C1 - CMC Platform

Rapid, scalable, microbial production platform for animal-free proteins for life sciences, diagnostics, and biomanufacturing.

Speed • Yield • Cost • Scalability

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APPLIED BIOSOLUTIONS

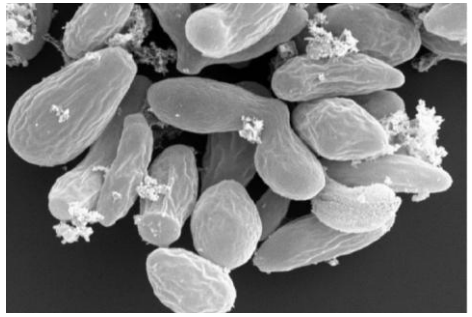
Safe harbor statement

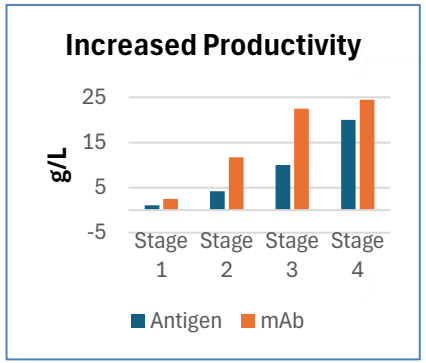
Certain statements contained in this presentation (including any oral commentary that accompanies this presentation) are forward-looking statements within the meaning of Section 27A of the Securities Act of 1933 and Section 21E of the Securities Exchange Act of 1934, including those regarding Dyadic's expectations, intentions, strategies and beliefs pertaining to future events or future financial performance, including expected product timelines for commercialization and expected revenue growth. Actual events or results may differ materially from those in the forward-looking statements as a result of various important factors, including those described in Dyadic's most recent filings with the SEC. Undue reliance should not be placed on the forward-looking statements in this presentation, which are based on information available to us on the date hereof. Dyadic assumes no obligation to update publicly any such forward-looking statements, whether as a result of new information, future events or otherwise. For a more complete description of the risks that could cause our actual results to differ from our current expectations, please see the section entitled "Risk Factors" in Dyadic's annual reports on Form 10-K and quarterly reports on Form 10-Q filed with the SEC, as such factors may be updated from time to time in Dyadic's periodic filings with the SEC, which are accessible on the SEC's website and at www.dyadic.com

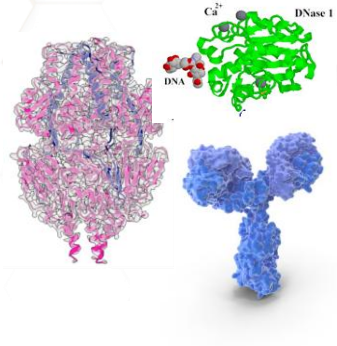
C1 Platform Architecture

An Engineered Fungal Cell Factory for Biologics production

Engineered C1 Strain	Fermentation	Protein Production Capability	Safety and Regulatory Readiness	Demonstrated Product Diversity







- Protease knockouts
- Targeted gene integration
- Humanized glycosylation options
- Non-sporulating

- Standard microbial fermention
- Pellet morphology → low viscosity broth
- Industrial scale > 100,00L

- High secretion capacity
- Rapid strain development
- No induction required
- Correct folding and disulfide formation

- US FDA GRAS lineage
- No mammalian viral replication risk
- Successful Phase I vaccine clinical trial

- Vaccine antigens
- Monoclonal antibodies
- Complex secreted proteins
- DNA/RNA enzymes
- Animal Free Albumin, Transferrin & Growth Factors

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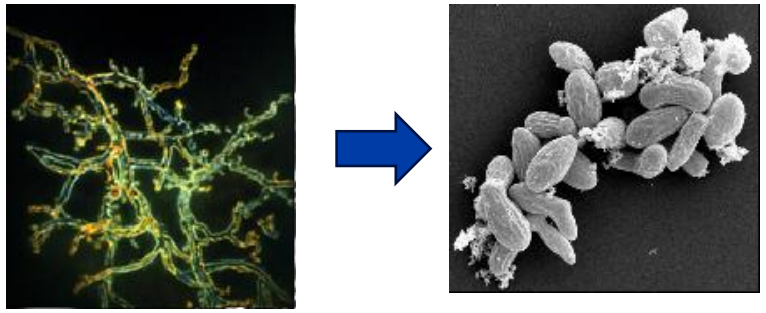
Microbial manufacturing efficiency combined with eukaryotic protein processing enables rapid, scalable, safe production of complex biologics.

The C1 Strain

Engineered production strain enables efficient production

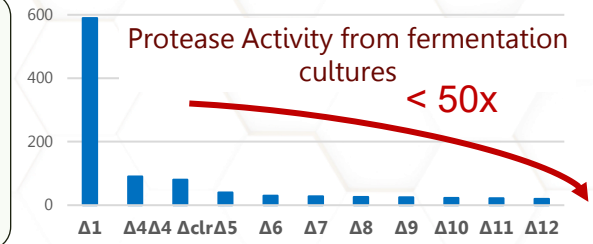
C1 Strain Adaptation



- Change in morphology led to hyper-productivity & low viscosity.
- non-sporulating

C1 Strain Engineering

>15 protease deletions (w/o CRISPR) → improved protein yield & stability

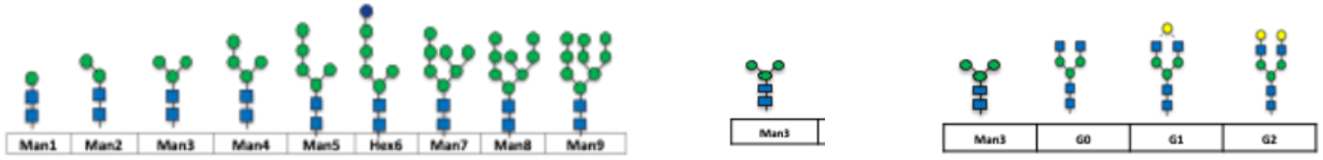


Wild type (Man3-Man9) → engineered strains → Man3 strain → humanized glyco strain (G2/G1/GO) → production hosts

Wild-type glycosylation pattern

- **Empty host strains** *(with humanized glyco-machinery)*
- **Genetic construct** *(convert a wild type glyco strain in humanized glyco strain)*

→ **Glycosylation Pattern compatible with Human System**



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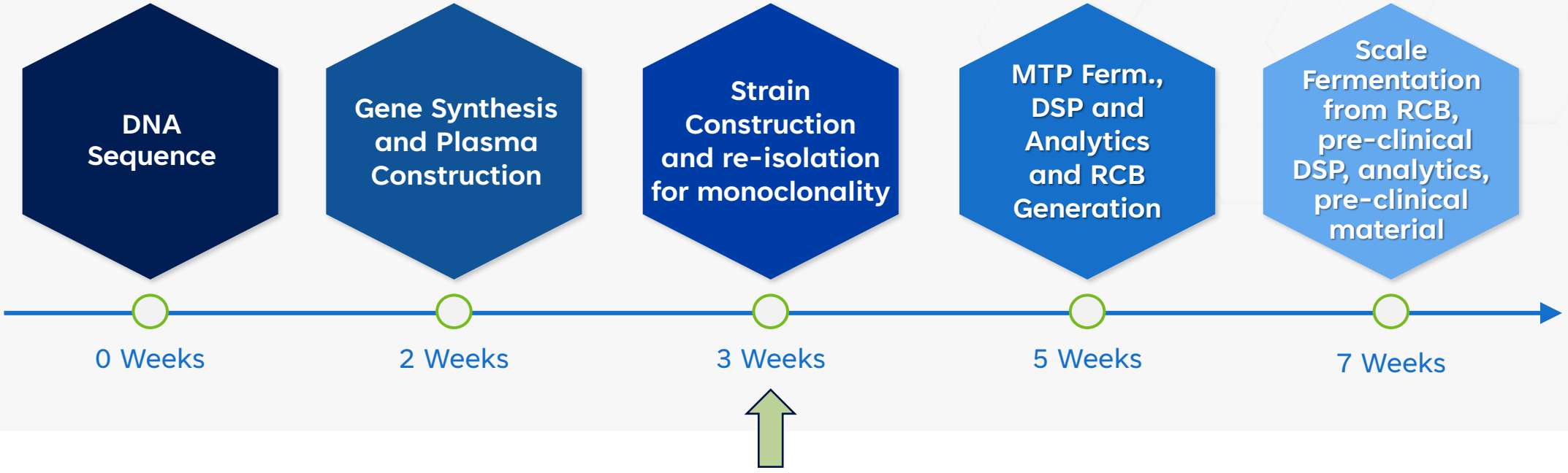
C1 — Rapid generation of production strains

Plasmid to stable cell lines in as short as ~ 3 weeks[1]

Workflow Process



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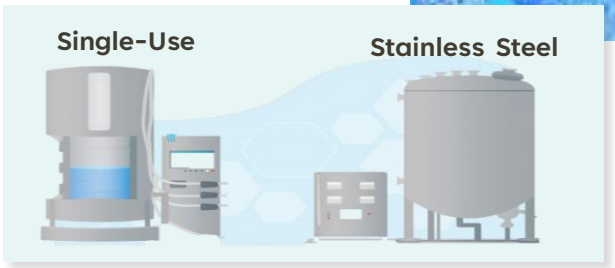
1 Generation of a stable pool of strains after receipt of codon optimized plasmid, prior to monoclonality

C1 Manufacturing Process

Rapid, robust, scalable microbial Biomanufacturing process

- Standard microbial fermentation equipment
- Low viscosity culture
- 4 to 7 days process
- Fed batch technology with glucose feeding
- Industrial scale validated up to >100,000L



Upstream Processing

Fermentation Bioprocess

Downstream Processing

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C1 Platform Advantages vs Traditional Systems

(Doubling Time, Cycle Time, Productivity, No Viral Clearance & Cost)

Feature	Mammalian Cells (CHO)	Insect Cells (Baculovirus)	C1 Microbial Platform
Cell Doubling Time	~20–24 hr	~18–24 hr	~2.5 hr
Cell Line Development	~3–6 months	~3-5 Weeks	~3 weeks
Production Cycle[1]	5–7 weeks	3–4 weeks	7-9 days
Protein Yield	Moderate	Low	High (g/l)
Viral Contamination Risk	Possible	Possible	None
Manufacturing Cost	High	Moderate	Low-cost fermentation

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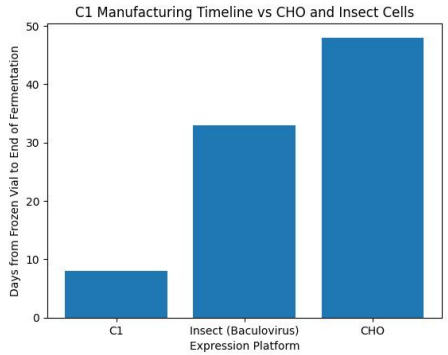
1. Timeline from frozen vial to end of fermentation

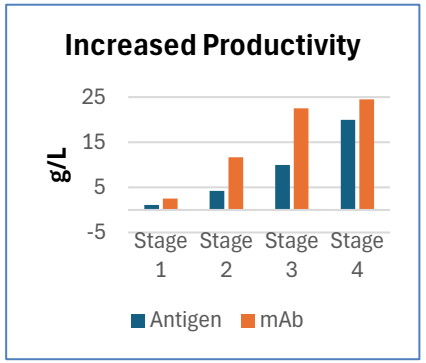
Process Performance -

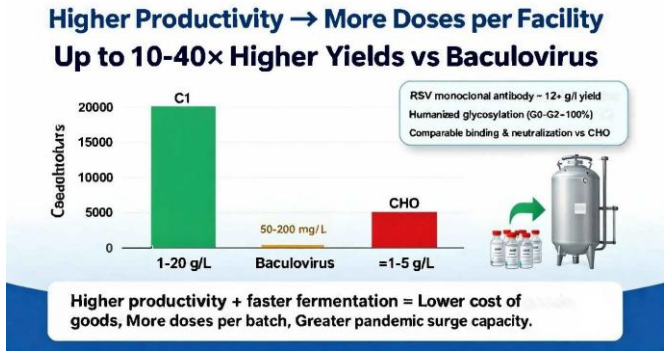
C1 – a rapid, high productivity and flexible platform

Faster than other eukaryotic expression systems [1]

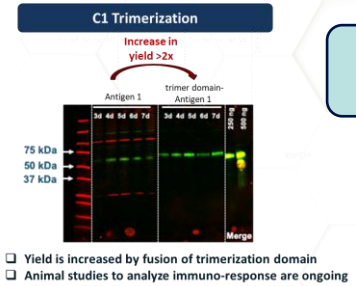


High Yield[1] (4-7 days)

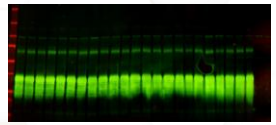




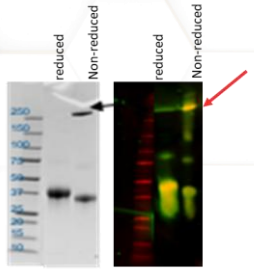
Supports expression of complex structures

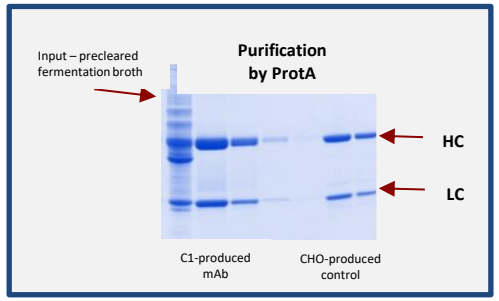


Trimers



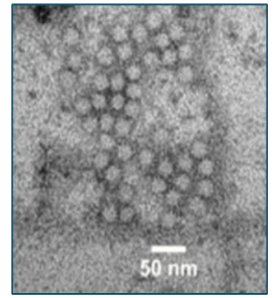
Ferritin Nanoparticles





mAbs

VLPs



1. C1 Bioreactor cycle time 4-7 days; Frozen vial to end of fermentation 7-9 days

Platform Safety & Regulatory Readiness

Established safety profile

C1 Host Safety

- Non-pathogenic filamentous fungus
- Widely used in industrial enzyme manufacturing
- Extensive large-scale fermentation history
- Absence of mycotoxin
- US FDA GRAS

Host with industrial and safety history

Manufacturing Control

- Controlled impurity profile (HCP, β-glucans, residual DNA) *Cygnus C1 HCP kit
- No mammalian viral contamination risk
- Platform purification processes comparable to other biologics

Impurity profile controlled by classical process

Regulatory and Clinical Experience

- Evaluated in nonclinical studies
- Human exposure in successful Phase I clinical trial
- Platform aligned with biologics regulatory frameworks

Nonclinical and clinical safety demonstrated

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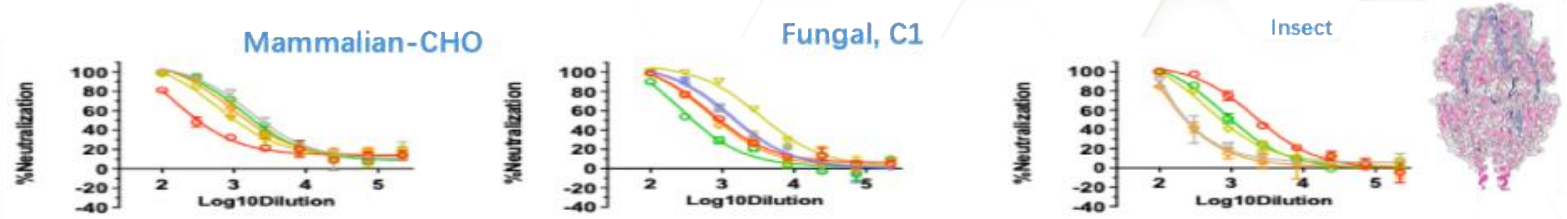
Product expression comparable to CHO

Flexible expression system for vaccines and therapeutic proteins.

C1 RSV trimers with CHO-like structure superior neutralization vs insect systems.



W5 RSV	M1	M2	M3	M4	M5	M6	RR	AVERAGE	ST. DEV
G1	408.9	1868	1275	2162	2686	N/A	100%	1414.1	874.6
G2	1069	942.2	4317	439.1	1553	1674	100%	1306.1	1373.0
G3	2512	260.9	832.6	1082	308.1	N/A	100%	711.2	914.6

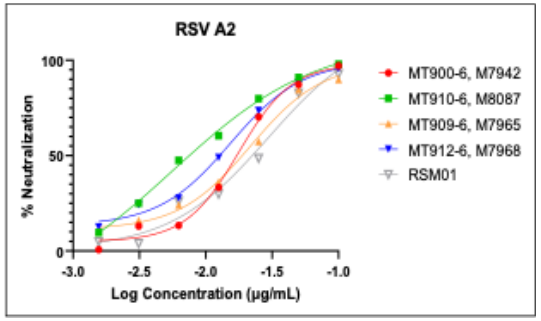
Week-5 Neutralization Results:

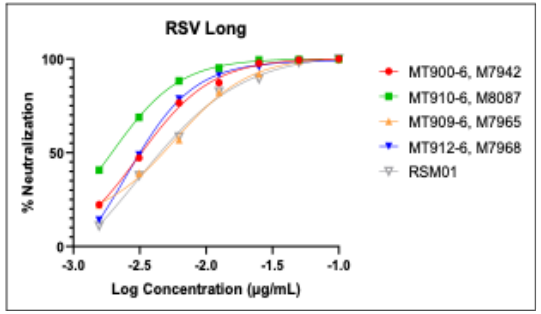
- All vaccine groups generated strong neutralizing antibodies
- **C1 RSV trimer neutralization = CHO**
- **C1 outperforms insect-derived antigen**

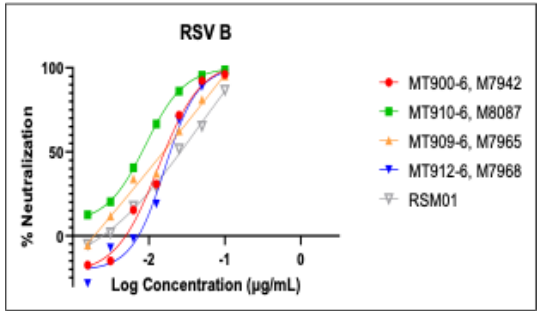
Structural Validation:

- High expression in C1
- Comparable purity and SEC profile vs CHO
- **Prefusion-closed structure confirmed (<1.0 Å RMSD vs CHO)**

C1 mAbs Comparable Neutralization & Binding







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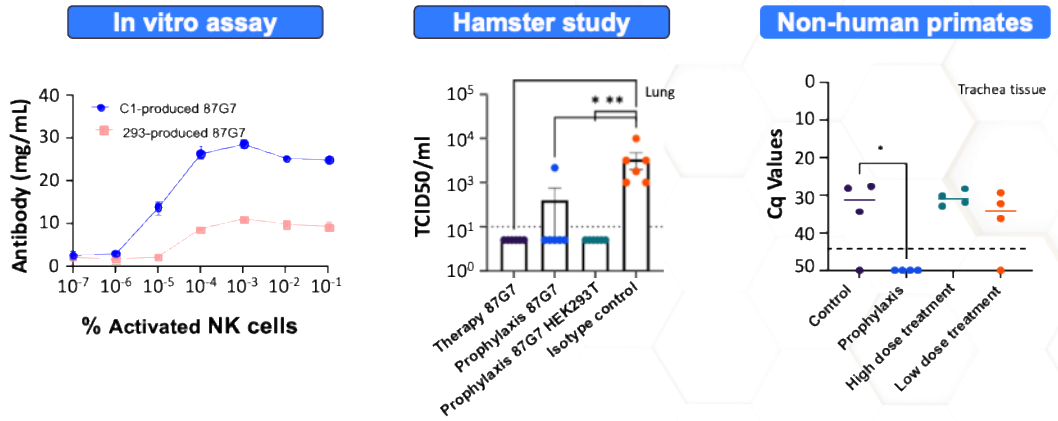
Comparable immunogenicity, neutralization & binding across diverse biologics.

Product expression versatility across wide range of molecules

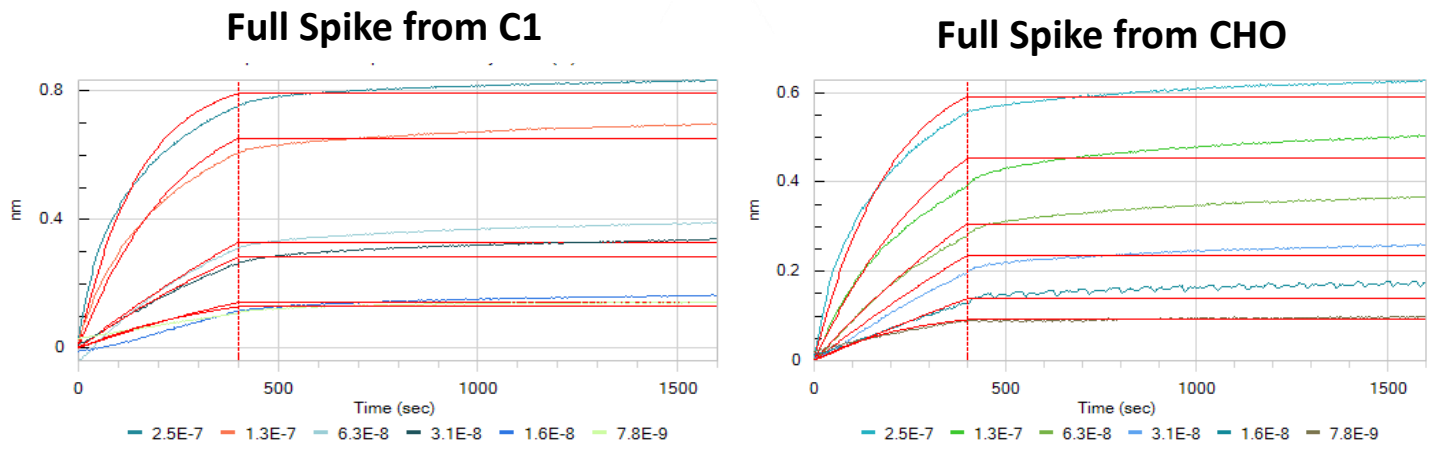
Flexible expression system for vaccines and therapeutic proteins.

C1 human mAbs provides protection against SARS-CoV-2 in hamster and non-human primate models



HuMabs expressed in genetically engineered C1 filamentous fungus have the potential to supersede mammalian cell-produced HuMabs for the prevention and treatment acute respiratory virus infections. As was previously shown for C1-produced proteins as vaccine candidates

C1 spike protein of the SARS-CoV-2 binding behavior similar to CHO



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Comparable immunogenicity, neutralization & binding across diverse biologics.

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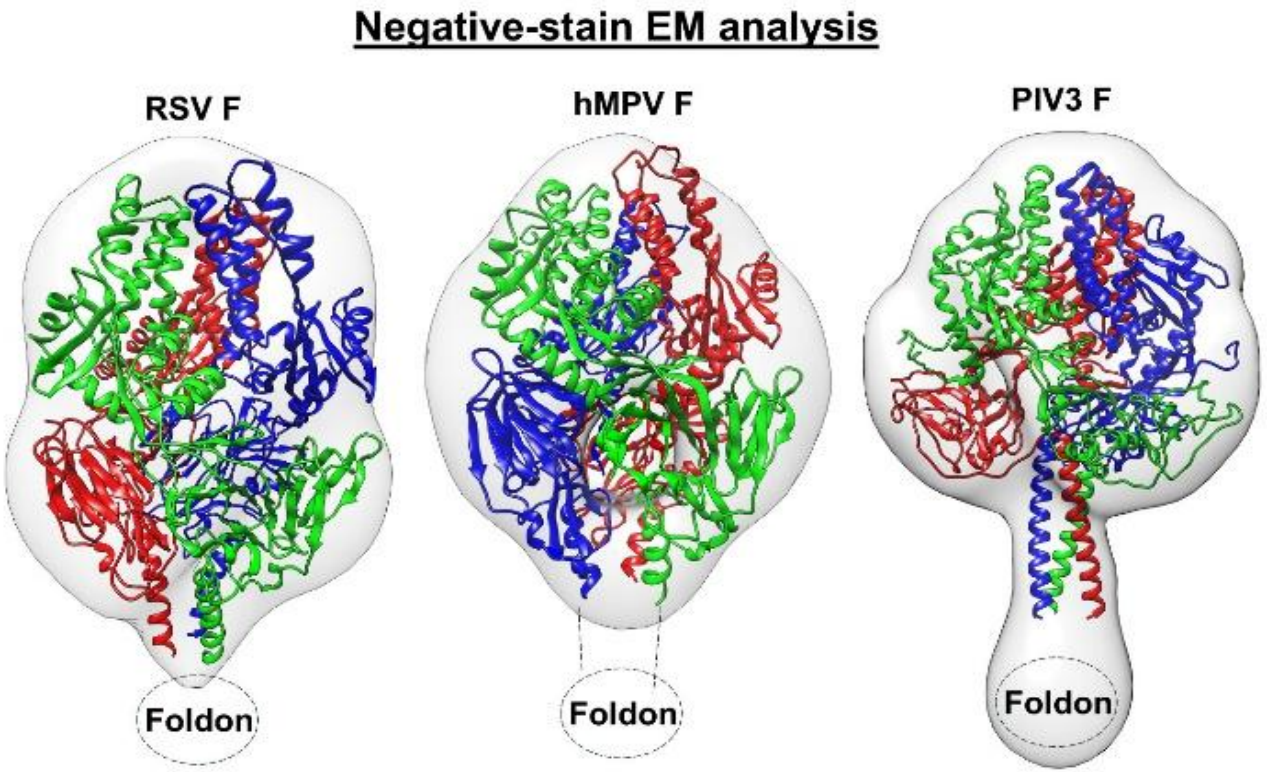
Backup slides

RSV/hMPV/PIV triple combination in pre-clinical

- Respiratory viruses cause major global disease burden, including:
  - Respiratory Syncytial Virus (RSV)
  - Human Metapneumovirus (hMPV)
  - Parainfluenza Virus (PIV3)
- Currently no approved multivalent vaccine targeting these respiratory pathogens exists.
- The C1 platform can support development of multivalent respiratory vaccines.

Structure-guided prefusion antigens rapidly produced using C1 fermentation



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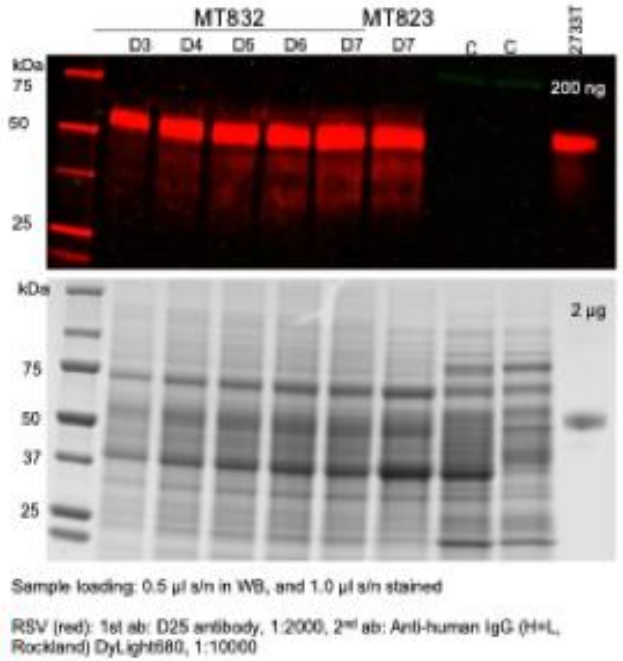
RSV/hMPV/PIV respiratory product produced in C1

Rapid, High Yield, and Immunogenic RSV PreF antigen

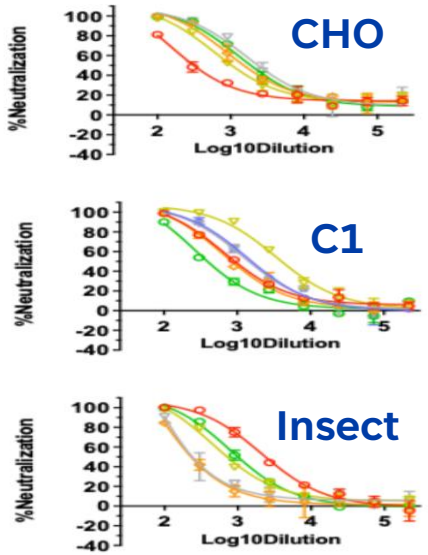
Yield is ~ 1.7g/L in 7 days

C1 RSV trimers with CHO-like structure superior neutralization vs insect systems.



Structural Validation:

- **High expression in C1**
- **Comparable purity and SEC profile vs CHO**
- Prefusion-closed structure confirmed (<1.0 Å RMSD vs CHO)



Week-5 Neutralization Results:

- All vaccine groups generated strong neutralizing antibodies
- **C1 RSV trimer neutralization = CHO**
- **C1 outperforms insect-derived antigen**

Strong PreF antigen design for RSV, hMPV and PIV combined with C1 expression system provides a fast, high yield complete solution for this respiratory combo

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Decades of innovation, now driving scalable growth

A platform with proven market validation

1990s → 2015 → 2022 → 2025+

Discovery of C1 System - Market expansion & GRAS certification

- Advanced fungal platform to enable efficient enzyme production
- Broadened industrial enzyme uses

Industrial acquisition

- Industrial enzyme business sold to DuPont; platform proven, pivoted to Rx biologics

Focused on high value input proteins

- C1 platform for life science applications
- Dapibus ™ platform for food & industrial proteins

Transitioning from R&D to revenue growth

- Revenue-generating deals in core segments
- Expected 2025 product launches via direct & partner channels

Evolving customer demands…

- ✓ Drug Supply chain safety & security
- ✓ Ethical concerns – animal free
- ✓ Health and safety
- ✓ Environmental sustainability

…align with recombinant advantages

- ✓ Consistency and quality
- ✓ Scalability and availability
- ✓ Contaminant & animal free
- ✓ Customizable and efficient

Why C1 microbial fermentation matters

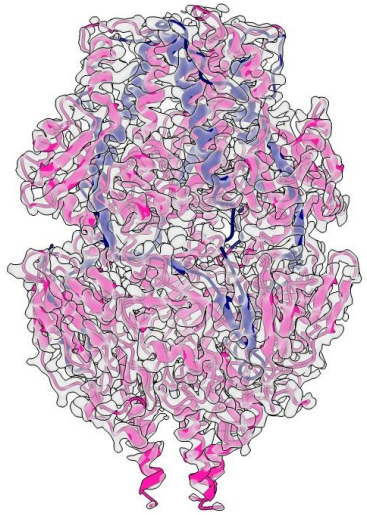
C1 enables significantly faster development timelines while maintaining CHO-like protein structure and functionality, supporting rapid response for vaccine and biologics manufacturing.

CHO:

- Long cell line development timelines
- Slow cell growth (~20–24 hr doubling)
- Expensive culture media
- Viral clearance validation required
- Long production cycles (12-14 days)

C1:

- Rapid strain development (~3 weeks)
- 2 ½ hr doubling time
- Short fermentation cycles (4–7 days)
- Multi-gram per liter protein yields
- No mammalian viral contamination risk
- Viral clearance steps not required
- Lower cost of goods



C1 Example:

- **RSV Prefusion Trimer Production**
  C1 yield: **1.7 g/L in 7 days**

Structure:

- CHO-like
  - The C1-produced RSV UFCR1-P2-NQ-foldon trimer shows a prefusion-closed structure, with a **less than 1.0Å Cα-Root-meansquare-deviation** compared to the ExpiCHO

Immunogenicity:

- Comparable to CHO
- Higher neutralization antibodies than insect cells`

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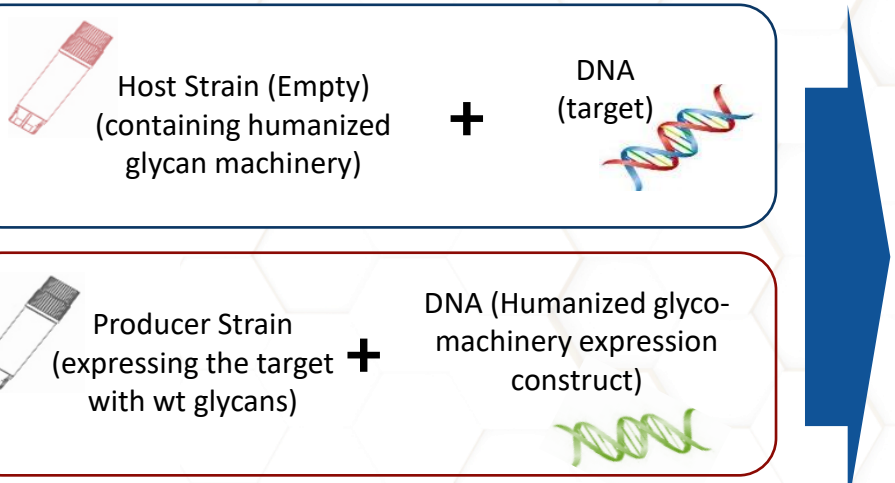
Human Glyco Pattern

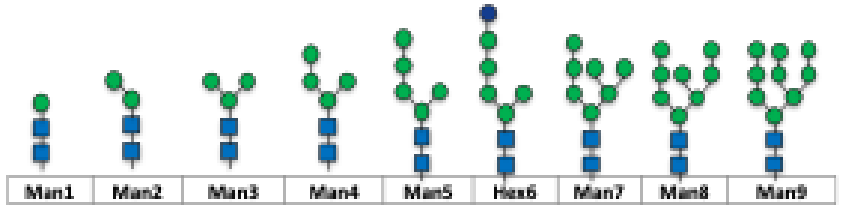
C1 Wild type glyco pattern targets are man3 to man9.

- Our aim has been to humanize N-glycosylation pathway and enable its use as production host for pharmaceutical proteins that require humanized glycans

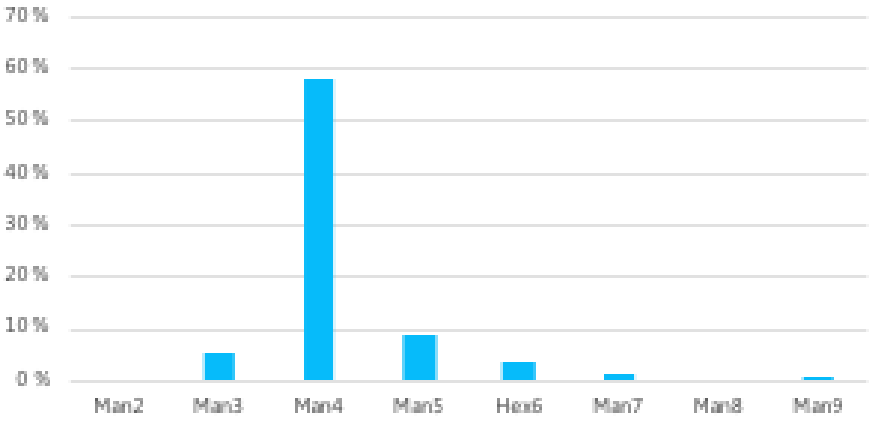
Two strategies have been sucessfully developed:

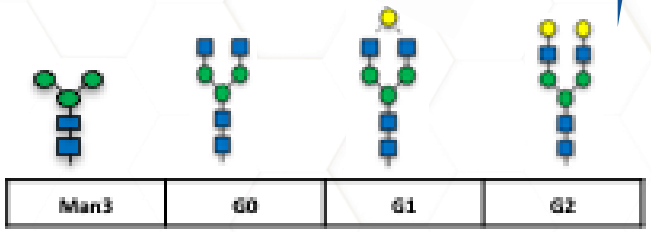
1. **Empty host strains** with humanized glyco-machinery
2. **Genetic construct** to convert a wild type glyco strain in humanized glyco strain by just one round transformation step



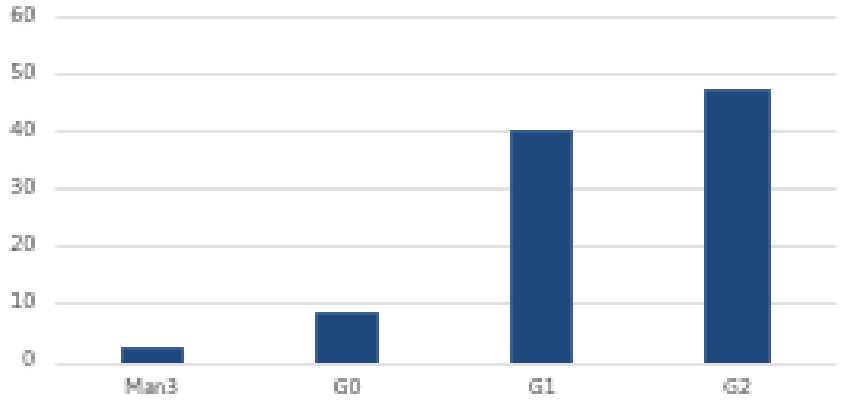


wt glyco pattern (mAb)





Humanized glyco pattern (mAb)



98.6% humanized glycans
92.7% Occupancy

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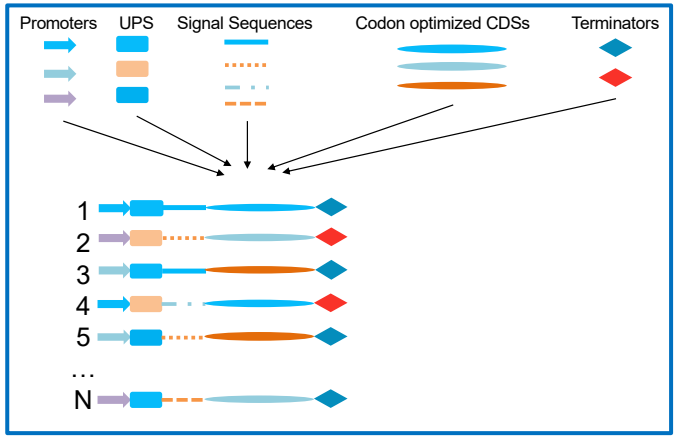
Multiple approaches to improve C1 productivity

(6–8× productivity improvements demonstrated)

Combinatorial library

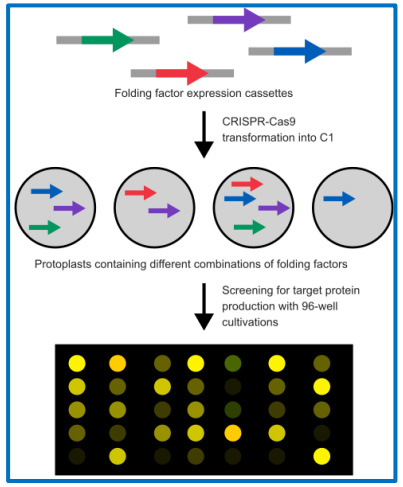


Several building blocks are being assembled using a combinatorial approach.

- Protein 5 production was improved by **6-8 fold.**

(*) Results were obtained without optimization of the fermentation.

Folding and secretion library

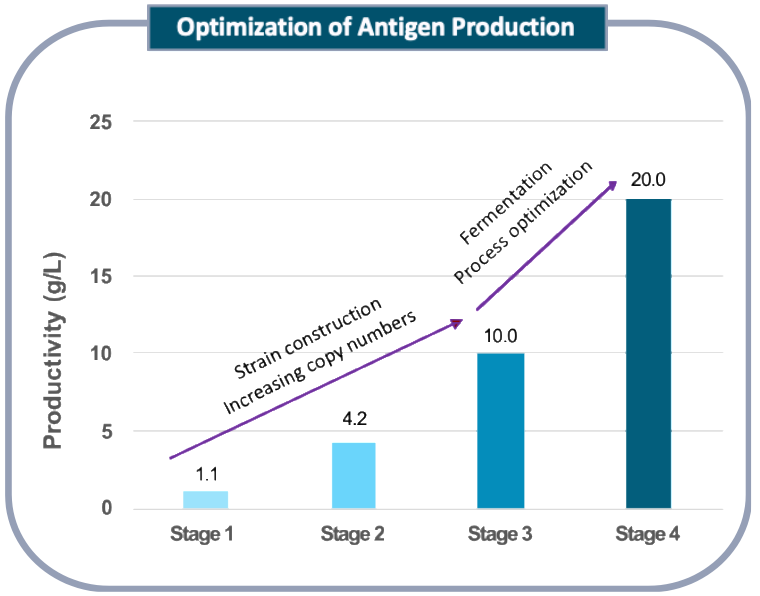


Folding and secretion factors were used for the library.

- Protein 1 production was improved from **0.73 to 1.84 g/l.**
- Protein 2 production was improved from **0.1 to 0.19 g/l.**
- Protein 3 production was improved from **0.51 g/l to 0.63 g/l.**
- Protein 4 production was improved from **6.9 g/l to 7.8 g/l.**
- Protein 5 Nivolumab G1/G2 was improved by **2 fold.**

(*) Results were obtained without optimization of the fermentation.

Fermentation optimization



Fermentation optimization

- Typically, the fermentation process optimization increases the productivity **by 20 – 50%.**
- Here the productivity was increased **by 100% after fermentation optimization.**

Comparability between Tox GLP and Phase I GMP batches

Quality by Design for C1-produced antigens

Comparability of DYAI-100 vaccine candidate batches GLP vs. Phase I GMP for some CQAs

Attribute	GLP	GMP	Comparability
Concentration	1.66 mg/ml	1.70 mg/ml	confirmed
Potency (ELISA - IVRP)	100 % (standard)	95 %	confirmed
Purity (monomers SDS)	94.3 %	99 %	confirmed
Purity (residual HCP)	4.20 %	< 1 %	confirmed
Purity (residual DNA)	NT	< 1 ppm	confirmed
Bioburden	0 CFU/ml	0 CFU/ml	confirmed
Endotoxins	3.67 EU/ml	< 0.1 EU/ml	confirmed

All parameters in Release and Charaterization panels (including tests not shown) where within acceptance criteria and similar between batches

All parameters within acceptance criteria, no significant differences between Tox GLP and Phase I GMP batches → Comparability confirmed

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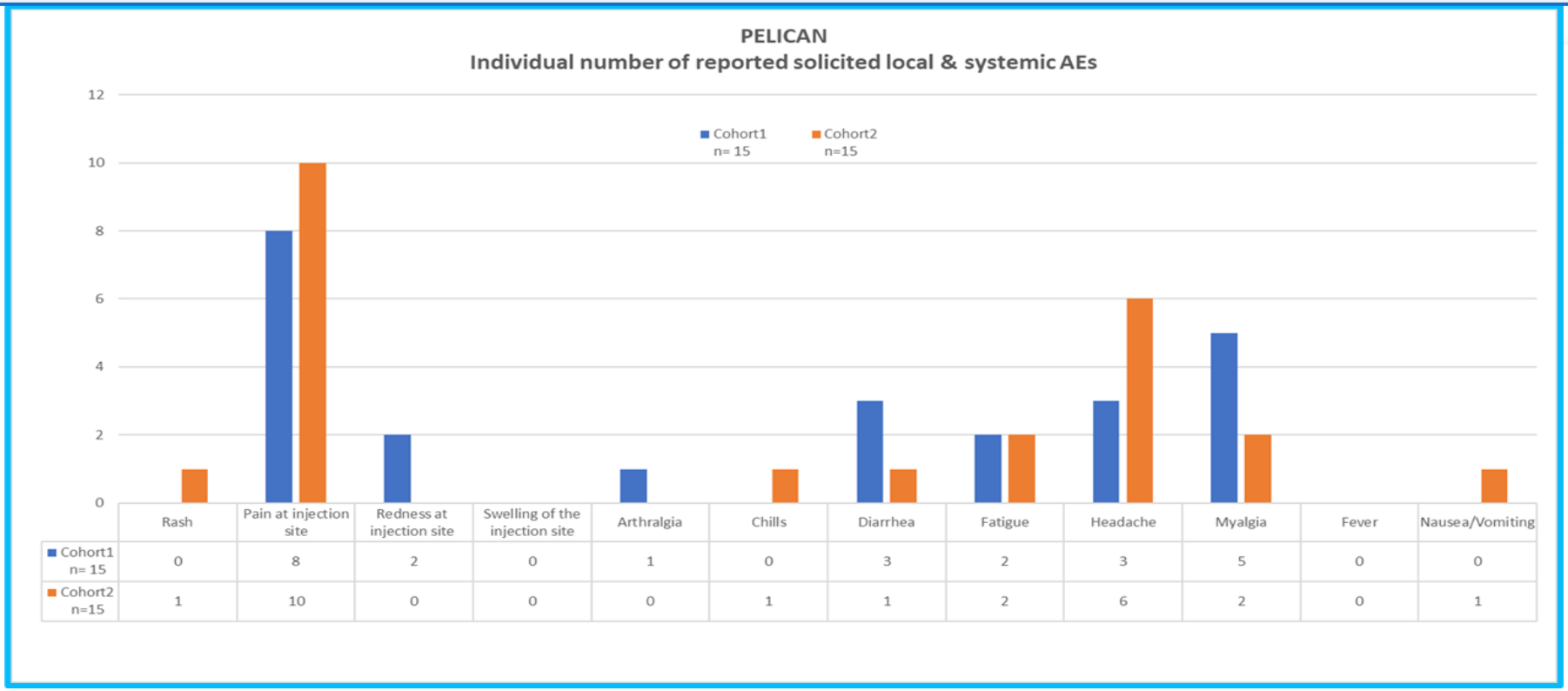
Successful DYAI-100 Phase 1 Results: Primary Endpoint Achieved

Phase 1 Study Results: Clinical safety demonstrated in humans

- *Double blind placebo-controlled safety study of 30 healthy adults conducted in South Africa.*
- *Primary endpoint of the study was to demonstrate the safety and reactogenicity of DYAI-100 as a single booster vaccine administered at two dose levels.*

Top-line safety data:

- ***Study met its primary endpoint demonstrating that both dose levels are safe and well tolerated.***
- ***DYAI-100 induced robust immune responses, including both humoral and cell-mediated responses, in vaccinated individuals.***



	Rash	Pain at injection site	Redness at injection site	Swelling of the injection site	Arthralgia	Chills	Diarrhea	Fatigue	Headache	Myalgia	Fever	Nausea/Vomiting
Cohort1 n= 15	0	8	2	0	1	0	3	2	3	5	0	0
Cohort2 n=15	1	10	0	0	0	1	1	2	6	2	0	1

DYADIC APPLIED BIOSOLUTIONS

Global Validation, CEPI, Gates Foundation, EU Vaccine Hub

Advancing Pandemic Preparedness with FBS leveraging C1 CEPI/EU Vaccine Hub

- Building on Dyadic's C1 platform and recent scientific advances
- Leveraging major new funding:
  - CEPI $4.5M
  - EU Vaccine Hub/FBS (€170M)
  - Gates Foundation mAbs $3M
- Accelerating global vaccine and therapeutic development
- Enabling faster, lower-cost, scalable production of antigens and mAbs
- Supporting pandemic preparedness and equitable access in LMICs.

Rapid Response Biomanufacturing Capability

Gene Sequence → Purified Antigen or mAb in ~33 Days

Accelerated Development Timeline

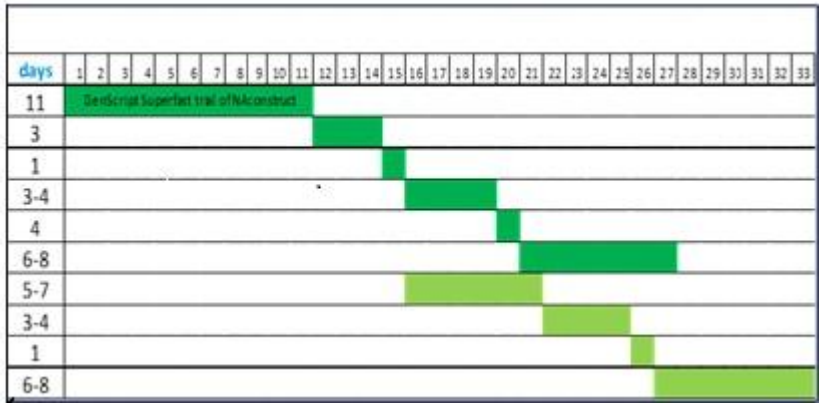
- Design & Synthesis
- Strain Development
- Expression & Screening
- Scale-Up & Production
- Purification & Characterization
- **Total Timeline: ~33 Days**

Validated in Real-World Programs:

- CEPI / EU Vaccine Hub aligned programs
- Applied to preclinical H5 avian influenza candidates
- **Supports CEPI 100-Day Mission**

Key Takeaways:

- Weeks vs months vs traditional systems
- Scalable, flexible (antigens & mAbs)
- **Accelerates pandemic response**



DYADIC
APPLIED BIOSOLUTIONS

$3 Million Gates Foundation Grant to Develop Cost-Effective mAbs

C1- Helping to Democratize mAbs; Multi-gram per liter monoclonal antibody production

- **12 g/l in 7-day fermentation after single transformation, prior to future optimization**
- **~ 100 % Human Glycan structures**
- Released N-glycans of single-step Protein A purified RSV mAb
- Two main peak fractions from each purification pooled and analyzed

Gates Foundation

		M7965 CRISPR MT909-6	M7968 CRISPR MT912-6	M7970 random MT913-6	M7965 CRISPR MT921-5	M7965 CRISPR MT922-5
N-glycan	RT (min)	Amount, %	Amount, %	Amount, %	Amount, %	Amount, %
M3	-	-	-	-	-	-
M3_GlcNAc	-	-	-	-	-	-
G0	10,6	9,1	9,5	7,52	7,67	8,52
M3_GlcNAc_Gal	11,3	1,4	-	-	-	-
G1	12,0	24,4	23,9	23,36	24,17	24,11
G1_2	12,2	20,4	20,2	20,38	19,80	20,60
G2	13,5	42,0	46,4	48,74	48,36	46,78
Total % of G0 to G2 N-glycans		96,0	100,0	100,0	100,0	100,0
RSM01 titer, g/L		12,3	10,3	5,3	11,5	12,1

High levels of humanized (G0 to G2) N-glycans, ~ 100%.

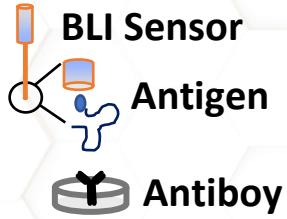
DYADIC APPLIED BIOSOLUTIONS

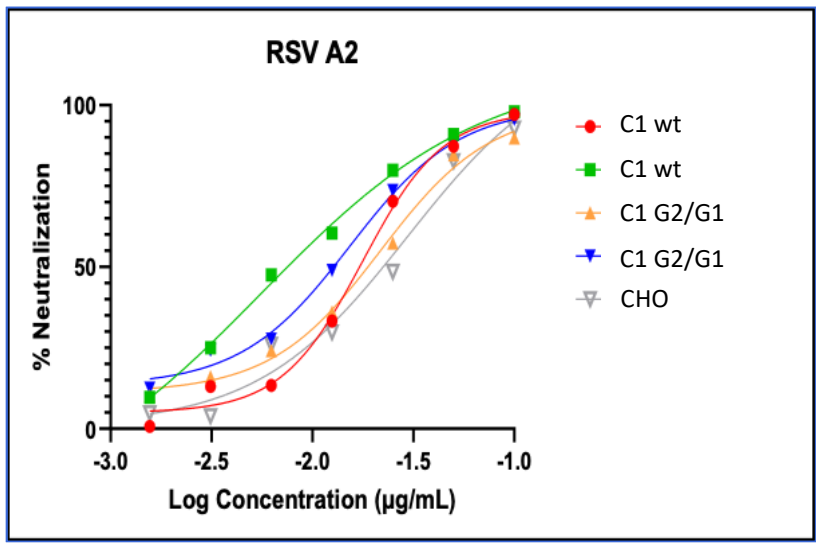
23

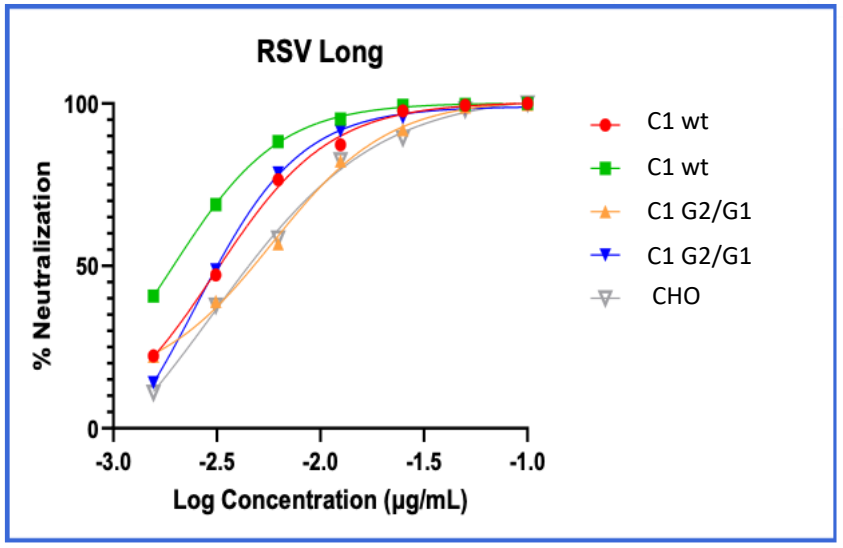
RSM01 mAb Potency Test – C1 Cells Are Equivalent to CHO Cells

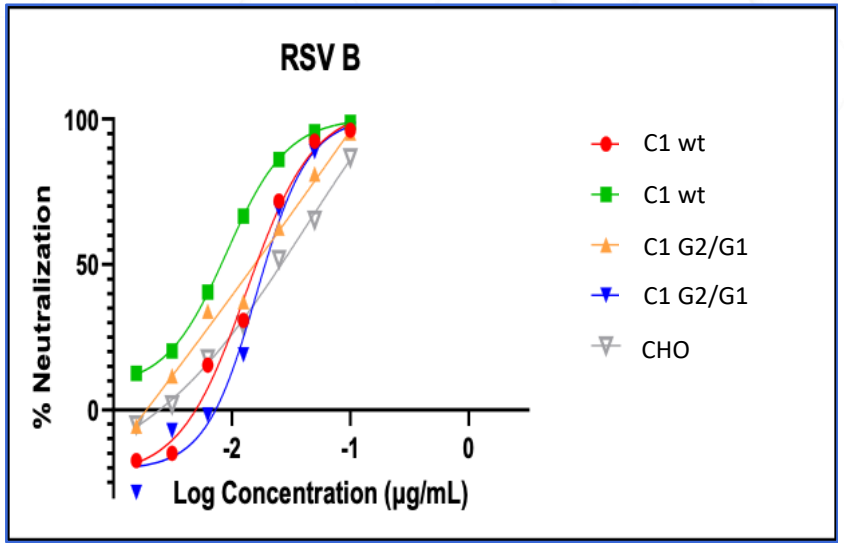
Kinetics of Respiratory Syncytial Virus (RSV) Plaque-Reduction Neutralization Test (PRNT) on Vero cells.
The test was done against various RSV strains (RSV A2, RSV A-Long, and RSV B).

Two different versions of C1-mAb were tested - C1-mAb containing native glycan (WT) and C1-mAb containing modified glycan (G2/G1).









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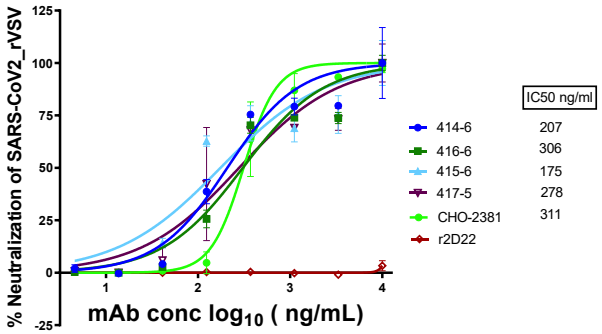
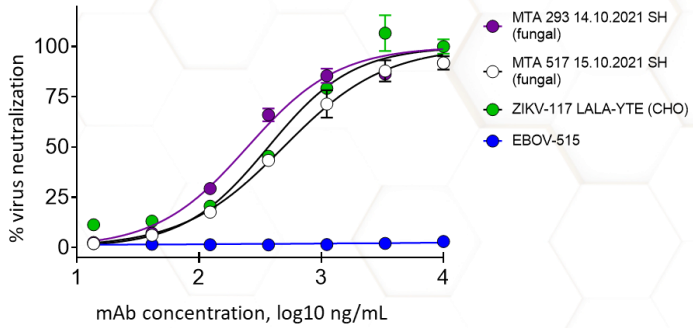
C1 mAbs Show Comparable Neutralization & Binding to CHO

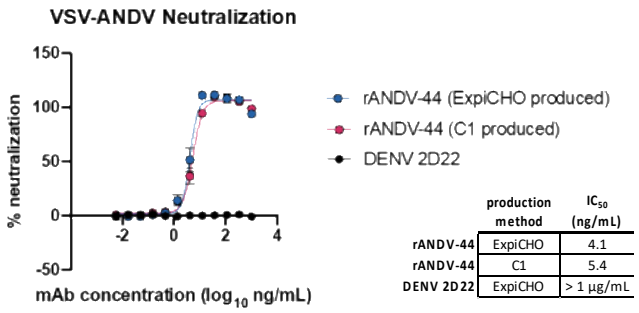
SARS-COV2



ZIKA

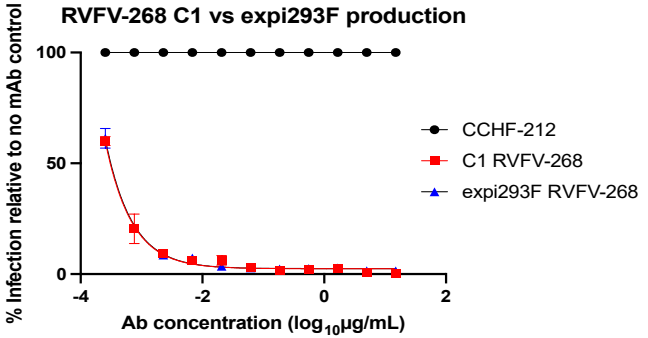


ANDES VIRUS



	production method	IC_{50} (ng/mL)
rANDV-44	ExpiCHO	4.1
rANDV-44	C1	5.4
DENV 2D22	ExpiCHO	> 1 µg/mL

RIFT VALLEY



DYADIC APPLIED BIOSOLUTIONS

Advancing C1 Platform & Product Candidates

C1 platform enables **gram-per-liter yields in 4–7 days**, supporting faster development, manufacturing, and release—with CHO-like quality but **higher yield, lower cost, and no viral clearance**.

Advancing an **expanding pipeline available for licensing** (RSV/hMPV/PIV3 combo, H5 influenza, rabies, malaria, and mAbs), including work aligned with the **Gates Foundation** & **CEPI's 100-day vaccine target**.

Worth a quick discussion?

C1; a Safe, Efficient, Affordable & Sustainable Biomanufacturing Platform for a Global Economy!

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Thank You

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