

Hepatitis C Virus (HCV) Mutants for Vaccine Development

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Technology description

Market Summary

Hepatitis C virus chronically infects more than 170 million people worldwide, with just over 3 million of these infections occurring in the United States. While 15-20% of HCV patients are able to clear the infection without treatment, the majority of HCV patients become chronically infected leading to serious symptoms such as cirrhosis and liver cancer. As such, HCV is the leading indication for liver transplants in the United States. Each year, an estimated 3 million people become infected with HCV worldwide and 8-10,000 people in the US die from HCV related complications. Many new therapeutic agents are in development to treat HCV infection. However, these therapies will not replace the need for an effective HCV vaccine.

Technical Summary

Development of a vaccine for the prevention of HCV is an ongoing need in both the developing and developed world. As most newly infected people are asymptomatic, spread of the virus can occur before the infected person is aware of their diagnosis. Despite the high incidence of HCV infection, no vaccine exists to prevent infectivity. HCV mutates easily making traditional vaccine development difficult. Viral entry into host cells occurs through interactions between the viral envelope and cell surface proteins. Disruption of these interactions is difficult due to the high variability that exists in the viral envelope.

Researchers at Emory University have discovered that by mutating a conserved portion of the envelope protein, they can prevent infection of cells by disrupting the interaction between the outer shell of the virus and cell surface proteins. Viral particles can be created and administered to a subject to illicit an immune response without the virus infecting the cells of the subject. These findings provide new possibilities for development of a therapeutic vaccine.

Application area

Mutated HCV as vaccine antigen.

Advantages

Non-infectious live HCV mutants which disrupt viral entry into healthy cells.

No current vaccine for prevention of HCV infection.

Institution

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