AbZelectPRO™: Enhanced Cell Line Development

Rapidly progress your therapeutic protein and recombinant vaccine projects from DNA to RCB in 10 weeks, de-risking the IND journey

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Abstract

Our **fully integrated AbZelectPRO™ platform** enables the rapid delivery of stable, high-producing cell lines for complex biologics or bioconjugates. AbZelectPRO™ combines our CHO-K1 mammalian cell line with **ProteoNic's 2G UNic®** premium vector technology and a tailored optimised process to boost expression levels and generate **fast doubling, higher-producing, stable cell lines, expressing up to 8 g/L of product**.

As a result, the AbZelectPRO™ platform supports the efficient and stable production of antibodies and more difficult-to-express proteins such as fusion proteins, bi-specifics, vaccines and other novel modalities. Backed by the **extensive experience** of Abzena's experts **in developing biologic therapeutics**, which are **supported by Abzena's comprehensive analytics portfolio**, the AbZelectPRO™ platform simplifies the IND application process and delivers client therapeutic proteins successfully to clinical phases. In addition, the platform enables activities such as downstream method development and formulation to be removed from the CLD critical path by using **Early Material Generation** from **Stable Pools**, which can also be run stand-alone as part of the Abzena offer.

AbZelectPRO™ Advantage: Timeline and Titres

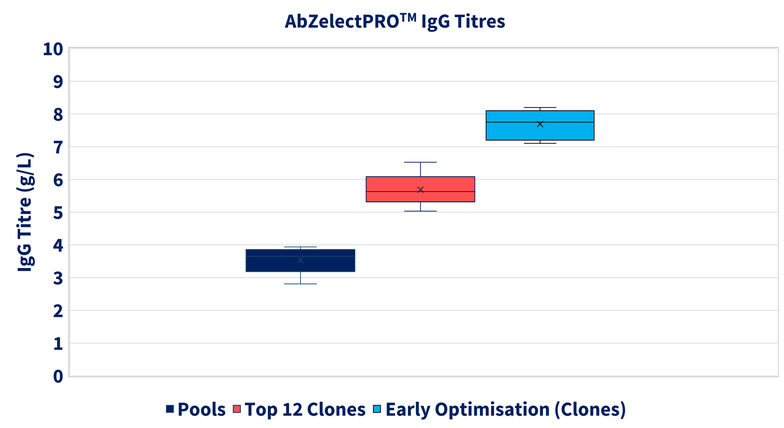


Figure 1. AbZelectPRO™ representative IgG titres at Pool and Clonal stage using platform Fed-Batch process, further enhanced through Early Process Optimisation.

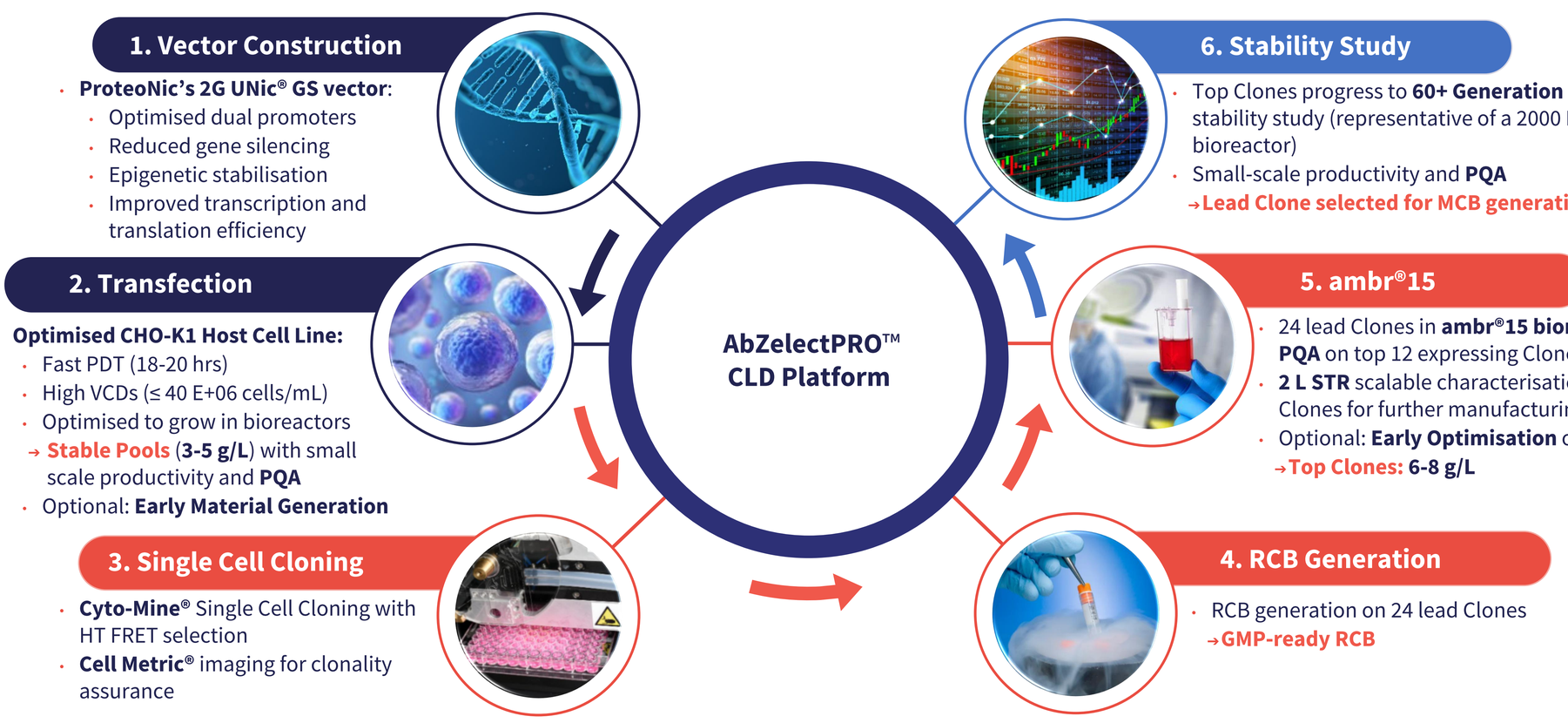
1-2*: DNA to Stable Pools: 3 wks

1-4*: DNA to RCB: 10 wks

1-6*: DNA to Lead Clone Selection: 26 wks

* Numbers as per AbZelectPRO™ CLD Process stages shown below.

Optimised CLD Process



- **Higher product** yield from Stable Pools and Clones
- **Greater percentage** of high producing Clones
- **Faster** doubling times
- **Improved** Clonal stability
- **Reproducible PQA** at all stages

The entire **CLD Process** has been **optimised** to improve efficiency, ensuring high productivity from Stable Pools and Clones while providing a **robust process from DNA to RCB and beyond**.

2. Early-Stage Stable Pool Material Generation (≥ 10 g)

→ Accelerate development using **Fast Stable Pools (FSP)** to generate **≥ 10 g** material for non-GMP studies:
- Formulation, Analytical and early DSP method development
- *In vivo* studies

Figure 2. Stable Pool Material Generation (≥ 10 g for standard mAbs). Purified using state-of-the-art ÄKTA™ systems yielding ≥ 95% purity and low endotoxin.

3. Single Cell Cloning: Population Enrichment and Clonality Assurance

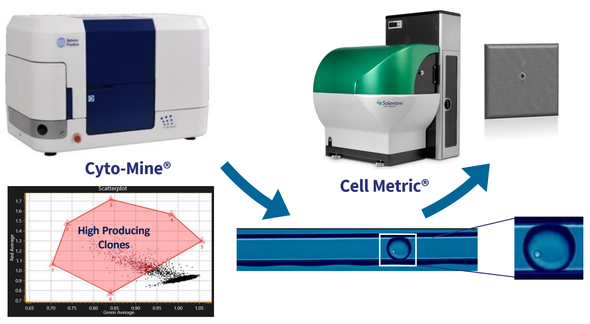


Figure 3. **Early population enrichment** using Cyto-Mine® microfluidics and Cyto-Cellect™ FRET probes **for multiple molecule types**, providing single cell encapsulation for initial evidence of monoclonality. Secondary evidence of monoclonality using Cell Metric® images throughout the single cell outgrowth time-course.

4-5. RCB Characterisation in ambr®15 and 2 L STR

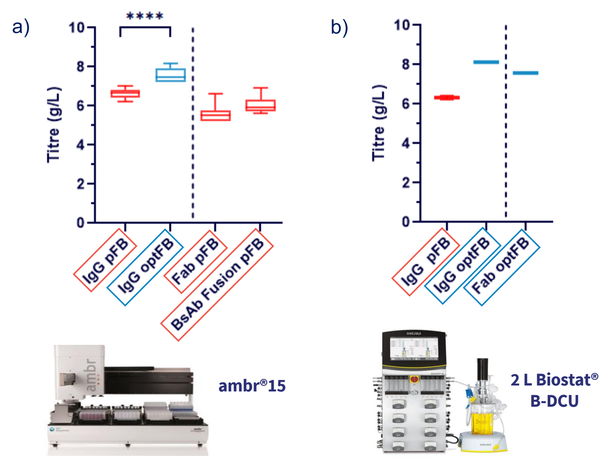


Figure 4. **a) ambr®15** AbZelectPRO™ RCB titre under platform Fed-Batch conditions (pFB) for the top 12 Clones of **3 different molecule types (IgG, Fab and Bi-specific Fusion**). The IgG dataset also includes early process optimisation (optFB) achieving higher titres ($P < 0.0001$) vs pFB process.

b) 2 L Biostat® B-DCU production run using pFB conditions for a standard IgG. Early process optimisation (optFB) conditions for 2 L run of IgG and Fab molecule lead Clones, respectively, showing process scalability. Titre quantitation was performed by Octet® BLI with quantitative HPLC final titre confirmation.

6. Clonal Stability Study (60 Generations)

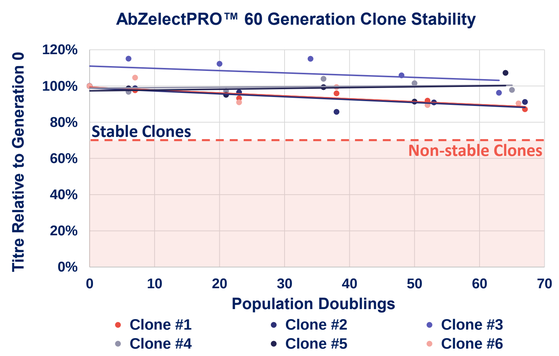


Figure 6. AbZelectPRO™ Clone stability throughout a 60+ Generation time-course based on normalised titre comparison to Generation 0. Additionally, cell-specific productivity (Qp) and PQA are taken into consideration for confirmation of Clone stability (results not shown). Enhanced Clonal stability provided by the 2G UNic® vector utilising epigenetic stabilisation for reduced gene silencing and greater Clonal stability.

AbZelectPRO™ - PQA and Analytical Capabilities Supporting Different Modalities

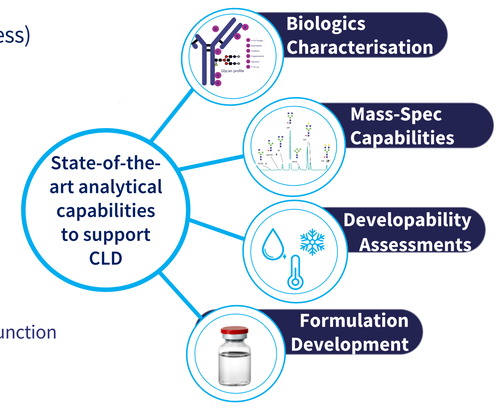
Platform PQA methods:
(used throughout the CLD Process)
- → SE-HPLC / CE-SDS
- → RPC-MS / cIEF

Extended PQA methods:
- → N-Glycan
- → Sialic acid
- → Peptide mapping

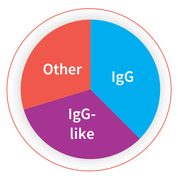
Structure

- → Immunogenicity assays
- → Cell-based assays
- → Binding ELISA
- → Biacore™ SPR

Function



Modalities Supported:



150+
Individual CLD programs with CHO-K1 cell line

IgG: IgG1, IgG2, IgG4, including variants thereof and other species

IgG-like: BsAb and Multi-specifics, Fabs, VHH, scFV, Fc-fusions

Other: Nanoparticles, Protein Fusions, Enzymes, IgA, IgE, Viral Sub-Units, Vaccines

Biosimilars represented in each group depending on modality

Overview

Trusted technology: AbZelectPRO™ is built on established CHO-K1 platform – well recognised in industry and by regulators. 2G UNic® technology used in 20+ IND filings.

Experienced team with proven track record: CLD team has delivered 150+ individual CLD programs with CHO-K1 cell line, including 20+ cell lines for clinical programs.

Compliance assured full traceability: Records of Host Cell Line, CLD processes and all contact materials. Established robust processes compliant with ICH-Q5 guidance.

Integrated platform with end-to-end support under one organisation across all stages of the drug development process.