



Kansas State University Research Foundation TECHNOLOGY LICENSING PROFILE

Norovirus Replicon System for Drug Screening

REF. NO. (2015-004)

Inventor: Kyeong-Ok Chang

Description: Norovirus continues to be a leading cause of gastrointestinal problems affecting the cruise ship industry and militaries around the world. Recent studies showed that noroviruses are responsible for greater than 90% of non-bacterial gastroenteritis outbreaks and are associated with an estimated 23 million cases of gastroenteritis in the U.S. alone each year. These viruses are highly infectious with the potential to be deliberately disseminated in food or water supplies as an agent of bio-terrorism.

Research at Kansas State University has produced a novel cell replicon that can be used to grow the virus in cell culture. The novelty of this invention pertains to the ability to produce the cell replicon in a human cell line.

This invention describes a method for generation of cells expressing self-replicating norovirus RNA molecules (norovirus “replicons”) in a human cell line (Huh-7). It will facilitate the development of vaccines and therapeutic drugs for norovirus and perhaps other calicivirus diseases.

Because noroviruses could not be grown in cell culture, research on vaccine and antiviral development has been severely hampered (if not impossible). Previously, there were no stable cell culture based systems to screen potential antiviral drugs against noroviruses and caliciviruses.

Advantages:

The generation of additional replicon harboring cells with a human hepatoma cell line (Huh7 cells) was a significant achievement because of host specificity and wide availability of commercial reagents for the human cell line. In addition, Huh7 cell based replicon produced much higher levels of viral proteins than BHK21 based replicon.

Applications: Antiviral drug screening