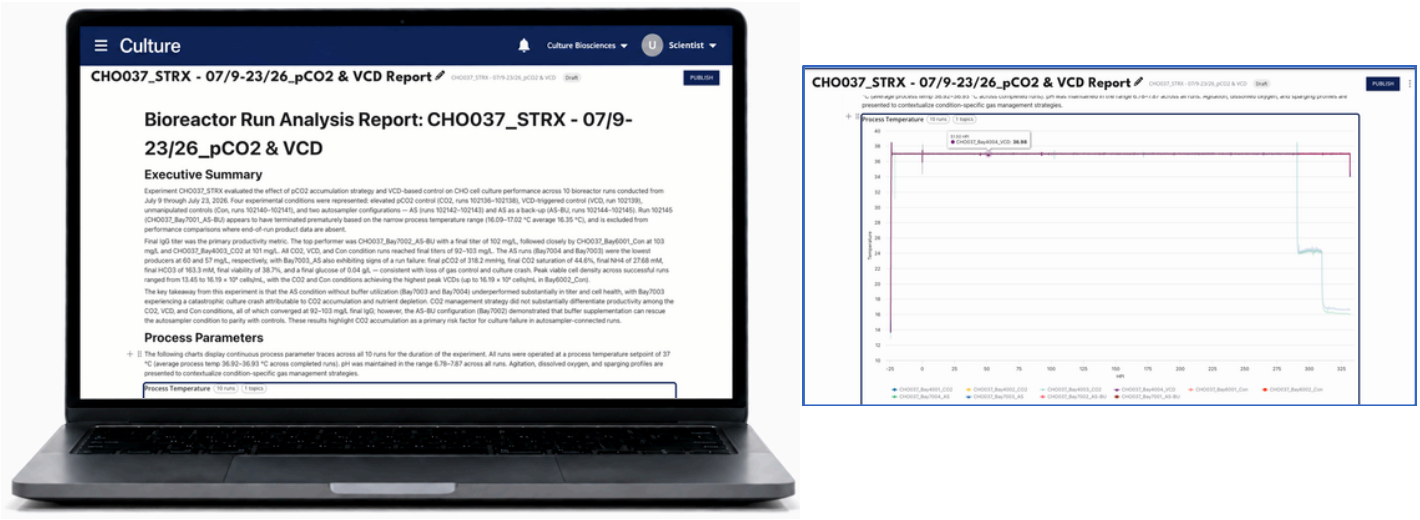

Figure 7. Integrated reporting within Console. Console brings experimental results, process data, and key run insights together in standardized reports, giving teams a clear, consistent view of performance across experiments. Centralized reporting helps streamline review, simplify data sharing, and move teams more quickly from results to informed decisions.

Turn every run into a reusable learning asset

A connected system of record makes it easier to carry lessons forward from one study to the next, from experiment design to recipe refinement, process understanding, and model development.

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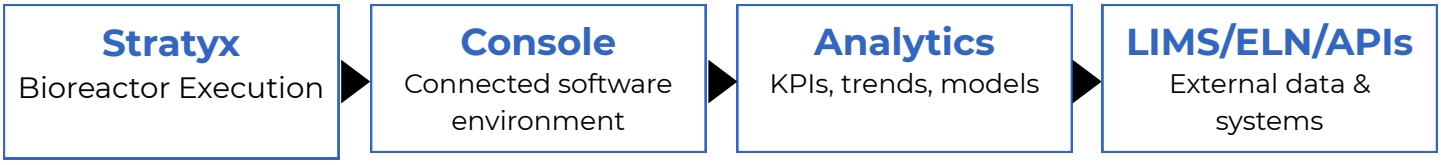
One Platform. Faster Learning. Better Bioprocess Decisions.

Connect instruments, workflows, data, analytics, and AI across the development ecosystem.

Console connects the software layer across experimental design, bioreactor execution, data, analytics, and AI—helping teams standardize development workflows and move more quickly from experiment to insight.



Data + context move forward; learning feeds the next experiment.

Built for bioprocess development

- Upstream process development and optimization
- Process characterization and robustness studies
- Scale-up and technology-transfer workflows
- Mammalian, microbial, and viral-vector development programs
- Small studies through large parallel experimental campaigns

Why Console

- Reduce manual work
- Standardize workflows
- Connect data and context
- Accelerate learning cycles
- Extend through APIs and AI

Bring design, execution, data, and decisions together.

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