Invention Summary:
Combination therapies have been extensively explored in the oncology field, for its potential to improve treatment efficacy, minimize the risks of resistance, and reduce adverse effects. Rutgers researchers have developed a novel drug delivery system for the combined delivery of anti-cancer drug Erlotinib (Tarceva) and nucleic acid molecules (e.g. siRNA), which may lead to synergistic treatment effect.

This invention utilizes novel cyclodextrin-modified dendritic polyamines (DexAMs) as a vehicle to co-deliver Erlotinib and nucleic acids. The structure of DexAMs facilitates the uptake of Erlotinib and interacts with the negatively charged nucleic acids, therefore serving as an optimal delivery method for both molecules. In addition, both Erlotinib and nucleic acid drugs have been demonstrated to function effectively after delivery. In an in vitro glioblastoma model, the combination therapy has been shown to be much more effective than individual treatments alone in terms of cytotoxicity and apoptosis induction.

Market Applications:
- Delivery of cancer therapeutics
- Biomedical Research

Advantages:
- Highly efficient delivery
- Potential for synergistic treatment effect
- Minimal toxicity comparing to commercial transfection reagents
- Ability to conjugate other components for different functions

Intellectual Property & Development Status:
Patent issued. Available for licensing and/or research collaboration.