

CASE STUDY

Intuitive Solutions and Automated Visualizations to Streamline Synthetic Biology



GOAL

Accelerating Synthetic Biology with Fully Unified Informatics

Synlogic is creating a novel class of living medicines. By genetically altering non-pathogenic bacteria found naturally in the human gut, Synlogic's medicines perform specific functions within the microbiome. Therapeutic synthesis can occur within the microbiome itself, without radically changing the human microbiota.

CHALLENGES

- Legacy software couldn't keep pace with Synlogic's need for rapid process iteration, putting the onus on scientists to manage manual data entry across disparate systems.
- Disparate systems of record for fermentation data hindered analysis and reporting, delaying critical business decisions.
- Without a central place to store the data produced by their bioreactors, scientists spent significant time tracking people down and sending emails.

KEY BENEFITS

One-Click Solution for Fermentation

After completing a reactor run, Synlogic's data is automatically uploaded and structured in Benchling and tied to its relevant experimental workflow.

Automated Visualizations

By leveraging the Benchling API, Synlogic automatically generates visualizations of their fermentation data. With these visualizations, they can track fermentation trends over time of individual and multiple fermentations.

Centralized Fermentation Requests

Synlogic's core platform development team runs fermentations for the rest of the organization. With Benchling, requesters see progress in real-time and can directly access and visualize their results the instant the data is compiled.



“We looked at a number of different LIMS systems to help manage our process development, but I don’t think any of this would have been possible without Benchling.”



Scott Hamilton, Senior Lead Process Engineer



Benchling Solutions

Structuring and unifying assays

- ✓ During and after fermentation runs, Synlogic's scientists use Benchling to run numerous assays to gauge characteristics such as optical density, cell health, and potency.
- ✓ Benchling Workflows structures these assays into trackable stages that automatically associate assay data to the fermentation run that it corresponds to.
- ✓ By unifying assay data and fermentation data, Synlogic improves scientist productivity and eliminates inaccurate and missing data.

Automating and visualizing fermentation runs

- ✓ Synlogic uses Benchling to automatically link bioreactor data to experiments.
- ✓ Through Benchling's APIs, Synlogic integrated their reactor software with Benchling. Fermentation data is automatically uploaded to Benchling and then automatically visualized through an integration with third-party data analysis software.
- ✓ By automating data centralization and visualization, Synlogic has built a "one click solution" for fermentation. They're able to make more informed decisions around process development much more quickly than ever before.

Centralizing and streamlining fermentation requests

- ✓ Groups across Synlogic rely on the platform development team to run fermentations for them. With Benchling, these groups have a single system to place fermentation requests and access data the moment it's generated.
- ✓ With Benchling Requests, requesters specify desired inputs and other experimental parameters. Taking advantage of the automations they've developed, Synlogic fulfills these requests and shares results and visualizations without any downtime.
- ✓ Groups throughout Synlogic get the results they need faster than ever before and no longer depend on outdated methods to work together.





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