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Intellectual Property

Status: Patent Pending

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Geminiviral Plant Protein Expression Vector Improvements

AzTE Case # M11-107

Invention Description

Plant viral vectors have great potential for rapid production of important pharmaceutical proteins. High-yield production, however, of hetero-oligomeric proteins that require the expression and assembly of two or more protein subunits often is problematic due to the competing nature of viral vectors derived from the same virus.

Researchers at the Biodesign Institute at Arizona State University have developed two solutions to this problem. They have produced a novel, single-vector replicon system providing high-yield production capacity for hetero-oligomeric proteins, without the need for identifying non-competing viruses or co-infection with multiple expression modules.

They have also developed a three-component BeYDV replicon system that permits simultaneous, efficient replication of two DNA replicons and thus high-level accumulation of two recombinant proteins in the same plant cell.

These two systems represent a significant advance in transient expression technology for protein and antibody production in plants.

Potential Applications

Plant-based production of antibodies and other proteins

Benefits and Advantages

- Single-vector replicon system:
 - provides high-yield production capacity for hetero-oligomeric proteins
 - o eliminates the difficult task of identifying non-competing viruses
 - \circ $\;$ eliminates the need for co-infection of multiple expression modules.
- BeYDV replicon system:
 - o permits simultaneous efficient replication of two DNA replicons
 - allows high-level accumulation of two recombinant proteins in the same plant cell