Benchling **Biologics**

Modernize process development for AI with Benchling

- Visual Recipe Design
- Experiment Planning
- Structured Batch Execution Embedded
- Continuous Analysis
- AI-ready data
- Instrument Connectivity

AI is accelerating the pace and complexity of process development, exceeding the abilities of legacy tools. Fragmented ELNs, LIMS, and homegrown systems and solutions silo data, which limits the effectiveness of AI. Benchling Development is the AI-powered industry solution for process development, built to increase capacity, accelerate time to critical milestones, and drive operational efficiency.

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More candidates are entering the pipeline. Process development has to scale with them.

With 60% of R&D pipelines shifting toward complex, next-generation modalities and 74% of novel therapeutics using expedited regulatory pathways, process development teams face unprecedented pressure to accelerate timelines and scale throughput.

At the same time, AI-powered computational design and automation are being used to increase the number of candidates that move into development. In an industry where computational models can design molecules in seconds, process development teams need to respond by modernizing their workflows to prevent creating a bottleneck to market.

- 23% of scientist time is lost manually collecting, cleaning, and structuring process data for analysis.
- 19% of scientist time is spent manually assembling static documents and spreadsheets for technology transfer.
- 87% of PD scientists report that data errors and disconnected records remain a persistent operational issue.

To benefit from AI, process development teams need one centralized industry solution — not a patchwork of disconnected solutions. This solution must generate AI-ready data from day one and give access to insights from legacy data. Benchling Development is purpose-built for exactly that, helping teams accelerate their path to critical milestones, while increasing operational efficiency and simplifying technology transfers into manufacturing.

> "As AI accelerates molecule design upstream, program teams are asking process development to deliver more, faster, with the same team. I hear the same problem: separate tools for design, execution, and analysis that don't share data. Benchling Development was purpose-built to help CMC teams address these challenges and run fewer, smarter cycles. Because process data lives on the same data graph as the sequences and cell lines that came out of discovery, a scientist can quickly trace a batch result back to the construct it started from, instead of losing hours piecing it together across systems."

— Derek Halliday, Chief Product Officer, Benchling

The teams that redesign their development work for AI will define the next decade

The pharmaceutical industry has broadly shifted toward new drug modalities — cell and gene therapies, RNA, and complex drug conjugates — to address unmet patient needs, and is using accelerated regulatory pathways 74% of the time to bring these drugs to market faster than ever before.[2] As AI is increasingly used in design and discovery, this pace will only accelerate, adding pressure on development teams to supply material for programs and clinical studies.

21%

of biopharma pipeline are complex, next-generation therapies[4]

1 to 10 fold

average boost in process development productivity due to process intensification[5]. Innovations are leading to novel bioprocess intensification practices with increased productivity and savings.

3x

projected growth in PAT market size over the next 10 years[6], creating more data for process optimization.

18.4%

CAGR projected for the global bioprocessing automation market by 2030[7], spurred by AI and tech advancements.

Benchling Development connects the work that gets a molecule to market

Typical teams that use Benchling Development

- Cell line development
- Upstream processing
- Downstream processing
- MSAT
- Formulations
- Analytical Development
- Analytical Operations

What can Benchling Development do for my R&D organization?

- **Remove data and process silos.** Stop switching systems and wrangling data between process steps and analysis. Benchling consolidates your ecosystem into a single, configurable and maintainable platform.
- **Optimize cycles through AI-generated insight.** Utilize legacy and current study data to run fewer and smarter process development cycles, instead of repeating experiments or investing time in hunting down prior data.
- **Automatically generate reports.** Structured, traceable process design and execution data means Benchling can automatically generate reports for internal review and tech transfer, reducing time spent on single-use, static reports.

- **Build a context-rich data foundation.** Benchling connects your instruments to your execution, eliminating data transcription and fueling your data science with centralized and context-rich data.

> "At Gilead, we're committed to creating a healthier world for everyone by discovering, developing, and delivering medicines for life-threatening diseases. This work requires managing highly complex, multi-dimensional data and necessitates technology partners that can support the scale and complexity of the data created by high-throughput biology. We selected Benchling as a partner because it's built for biology. By capturing structured data in Benchling, our scientists are empowered to ask challenging questions and uncover new insights."

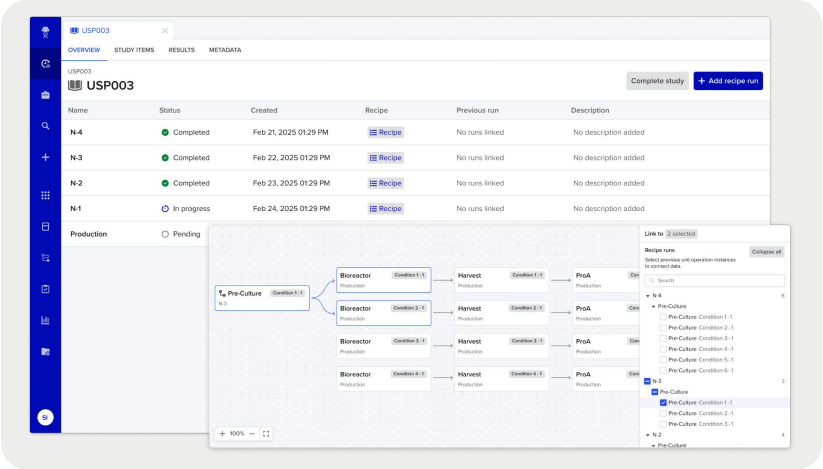
— Peter Huang, Executive Director, Pharmaceutical Development & Manufacturing Information Systems, Gilead

What you can do with Benchling Development

Benchling provides a visual representation of your process with a ISA-88 inspired data foundation. This gives your team a common way of working on a single platform, and data that's ready for AI to use downstream.

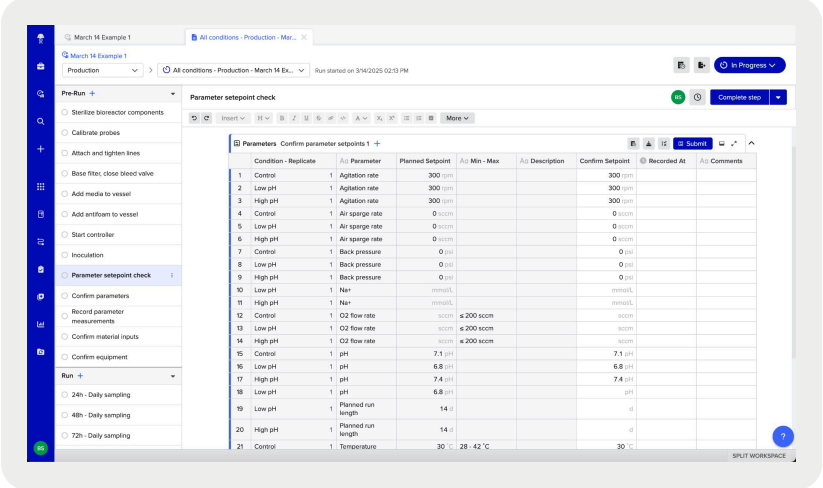
Design recipes and plan experiments visually

Create recipes using an intuitive, visual designer. Sequence the order of unit operations using a drag-and-drop interface, and define the process parameters, material inputs/outputs, and equipment. Flexibly design experiments that cover the process design space with variations across process parameters and materials.



Batch execution without manual set up

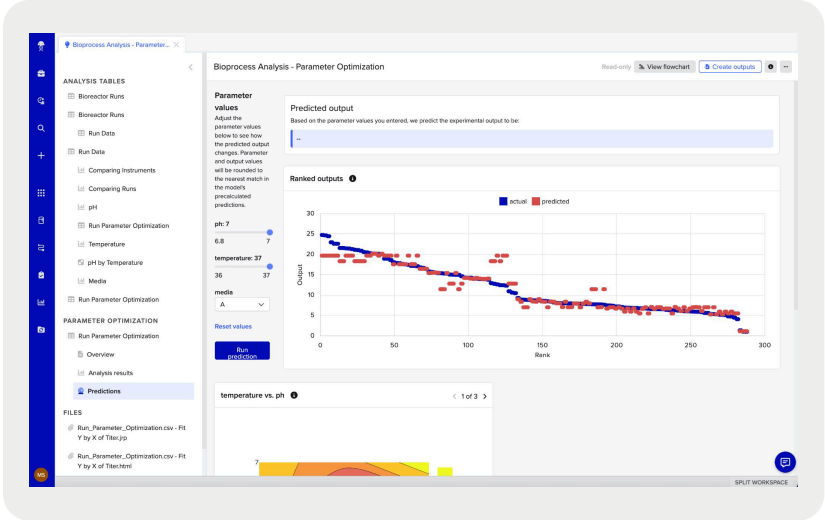
Move your recipe designs and experiments into guided batch execution, with instructions dynamically populated from the recipe definition. Run experiments in parallel, collect data at each process step, integrate with your instruments, collaborate across teams, and track overall progress, all while saving time from not manually configuring batch instructions for each run.



Move faster with built-in analysis and connectors

Analyze data across runs and studies, including the use of Bayesian models, to visualize process data with full experimental context and traceability within the platform.

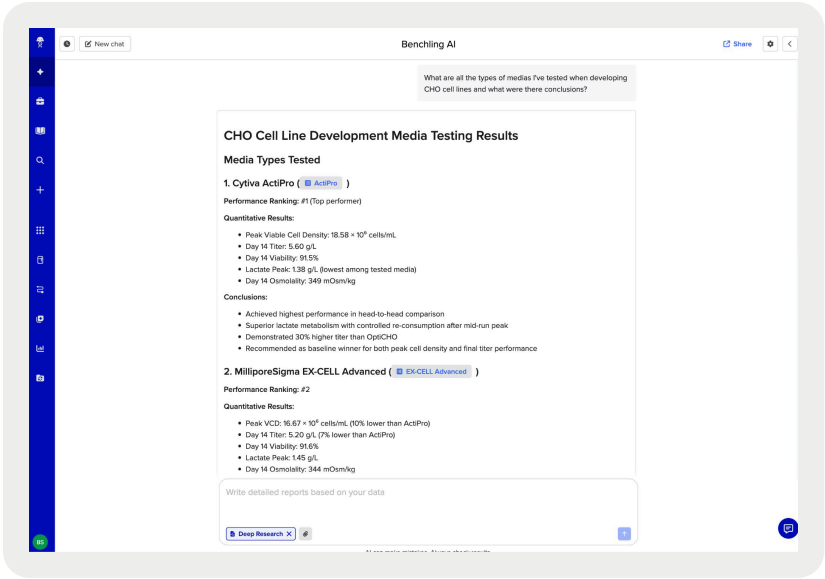
Move structured data into third-party analysis tools using out-of-the-box connectors like JMP, Pluto, and Watershed or feed into data lakes and AI/ML pipelines directly using APIs. Generating an analysis automatically following execution speeds time to the next experiment design and keeps your process efficient.



Develop AI-ready data

The ISA-88 inspired data model within Benchling Development unifies process and execution data into a highly structured scientific data foundation. This structure allows it to be used by Benchling AI, removing toil from daily scientific activity and giving scientists all the necessary data for hypothesis creation and insight generation.

Combined with the Benchling Legacy Data import capability, which imports institutional data from legacy unstructured data sources, teams are able to access the full range of scientific memory, amplifying the effectiveness of each development cycle.



Connect,manage, and analyze R&D data across your organization

Using a single solution reduces the need to manually link individual datasets and increases data confidence[8]. Benchling Development is built on a unified platform, allowing R&D teams and their IT partners to consolidate onto a common technology stack with shared ontologies, data structure, user provisioning, and data access, creating confidence in data completeness and accuracy.

Benchling is trusted by leading life science companies

AstraZeneca, GILEAD, MERCK, Lilly, REGENERON, Bristol Myers Squibb, moderna, BAYER, sanofi

New to Benchling?

Learn more about Benchling Development and request a demo for an initial call with a product specialist to see how Benchling can transform your process development organization.

Already a Benchling customer?

Contact your account executive and customer success team to learn how Benchling Development can help your organization. Discuss the optimal transition from your current implementation if needed.

References:

1. IQVIA Institute, 2023. 2. Regulatory Focus, 2022. 3. Blinded survey of process development professionals, conducted by third-party research firm, 2023. 4. GlobalData, assessed May 2023. 5. doi.org/10.1016/j.cep.2022.108793; doi.org/10.1016/j.cep.2021.108727. 6 globenewswire.com, Process Analytical Technology Market, April 2023. 7. einpresswire.com, Global Bioprocessing Automation Market, 2023. 8. Blinded survey of process development professionals, conducted by third-party research firm, 2023. 9. McKinsey survey of 100 digital and analytics leaders in life science functional areas, November 2022