CYPRESS BIO

TRANSFORMING BIOPHARMACEUTICALS

Innovating Plant-based Biopharmaceuticals for a Sustainable and Scalable Future

OUR MISSION

To revolutionize the biotechnology landscape by leveraging plant-based technologies for innovative therapeutic solutions.

SAFETY

Free from human or animal components.

SPEED

Rapid production cycles (4-7 days), reducing time to market.

SCALABILITY

Cost-effective and environmentally friendly.

SIMPLICITY

Streamlined processes for accessibility and compliance.

THE BIOPHARMACEUTICAL BOTTLENECK

High Costs	$10,000+ per gram for monoclonal antibodies (e.g., anti-cancer antibody).	Affordable plant-based production reduces costs by up to 80%, making advanced therapeutics accessible globally
Commercial Scale Difficulties	Complex and costly large scale manufacturing	Rapid Protein Production System enables scalable manufacturing in just 4–7 days, overcoming bottlenecks in large-scale production
Storage & Distribution Challenges	Cold chain logistics required for transport and storage, increasing costs	Shelf-stable therapeutics eliminate the need for cold-chain logistics, enabling distribution in remote and underserved regions
Access Barriers	High costs and limited scalability restrict access, especially in underserved regions	Lettuce-Based Bio-Capsule technology simplifies drug delivery with easy-to-use, oral therapeutics for equitable access

Our Plant Rapid Protein Production System still requires cold chain storage

- By integrating plant-based production and innovative delivery systems, Cypress Bio transforms bottlenecks into scalable, sustainable solutions.
- Our platforms align with the future of biopharma: rapid, affordable, and accessible therapeutics for all.

CYPRESS BIO: TRANSFORMING BIOPHARMACEUTICALS

Platform 1:

Lettuce-Based Bio-Capsule System

- System Target therapeutic proteins in plant chloroplasts.
- Orally bioavailable proteins for chronic diseases.
- Plant cell walls protect proteins through digestion and release them in the gut.
- Eliminates expensive injections and cold storage.

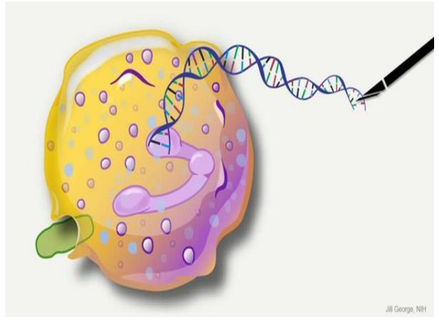
Platform 2:

Plant Rapid Protein Production System (4-7 days)

- Scalable — each plant is a single bioreactor.
- Cost-efficient production of therapeutic proteins in plant leaves.
- Reduces recombinant protein production costs to $150-200 per gram.
- Fast production cycles using light, water, and fertilizer.

PLATFORM 1 – SAFE, EFFECTIVE, AND ACCESSIBLE ORAL THERAPEUTICS:
LETTUCE-BASED BIO-CAPSULE SYSTEM

Gene Modification



Scalable Growth

Freeze dry

How It Works:

- Utilizes high-copy-number chloroplast genomes to produce therapeutic proteins.
- Bioencapsulation in plant cells protects proteins from digestion.
- Released in the gut by commensal bacteria, targeting immune or circulatory systems.

Advantages:

- Long-Term Stability: No refrigeration required; stable for 3 years as freeze-dried powder.
- Lower Costs: Avoids purification, reducing production expenses.
- Patient Compliance: Oral delivery eliminates the need for injections.
- Safety: Free from human or animal components, no blood-related concerns, and no risk of human infectious diseases.

Yield and Scalability:

- 1 kg fresh lettuce produces 25 g powder after lyophilization.
- 40 kg fresh lettuce produces 1 kg powder containing 120–400 g of therapeutic protein.
- Each kilogram of powder can generate 2,400–8,000 capsules, depending on protein yield.
- Cost Per kg of Lettuce: $3 –$4 (comparable to grocery store prices).

Case Studies:

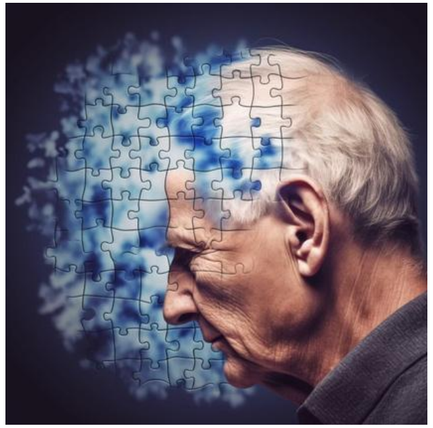
- Hemophilia A&B
- Peanut allergies
- Pompe
- Rheumatoid arthritis
- Allergic asthma
- Pulmonary Hypertension
- Human Insulin-like growth factor-1
- Diabetes

To our knowledge, we'll be the first company in the world to utilize this technology

PLATFORM 1 – LETTUCE-BASED BIO-CAPSULE SYSTEM:
CORE FOCUS AREAS (FLEXIBLE FOR EXPLORATION)

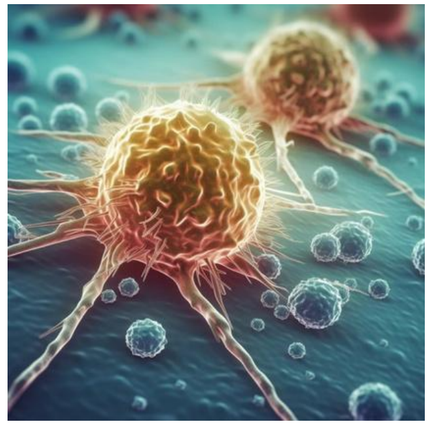
Aging-Related Diseases

- Produce and deliver anti-aging proteins (i.e. Telomerase) for anti-aging treatments
- Hypertension, cardiovascular diseases



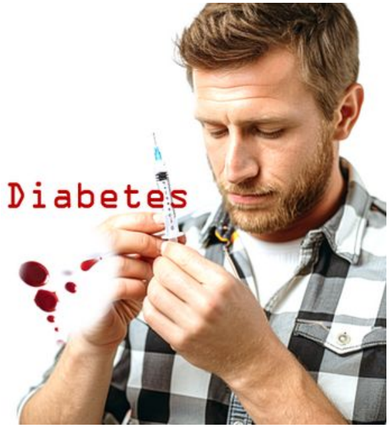
Alzheimer's Disease

- Stable, patient-friendly oral delivery method
- Improves accessibility and compliance for treatments



Cancer and Tumor

- Development of therapies for tumors and cancer
- Produces proteins or antibodies targeting cancer cells
- Potentially improves outcomes for cancer patients



Diabetes

- Lettuce plants using chloroplast technology to express insulin-stimulating proteins
- Potential in regulating blood sugar levels in animal studies
- Suggesting a potential functional cure for diabetes

PLATFORM 2 – SCALABLE AND COST-EFFECTIVE BIOMANUFACTURING: *PLANT RAPID PROTEIN PRODUCTION SYSTEM (PRPPS)*

How It Works:

- Rapid introduction of target genes into plant organisms through plant-specific expression vectors
- Proteins are harvested directly from plants in a short period of time (up to several days)

Advantages:

- Cost Efficiency: $150-200 per gram.
- Rapid Scalability: Production cycles completed in 4–7 days using minimal inputs (light, water, fertilizer).
- Sustainability: Eco-friendly with minimal resource requirements.

Use Cases:

- Vaccines, enzymes, monoclonal antibodies.
- Potential to address future pandemics with rapid production.

CAPABLE OF PRODUCING 150 KG OF MONOCLONAL ANTIBODIES (MAB) PER YEAR!

Gene Modification

Agroinfiltration

Plant Factory

4-7 days Protein Expression

Protein Purification

2-3 days

Function Analysis

Product

PLATFORM 2 – PRPPS:
HARNESSING PRPPS TO DEVELOP PERSONALIZED MEDICINES AND ORPHAN DRUGS

Individual Disease
（Such as Tumor)

1 or 2
Weeks

Individual Pathological
Gene Characterization
via Genomic Analysis

1 or 2
Weeks

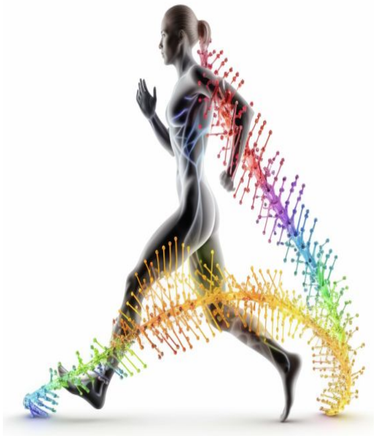
Gene Synthesis and
Expression Vector
Construction

4
Days

Lettuce Agroinfiltration

Lab-scale Protein Purification

2 or 3
Days



Personalized medicine
Only for You

CYPRESS BIO

THANK YOU

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