Genetic Engineering-2013

International Conference on
Genetic Engineering & Genetically Modified Organisms

August 12-14, 2013 Raleigh-North Carolina, USA

Overproduction of recombinant proteins in plants

Erin Egelkrout
Applied Biotechnology Institute, USA

Abstract

Recombinant protein production in microbial hosts and animal cell cultures has revolutionized the pharmaceutical and industrial enzyme industries. Plants as alternative hosts for the production of foreign proteins are being actively pursued, taking advantage of their unique characteristics. The key to cost-efficient production in any system is the level of protein accumulation, which is inversely proportional to the cost. Levels of up to 5 g/kg biomass have been obtained in plants, making this a cost competitive system with microbial hosts. Increasing protein accumulation can be addressed at the cellular level by varying host, germplasm, location of protein accumulation, and transformation procedure. At the molecular level increased expression can be achieved by improving transcription, translation and accumulation of the protein. The greatest increase in protein accumulation will occur when various optimized parameters are more fully integrated with each other. Because of the complex nature of plants, this will take more time and effort to accomplish than has been the case for the simpler unicellular systems. However the potential for plants to become one of the major avenues for protein production appears very promising. Approaches to optimizing foreign protein expression in transgenic plants will be discussed along with the examples of promising plant-produced protein products.

Biography

Erin Egelkrout completed her Ph.D. at North Carolina State University and postdoctoral studies at the Fred Hutchinson Cancer Research Center. She is currently a Senior Scientist at Applied Biotechnology Institute, a company focused on production of high-value products in plants. She has written and contributed to numerous publications over the last twenty years.