

In plantae production of heterologous proteins using viral amplicons

Tech ID: 31824 / UC Case 2011-094-3

ABSTRACT

Researchers at the University of California, Davis have developed a viral amplicon-based vector system for heterologous protein expression and production in plants.

FULL DESCRIPTION

Heterologous (not in the original host) production of proteins has historically been accomplished in a variety of hosts including bacteria, yeast, and even mammalian cells. However, depending on the properties of the protein, certain hosts may require laborious methods or protein production may not even be possible. A method that enables the use of plants as hosts would make the protein production process more efficient and cost-effective.

Researchers at the University of California Davis have developed an advanced tripartite Cucumber Mosaic Virus (CMV)-based protein production system in which allows for the use of non-transgenic plant hosts. Utilizing viruses to produce desirable proteins in plants can also enable, if necessary, the ability to make rapid changes in the virus construct for increased or modified protein product yields. The system can be used for rapid production of heterologous proteins by transient agroinfection in plants and harvested plant tissues with enhanced expression.

APPLICATIONS

- ▶ Industrial enzyme production
- ▶ Pharmaceutical protein production

FEATURES/BENEFITS

- ▶ Reduced time and cost compared to transgenic plants
- ▶ Increased yields compared to transgenic plants
- ▶ Rapid modification of recombinant protein cassettes

PATENT STATUS

Country	Type	Number	Dated	Case
United States Of America	Issued Patent	8,993,839	03/31/2015	2011-094

RELATED MATERIALS

- ▶ Hwang, M.S., Lindenmuth, B.E., McDonald, K.A. et al. Bipartite and tripartite Cucumber mosaic virus-based vectors for producing the Acidothermus cellulolyticus endo-1,4- β -glucanase and other proteins in non-transgenic plants. BMC Biotechnol 12, 66 (2012)
doi:10.1186/1472-6750-12-66

CONTACT

Victor Haroldsen
haroldsen@ucdavis.edu
 tel: [530-752-7717](tel:530-752-7717).



INVENTORS

- ▶ Dandekar, Abhaya M.
- ▶ Falk, Bryce W.
- ▶ Hwang, Minsook
- ▶ Jung, Sang Kyu
- ▶ Kingsbury, Nathaniel J.
- ▶ Lindenmuth, Benjamin E.
- ▶ McDonald, Karen A.

OTHER INFORMATION

KEYWORDS

Viral amplicon expression system Transient agroinfiltration Heterologous protein expression Recombinant protein production Plant-based bioreactor

CATEGORIZED AS

- ▶ **Biotechnology**
- ▶ **Genomics**

► [Industrial/ Energy](#)

► **Research Tools**

► [Expression](#)

System

► [Protein Synthesis](#)

► [Vectors](#)

RELATED CASES

2011-094-3

ADDITIONAL TECHNOLOGIES BY THESE INVENTORS

- [Cucumber Mosaic Virus Inducible Viral Amplicon \(CMViva\) Expression System](#)
- [Plants as Platform for the Biosynthesis of Melanin](#)
- [RNA-based, Amplification-free, Microbial Identification using Nano-Enabled Electronic Detection](#)

University of California, Davis

Technology Transfer Office

1 Shields Avenue, Mrak Hall 4th Floor,
Davis, CA 95616

Tel:

530.754.8649

© 2020, The Regents of the University of California

[Terms of use](#)

techtransfer@ucdavis.edu

[Privacy Notice](#)

<https://research.ucdavis.edu/technology-transfer/>

Fax:

530.754.7620