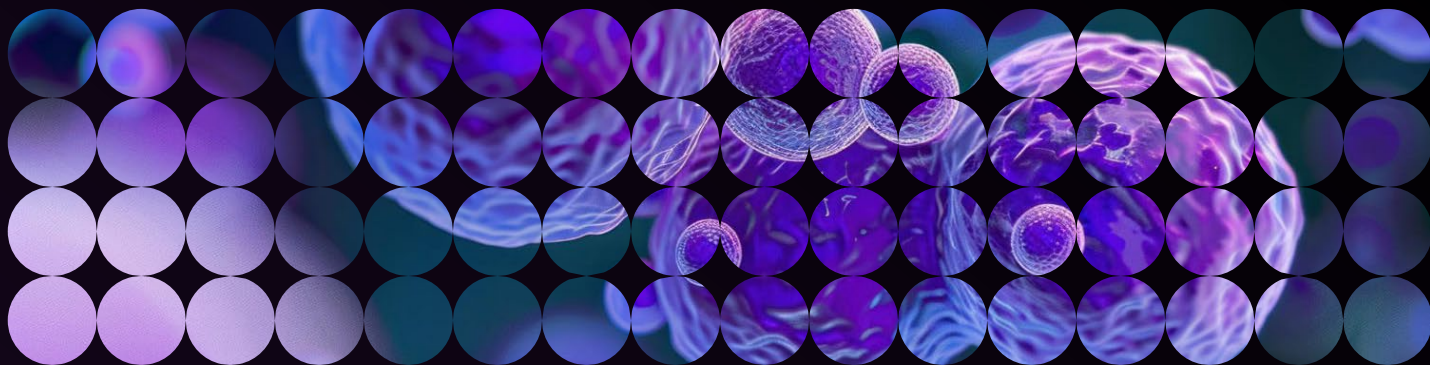




2025

From Bottlenecks to Breakthroughs: Celledonia™ Transforms Cell Line Development.

Cutting CLD timelines by >40%, with
"right first time" clonal selection



Prompt and Predictive Label-Free Analytics.

From Bottlenecks to Breakthroughs: Celledonia™ Transforms Cell Line Development (CLD).

Unlocking speed and
predictability in CLD
with Celledonia™

The Problem



CLD is slow, costly, and unpredictable. The only way to identify the winning clones is to perform and analyse hundreds/thousands of cultures.

Strategic Importance



Failure in selecting optimal clones can delay IND filings, enabling competitors to gain first mover advantage and market share.

The Opportunity



Biopharma needs a CLD process to select the best clone first time.

The Solution:



Celledonia™ offers fast, predictive clone assessments: a yes/no test to select clones that will be high-producing at scale under manufacturing conditions.

Celledonia™ can select
the right clone first time
and streamline CLD

Collaboration with a global service provider:



Background

Aim:

- Demonstrate that Celledonia™ **predicts high-producing clones** from their intrinsic properties, accelerating CLD

Objective:

- Predict high-producing clones early in the CLD process
- Reduce reliance on proxy-based assays and slow, resource-intensive fed-batch assays



Methods

- 15 CHO clones were tested: 1 host line and 14 producer clones, grown in flasks (early stage CLD)
- The trial was blinded to avoid bias in clone evaluation
- Celledonia™ signatures were generated for the host line and producer clones.
- Producer clones were compared to the host line using T-tests
- Clone productivity data was revealed after testing
- Clones were grouped by final fed batch titre:
 - High: ≥ 5 g/L
 - Med: $>2 - <5$ g/L
 - Low: ≤ 2 g/L





Results

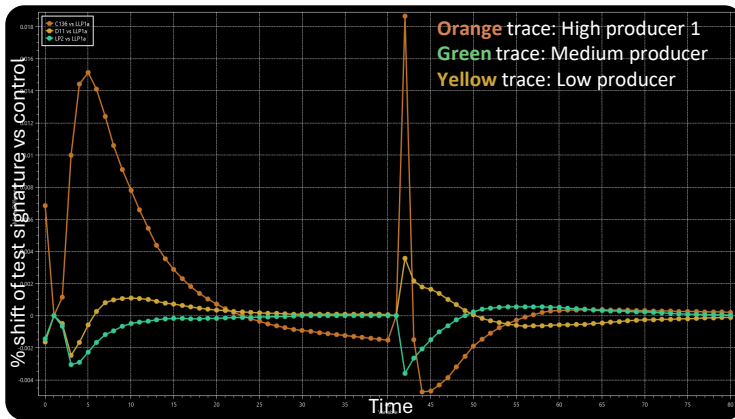


Figure 1: Celledonia™ signatures demonstrating detection of a **high** (≥ 5 g/L) producer clone when compared to the control. The signatures of **medium** (>2 – <5 g/L), and **low** (≤ 2 g/L) producers did not differ from the parental line.

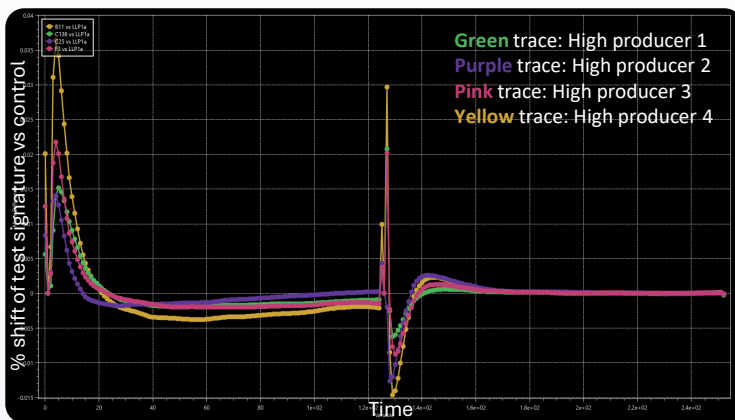


Figure 2: Celledonia™ signatures of all high-producing lines plotted against the parental control, showing statistically significant differences in all cases.

❖ Elimination of Suboptimal Clones

Statistical analysis ($p < 0.05$) effectively distinguished high-producing clones from suboptimal ones (Figure 1).

❖ Early Prediction of High Producers

Celledonia™ successfully **predicted** 100% of the clones that went on to produce high antibody titres in bioreactor conditions at the much earlier shake flask stage (Figure 2).

❖ Performance Beyond Titre Measurements

Early titre measurements were insufficient to determine best candidates for scale up. Celledonia™ provided early, 100% accurate binary decisions (yes/no), reliably **predicting** high-performing clones destined for bioreactor success.



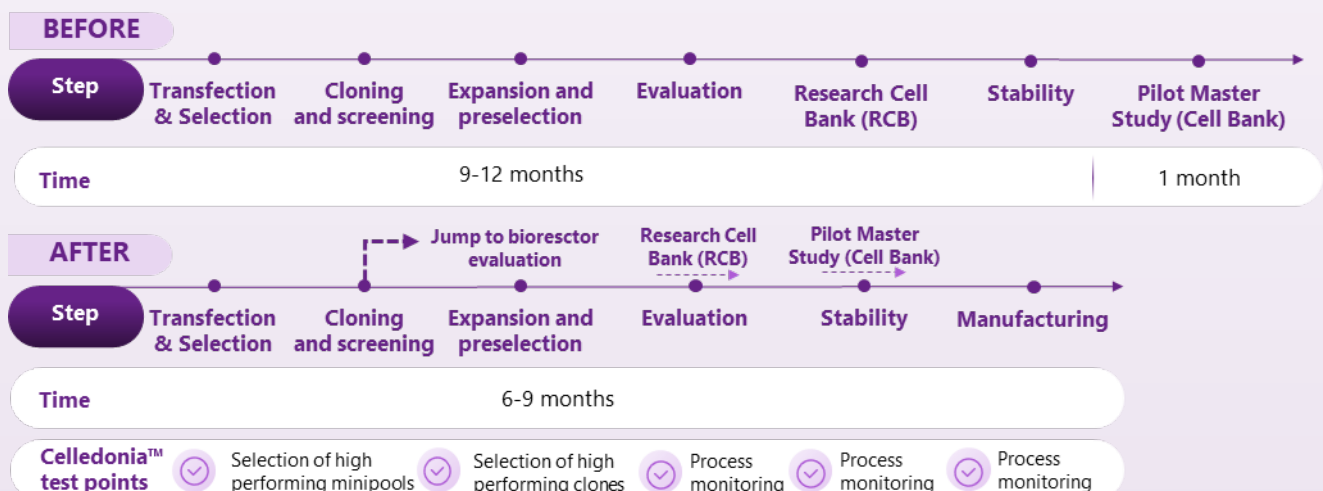
Conclusion

Celledonia™ delivers a transformative approach to CLD by enabling fast, predictive clone selection and eliminating inefficiencies in the scale-up process. In under 15 minutes, it delivers accurate yes/no decisions, empowering teams to make confident, data-driven choices without relying on ambiguous titre-thresholds.



Outcome

Accelerate CLD workflows and development timelines with early predictive insights.



Celledonia™: Streamline CLD Through Early, Confident Clone Identification



Rapid Clone Identification:

Rapid yes/no identification of high-producing clones



Fast Decision Making:

Efficient, smarter resource use and parallel development.



Speed to Market:

Shorten development cycles by focusing on top producers that perform at scale and withstand manufacturing processes.

For any more information, or to arrange a call with one of our experts, contact our Head of Business Development Mike Hughson mike.hughson@cytomos.com.

