Plant Form

Plant-made biologics for today's global healthcare needs

plantformcorp.com

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OPPORTUNITY

Biologic drugs are a revolutionary category of therapeutics.

These large, complex molecules are made in living cells to treat life-threatening diseases like cancer, and other chronic, complex conditions.

The global market for Biologics of USD $400 Billion in 2024 is projected to reach USD $653 Billion by 2030 (CAGR of 8.5% from 2025 to 2030).

But these drugs are expensive and increasingly unaffordable for patients and healthcare systems.

Cancer treatment with Keytruda (Pembrolizumab) can cost up to USD $150,000 per patient.


Plant Form
We're changing that...

SOLUTION

*vivo*XPRESS® platform for plant-made antibody and protein therapeutics

- Biologic drug production for one-third of industry standard COGS
- High-yield expression
- Mammalian-type glycosylation
- Rapid production
- Unlimited scalability
- Versatility (many applications)
- Animal-free materials
- Patented technology
- Pipeline of biosimilar + innovator medical countermeasure drugs

MADE IN CANADA

Dr. Chris Hall

Dr. Chris Hall, a PlantForm co-founder, developed the original *vivo*XPRESS® platform at the University of Guelph as a Tier 1 Canada Research Chair in Recombinant Antibody Technology.

PlantForm has an exclusive worldwide license for the original technology and has patented many important improvements.

*vivo*XPRESS® RECOMBINANT TECHNOLOGY PLATFORM

***vivo*XPRESS® proprietary process (fully contained environment)**

Standard processing

Step 1

Generate biomass

Grow *Nicotiana bethamiana* from **proprietary KDFX seedline**

4 weeks

Customize *Agrobacterium* with genetic sequence for target drug **(patented process)**

3 days

Step 2

Infiltrate plants with *Agrobacterium*

1 day

Step 3

Generate product

Plants grow, producing drug in each cell

1 week

Step 4

Extract drug

1 day

Step 5

Purify drug

Using standard process

4 days

Step 6

Package product

2 days

6 weeks from seed to high-value pharmaceutical

Manufacturing process aligns with preferred standards and regulations for pharmaceutical drug production.

*vivo*XPRESS® IP ESTATE (1 OF 2)

7 families of patents issued for technology and methods | 3 additional patent families under review

Country	Patent Number	Status	Expiration	Letters Patent	Purpose
Patent Title: Vectors and Methods For Enhancing Recombinant Protein Expression in Plants					
Argentina	P 013 01 03350	Issued	2033	Data Room	Fundamental process patent protecting the *vivo*XPRESS® plant-based production system
Brazil	BR1120150059112	Issued	2033	Data Room	
Mexico	MX/a/2015/00340 3 (32707)	issued	2033	Data Room	
Patent Title: Production of Ricin Antibodies in Plant					
Canada	3,045,161	Notice of Allowance	2036	App Pending	Patent protecting the method of production of PhD9, a plant produced antidote to Ricin exposure
United States	16/464,797(11,447,789)	Issued	2036	Data Room	
Patent Title: Transgenic Plant With Reduced Fucosyltransferase And Xylosyltransferase Activity					
Canada	3,045,173	Pending	-	App Pending	Plant with modified glycosylation. A tool which can be used for production of optimized products with the *vivo*XPRESS® plant-based production system
Europe	17876146.6	Pending	-	App Pending	
United States	16/464,818 (11,499,160)	Issued	2037	Data Room	
Patent Title: Compositions and Methods For Increasing Expression of Heterologous Proteins in Plants					
United States	63/633,245	Pending	-	App Pending	Key molecular biology tools for increasing the production rate of proteins and antibodies in the vivoXPRESS® and other plant production systems.

*vivo*XPRESS® IP ESTATE (2 OF 2)

Country	Patent Number	Status	Expiration	Letters Patent	Purpose
Patent Title: Transient Silencing Of Native Argonaute1 & Argonaute4 To Increase Recombinant Protein Expression In Plants					
Canada	3,071,578	Pending	-	App Pending	Extension of protection for *vivo*XPRESS® plant-based production system
Europe	18842376.8	Pending	-	App Pending	
United States	16/635,402 (11,802,289)	Issued	2038	Data Room	
Brazil	BR112020002298	Pending	-	App Pending	
UAE	P6000164/2020	Pending	-	App Pending	
South Africa	2020/01019	Pending	-	App Pending	
Patent Title: T-DNA Vectors With Engineered 5' Sequences Upstream Of Post-translational Modification Enzymes And Methods Of Use Thereof					
Brazil	BR1120210176020	Pending	-	App Pending	Protection of glycoengineering methods in the in the *vivo*XPRESS® plant-based production system allowing generation of mammalian type products
Canada	3,132,423	Pending	-	App Pending	
Europe	20765965.7	Pending	-	App Pending	
Patent Title: T-production Of Ace2-fc Fusion Protein In Plants And Uses Thereof					
Canada	3,179,142	Pending	-	App Pending	Method for production of a Coronavirus therapy

PRODUCT FOCUS

Biosimilars

Biosimilars are highly similar versions of existing, off-patent biologic medications with comparable efficacy, safety, and quality to the original brand name drug.

Rationale

Access to market

Approved biosimilar medicines are required to have no clinically meaningful differences in terms of safety, efficacy, purity, or potency from the relevant reference product and are based on the totality of evidence from analytical, nonclinical, pharmacokinetic, and clinical studies.

Phase 2 clinical studies are not required. Only limited Phase 3 studies are required.

Market size

The biosimilar market was USD $36.0 Billion in 2024 and is expected to rise to USD $114 Billion in 2031.

PlantForm opportunities

Biosimilar Lucentis® (ranibizumab)
Biosimilar Keytruda® (pembrolizumab)

PIPELINE

Biosimilar Keytruda®

- PlantForm has a Collaborative R&D agreement with Brazil's Ministry of Health to develop a biosimilar pembrolizumab (and up to 5 future products for the Brazilian and other world markets).
- Potential biosimilar royalties from Brazil to PlantForm of up to USD $300 Million per year starting 2028.
- The global Keytruda® market was USD $27.1 Billion in 2024 and is anticipated to reach USD $81.1 Billion by 2037, growing at a CAGR of roughly 9.5% between 2024 and 2032.

Keytruda® is the world's best-selling drug, used to treat many types of cancer including breast cancer, skin cancer and lung cancer.

CURRENT STATUS & MILESTONES

Biosimilar Keytruda (pembrolizumab)

COMPLETED

2023 → **2024**

- Expression Development
- Process Development
- Preclinical Development

NEXT STEPS

2025 → **2028**

- Preclinical studies
- IND
- Phase 1 & 3 Clinical Trials
- GMP Validation & Manufacturing
- Regulatory Submission
- Sales

PIPELINE

Biosimilar Lucentis®

- PlantForm's biosimilar ranibizumab is in development with an expected commercial launch date of 2027.
- Current FDA approved biosimilars in market include Byooviz and Cimerli. A biosimilar Eylea is approved by FDA but subject to ongoing litigation.
- The global Lucentis® market was estimated at USD $8.5 Billion in 2024 and is anticipated to reach USD $15.2 Billion by 2032, growing at a CAGR of roughly 8.43% between 2024 and 2032.

Lucentis® and comparable drug Elyea are used globally to treat age-related macular degeneration

- **Lucentis costs USD $1,850 for a single-use 0.5-mg vial**
- **Current biosimilars are USD $1,130 for a similar single-use dose**
- **PlantForm biosimilar expects to be priced at < USD $750 with higher absolute cash margin compared to innovator or other biosimilars.**

CURRENT STATUS & MILESTONES

Biosimilar Lucentis (ranibizumab)

COMPLETED

2023 → **2024**

- Expression Development
- Process Development
- Preclinical Development

NEXT STEPS

2025 → **2027**

- Preclinical studies
- IND
- Phase 1 & 3 Clinical Trials
- GMP Validation & Manufacturing
- Regulatory Submission
- Sales

Biodefense

Biodefense is focused on medical countermeasures to biological threats including bioterrorism attacks.

Rationale

Accessible government stockpiling

The primary market for biodefense drugs are government agencies for emergency stockpiling preparedness.

Phase 2 and Phase 3 clinical studies are not required.

Market size

The biodefense market is expected to grow from USD $17.9 Billion in 2024 to USD $37.6 Billion by 2034.

PlantForm lead opportunity

Antidote to ricin poisoning.
First estimated sales projected for 2027 of USD $38 Million+.

PIPELINE

Ricin Antidote

- PlantForm has an exclusive worldwide license for the best-in-class antidote drug PhD9, developed in partnership with Defence Research and Development Canada.
- A collaboration agreement is in place with SwiftPharma for Europe, Middle East, Africa (EMEA).
- The future market value of the Antidotes Market is expected to reach USD $3.94 Billion by 2030.

Ricin is a highly toxic, naturally occurring toxin derived from the castor bean plant. It is a high-risk threat agent, with significant cases since 1978.

CURRENT STATUS & MILESTONES

PhD9 Ricin Antidote

COMPLETED

2014 → **2024**

- **Expression Evalution**
- **Process development**
- **GLP Manufacturing**
  Activity, stability characterization
- **Efficacy**
  NHP
- **Safety study**
  NHP

NEXT STEPS

2025 → **2027**

- **GMP Manufacturing**
- **Safety & toxicology**
  Rodents, NHP
- **IND**
- **Phase 1 Clinical**
  Volunteers (no exposure)
- **Validation**
  Process assays
- **Regulatory Submission/ PreSales**

BUSINESS MODEL

Development and Manufacturing of Biologics for In-House and Partnered Programs

- Research, development and production of target drug products.
- *vivo*XPRESS® production in *Nicotiana benthamiana* plants (patented seedline & process).
- Plant growth has progressed from laboratory greenhouse (10 plants) to clinical scale at CMO (32,700 plants).
- Commercial scale is 675,000 plants in a fully contained vertical growth facility.

Contract customers and strategic partners include DARPA, Gates Foundation, NIH-NIAID, University of Alabama, Birmingham (U.S.); Defence Research and Development Canada, Agriculture and Agrifood Canada; National Center for Scientific Research, (France).

GO TO MARKET PLAN

MEDICAL COUNTERMEASURES

Develop and manufacture products for direct sale to government buyers.

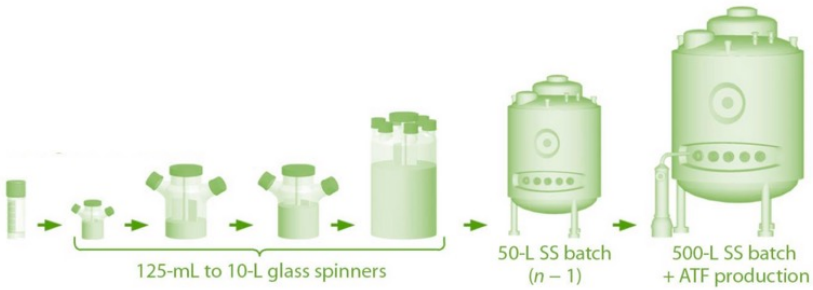
BIOSIMILARS

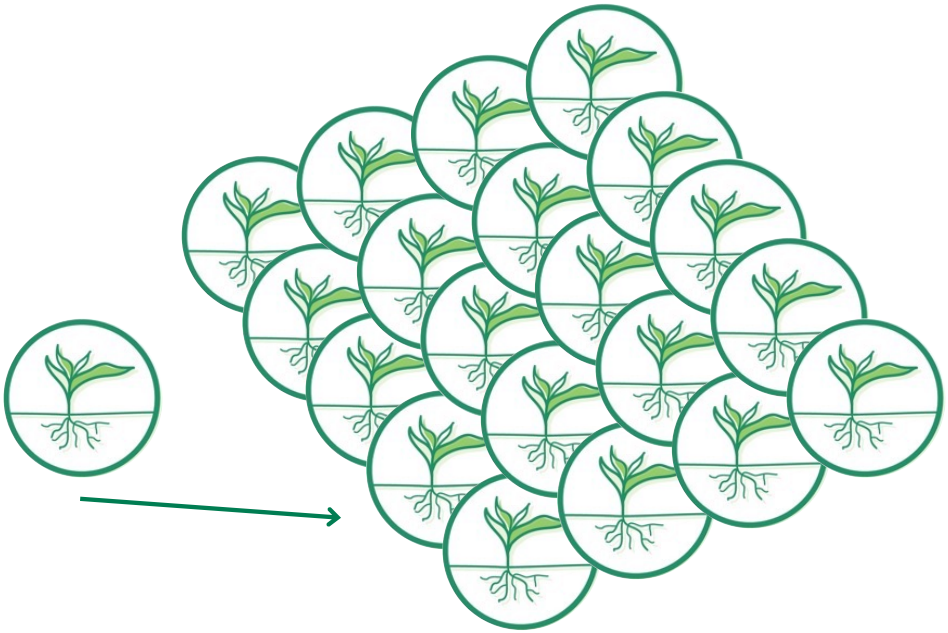
Partner with a large generic or biopharmaceutial company for Phase 3 clinical trials, market entry and sales distribution.

PlantForm will licence products for partner sales & distribution.

PlantForm will receive a licensing fee and transfer price for manufacturing.

COMPETITIVE ANALYSIS





MAMMALIAN CELL FERMENTATION

Longer, highly expensive process with many complex steps and equipment changes.

FAST, SIMPLE LINEAR SCALABILITY

Ultra-low-cost process rapidly scales to hundreds of thousands of identical plants. No animal materials.

COMPETITIVE ANALYSIS: PLANT-BASED SYSTEMS

WHOLE-PLANT SYSTEMS *(Nicotiana benthamiana)*

PlantForm has the most advanced, patented technology for:

- High expression rates
- Humanized glycosylation
- Cloning process

Many applications

7 families of patents

PlantForm scientists have 20+ years experience developing vector systems for transient expression of proteins in plants.

This expertise is a key component of the PlantForm competitive advantage – comprising a wealth of trade secret practices relating to plant husbandry, growth of *Agrobacterium*, vector design, and behaviour of proteins.

OTHER COMPANIES WITH PLANT-BASED SYSTEMS

A list of key competitors for recombinant plant-made pharmaceuticals is available upon request.

MANAGEMENT TEAM

Don Stewart, PhD
Chief Executive Officer

Dr. Stewart brings 30 years management experience in the biotechnology industry to this role. As the Director of Research and Development for Cangene Corporation, Dr. Stewart was responsible for the company's research and development group and gained experience in other aspects of therapeutic drug development while responsible for manufacturing for clinical trials, animal efficacy and toxicology studies.

Ron Hosking
Chief Financial Officer

Mr. Ron Hosking, an experienced financial manager and chartered accountant, is a founder of PlantForm Corporation.
Mr. Hosking brings 40 years of experience providing strong leadership, sound business management and clear strategic financial direction to growing businesses in the life sciences industry. Mr. Hosking was a Board Member of Cynapsus Therapeutics and helped oversee the sale of the clinical development stage company for $830 million.

David Cayea
Chief Operating Officer

Mr. David Cayea joined PlantForm in 2011 as Director of International Relations & Business Development, responsible for advancing the Company's strategic growth strategy by developing and fostering global partnerships.
Mr. Cayea is an entrepreneur who has successfully launched private-sector companies in multiple industries over the last 20 years. He has extensive business management experience in Europe, Asia and North America.

Doug Cossar, PhD
Vice President Research

Dr. Doug Cossar is a biotech industry veteran with 30 years of management and research experience. Prior to joining PlantForm as Vice-President, Research, Dr. Cossar was research manager, biotechnology, at Croda Europe Ltd. He has served as principal investigator, biotechnology, for the Structural Genomics Consortium and in senior positions at Canadian biotech company Cangene and the Public Health Laboratory Service in the U.K.

Ashley Meyers, M.Sc.
Chief Operating Officer, AntoXa Corp

Ms. Meyers has been a member of the company's leadership team since its inception.
She brings more than 17 years of experience in drug research and development with a focus on recombinant proteins and production of these products for pre-clinical trials. Ms. Meyers has led AntoXa's medical countermeasures research and development programs since 2012 and has secured more than $4.5 million towards advancing its programs.

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Thank you

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Making life-saving biologic medicines more affordable & accessible

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