

Veraptus Therapeutic Aptamers for the Treatment of Viral Infectious Diseases

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Changsha, Hunan, China - There are eight major viral infectious diseases: hepatitis B and C; HIV/AIDS; HSV; HPV; influenza (seasonal); childhood diseases of measles, mumps, rubella; viral pneumonia; and rotavirus. Several of these diseases (e.g., MMR, HPV, influenza, rotavirus) do not have specific pharmaceutical treatments and are primarily controlled through vaccination. A proven pharmaceutical or vaccine treatment option does not exist for Ebola.

Viruses continually replicate within the cells of organisms. Their small genome size and mutability make them difficult targets for traditional methods of drug development. Small molecules are typically developed to fit within “clefts” on protein surfaces, inhibiting critical steps in the virus’ lifecycle. However, this is not always successful in clearing the patient of the virus due to two main reasons: (1) the emergence of resistant viral strains and (2) cytotoxicity to the patients’ healthy cells. Some viruses mutate with high error rate, potentially resulting in qualitative and quantitative differences in antigens present. With the lengthy time needed to screen for small molecules, optimize, and then validate, viruses with high mutation rates will continue to evolve with relatively low impedance. Molecular docking and computational modeling has made screening for small molecules more of a science, but this is still a very lengthy process. Highly specific Veraptus aptamers with high affinity can be developed within a month for virtually any target, meaning multiple aptamers for multiple mutations of the virus can be developed in an efficient manner.

Also, small molecules pose the risk of cytotoxicity. Off-target reactivity often results in mild side effects, but in some cases can be serious. This risk increases even more when utilizing cocktail treatments of small molecules to target multiple viral mutations. Aptamers pose very little risk for cytotoxicity, giving doctors the ability to treat viruses more aggressively. Veraptus aptamer therapy has the capability to transform medicine and keep life threatening viruses such as HIV, HCV, and influenza at bay.