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Peptide Ligands

AzTE Cases # M10-001 and M10-014

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Patent Pending

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Invention Description

Norovirus causes almost 90% of epidemic, non-bacterial outbreaks of gastroenteritis around the world. Extremely infectious and diverse, the virus causes acute diarrhea, vomiting, abdominal cramps, headache, fatigue, and fever. Though the illness is generally resolved within 48 hours, mortalities do occur in the young, elderly, and immune-compromised, as a result of complications brought on by dehydration.

In spite of the high prevalence of norovirus infections, there is still no vaccine available to prevent the disease. Progress is hindered by a lack of a suitable animal model and low reproduction rates in cell culture. However, the capsid protein of norovirus has been successfully expressed in plant and insect cells; these proteins present an alternative method for vaccine production. To make this option viable, a cost effective purification scheme for these proteins must be realized.

Researchers at the Biodesign Institute at Arizona State University have developed a peptide ligand selection technique to isolate protein components of norovirus for vaccine development. This technique utilizes a library of 10,000 peptides which are 20 amino acids long—a sufficient library size due to the presence of all possible dimers, trimers, and 60% of all possible tetramers. The increased affinity of the longer peptides also enables low sample consumption and generation of fewer false positives. High affinity binding peptides can then be used for vaccine development as purification tools for recombinant proteins.

Potential Applications

- Vaccine development
- Purification
- New detection materials

Benefits and Advantages

- Convenient: No need for bulky labeling groups
- Fast: Highly diverse library allows quick identification of high affinity peptides
- Accurate: Low rate of false positives
- Low sample consumption: Micrograms of sample needed