Pendant Polymer: Amino-Beta-Cyclodextrin Guest: Host Complexes as Safe and Efficient Vectors for Nucleic Acid Delivery

Pendant polymers offer a significantly less toxic and equally efficient alternative to branched polyethyleneimines for internal cell delivery of nucleic acid therapeutics.

Nucleic acids are very important in the field of biomedical research, and their role in the pharmaceutical industry as therapeutics is promising. However, the majority of nucleic acids are large, so they have difficulties crossing the cell membrane to function inside the cell. The current method of transferring nucleic acids into a cell is by using branched polyethyleneimines (bPEI). bPEI condenses nucleic acids into positively charged particles which bind to the cell surface and are then engulfed into the cell via endocytosis. However, PEI is very toxic.

Purdue University researchers have developed pendant polymers for nucleic acid delivery. These delivery vectors have toxicity three or four times lower than that of branched PEI and comparable efficiency.

Advantages:

-Three to four times less toxic than bPEI

-Comparable efficiency

TRL: 2

Intellectual Property:

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