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Intellectual Property Status:

Patent Pending

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Molecular Chaperones that Promote Hepatitis C Virus E2 Protein Production in Plants

AzTE Case # M11-130

Invention Description

Infections caused by the Hepatitis C virus (HCV) are very common worldwide (afflicting up to 3% of the population), and chronic infection may develop into cirrhosis and liver cancer. For this reason a vaccine against HCV would have great utility, with the HCV envelope protein 2 (E2) a promising candidate because it can directly bind to a human cell receptor and plays a role in viral entry. However, studies of producing E2 for a vaccine have shown that much of the E2 produced is misfolded and thus not functional.

Researchers at the Biodesign Institute of Arizona State University have developed a method to transiently overexpress two molecular chaperones in the endoplasmic reticulum of plants in order to facilitate E2 folding and production. Western blot analysis showed that calnexin and calreticulin overexpression in *Nicotiana benthamiana* significantly increased the yield of properly-folded E2 compared to controls.

This discovery has the potential to accelerate the research for a commercially-viable vaccine for Hepatitis C virus.

Potential Applications

- therapeutic for Hepatitis C virus
- prophylactic vaccine for Hepatitis C virus

Benefits and Advantages

- increases the yield of the promising vaccine candidate E2
- amenable to use in a plant system, with the attendant advantages of greater safety, lower cost and easier scalability to industrial production