Protheragen

Transgenic Crops with High Expression of Sweet Proteins

Seeking Out-licensing, Co-development, and Financing Opportunities

Transgenic Crop Breeding Technology Platform

Li* company has established a complete vector construction, gene editing tool development, tissue culture rapid propagation, and genetic transformation platform. This company utilizes genetic engineering technology to clone sweet protein genes into carefully selected crops to construct transgenic crops that are easy to grow and highly express sweet proteins.

Li* is developing transgenic crops with high expression of sweet proteins, such as **Corn, Cucumber, Japonica Rice, Potato, Soybean, and Tomato**, to reduce the demand for traditional sugar crops, increase crop value, improve public health, and promote the development of related industries.

Expression of Exogenous Sweet Protein in Major Crops

Through a comprehensive evaluation involving sensory analysis, molecular qualitative analysis (PCR), and copy number determination, the data results across 39 corn samples, 19 rice samples, and 45 soybean samples confirm that Li*'s technology platform has achieved stable expression of exogenous sweet protein in three major crops.

Food Sensory Testing

Statistical analysis of the samples reveals the potential of these three major crop species in sweet protein expression.

- Rice Chassis (Oryza sativa) lines demonstrated an exceptionally high upper limit for expression.
- Corn Chassis (Zea mays) lines exhibited the most robust expression performance and the highest average sweetness, making them suitable as a source for large-scale industrial production.
- Soybean Chassis (Glycine max) lines achieved synergistic accumulation of sweet protein and plant protein.

Crop Type	Avg. Sweetness	Peak Sweetness	Commercial Potential
Corn	2.33	3.1	Ideal for large-scale bio-manufacturing of sweet protein extracts
Rice	1.71	3.4	Suitable for premium functional food development
Soybean	1.58	2.6	Plant-based milk, protein beverages, healthy meal replacements

Sweetness was quantified on a 1-to-5 intensity scale, with the sensory panel calibrated against standard sucrose solutions of varying concentrations to ensure objective evaluation.

Low-Copy, High-Expression Lines

Multiple lines characterized by "single-copy insertion + high sweetness" have been successfully screened. This demonstrates that this company's transgenic technology has achieved precise insertion and efficient expression. Subsequent propagation offers high regulatory compliance and extremely stable hereditary traits.

The lines listed in the table hold significant potential. Through purification and breeding, it is expected that varieties with ultra-high sweetness can be developed. Low-copy lines effectively mitigate the risk of gene silencing associated with multiple copies, ensuring stable expression of target traits across generations. Furthermore, single-copy lines facilitate the establishment of homozygous lines and hybrid introgression into leading commercial varieties.

Line ID	Crop Type	Sweetness Score	Copy Number	Commercial Potential
MG24-52-1348-2	Corn	3.1	2	For high-intensity sweetener production
24-20797	Rice	3.4	3	For establishing low-cost biosynthetic solutions to replace chemical sweeteners
S24-YN-05515-01	Soybean	1.8	1	For developing non-added-sugar soybean milk with a naturally sweet profile

In addition, elite lines such as Rice 24-20800 (Score: 2.2, Copy: 1) and Corn MG25-01-0262-2 (Score: 2.6, Copy: 1) exhibit stable inheritance patterns. This simplifies homozygous line development and backcrossing into mainstream commercial cultivars.

R&D COMPANY OVERVIEW

Li* is an innovative biotechnology company in the United States that focuses on agricultural science. This company is dedicated to revolutionize the food industry by using innovative gene editing technology to produce high-quality vegetables or fruits with high sweetness, good taste, and low calorie. Li* has an experienced molecular breeding team and establishes in-depth connection with many molecular breeding experts.

SEEKING OPPORTUNITIES

- Out-licensing
- Co-development
- Financing

Market Potential

Compared to microbial fermentation or traditional natural extraction, producing sweet protein through large-scale field crop cultivation significantly reduces raw material costs and provides substantial potential for gross margin premiums. In alignment with global "sugar reduction" and "zero additive" trends, transgenic crops offer a systematic solution for natural sugar substitution at the source.

According to market data released by Fortune Business Insights, the global natural sweetener market size was valued at USD 25.78 billion in 2024 and is expected to grow to USD 42.61 billion in 2032 at a CAGR of 6.48% during the period. Sweet protein as a natural, low-calorie sweetener can replace some sucrose and artificial sweeteners. Developing and planting transgenic crops with high expression of sweet proteins is a fast and effective way to achieve high production of sweet proteins. In addition, the widespread application of sweet proteins will drive the development of related industries such as the food industry, beverage industry, and the pharmaceutical and health product industries.

About Protheragen

Headquartered in New York, Protheragen is a US-based company specializing in the global pharmaceutical and biotech sectors. Our core services aim to precisely connect innovative assets with potential partners worldwide, efficiently facilitating diverse strategic collaborations including, but not limited to: Licensing-out, Financing, Co-development, and Mergers & Acquisitions.

www.protheragen.com

inquiry@protheragen.com

101-4 Colin Dr, Holbrook, NY 11741, USA