

Optimizing Cell Engineering with a Unified Informatics Platform

Rubius Therapeutics is genetically engineering red blood cell therapeutics, or RCTs, to treat a range of diseases. These RCTs are capable of targeting cancer through activating immunity, treating auto-immune diseases through self-antigen tolerance induction, and combating rare enzyme deficiencies by introducing therapeutic enzymes that are cellularly shielded.



PRIOR CHALLENGES

1 / Manual record keeping systems that housed all experimental data – including donor metadata, DNA stock, and prototype protein expression – were disorganized and cluttered, hindering cross-team collaboration.

2 / Legacy request management protocols were inefficient and required scientists and managers to search through scattered, disparate records on cell cultures and quality control assays.

3 / Engineering processes were out of sync and difficult to track as a result of decentralized systems of information storage and unreliable reporting on project progress.

KEY BENEFITS

1 / Cross-team Collaboration with Complete Experimental Context

Rubius stores, shares, and interlinks all the experimental data of their samples, vectors, and engineered red blood cells in Benchling. Now, Rubius effortlessly navigates from sequences to prototype backgrounds and experimental conditions.

2 / Insightful Request Management

Rubius now streamlines their request fulfillment process, ultimately using this information to track experiment status and forecast needs in real-time.

3 / Centralized Project Management

With Benchling Workflows, Rubius structures, executes on, and optimizes their cell engineering processes- from DNA production to cell construction.

“ Benchling is a very powerful system. The one thing I've heard from most of the scientists is that it's more powerful than they realize all the time. ”

Tiffany Chen, Director of Discovery, Rubius Therapeutics

APPLICATIONS USED



Notebook



Molecular Biology



Registry



Inventory



Workflows



Requests



Fostering collaboration with interlinked data

- Rubius designs therapeutic DNA sequences in Benchling, stores that data in the Benchling Registry, then links it to upstream experimental records as well as downstream entities.
- With Benchling, Rubius tracks the DNA candidates used to produce lentivirus and interlinks these data to downstream virus batches.
- Rubius uses the Benchling ecosystem to house all of their project inputs and outputs on one integrated platform, cohering experimental data and powering collaboration.

Seamlessly filing and tracking requests

- With Benchling, teams can queue and structure requests, allowing them to anticipate project needs and more efficiently assign upcoming tasks.
- Rubius biology teams request information on prototypes, the cell engineering team receives and executes on these requests, and the cells are then referred back to the original teams for processing, seamlessly within Benchling.
- Benchling Requests gives Rubius real-time visibility into laboratory needs and resources, which in turn affords them insights into step-wise planning and preparation for cell production.

Unifying and iterating on complex cell engineering processes

- Rubius scientists collaboratively manage the cell engineering stages by performing protocols and communicating results within and across stages — on one unified platform.
- Whether a project is in design or production, different groups at Rubius can configure their own Benchling workflows and flexibly iterate on them to optimize project progress.
- Benchling Workflows enables Rubius to actively manage and track their entire RCT pipeline in real-time — from discovery to engineering — ultimately expediting project progress.