

HKU project funded under the NSFC/RGC Joint Research Scheme

Photoresponsive mRNA Delivery System for Esophageal Carcinoma Treatment

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Project Summary:

Esophageal cancer is one of malignant tumors with a high incidence in China. Because it is hard to treat and patients often have a bad outcome, new treatments are urgently needed. The mutation of the PTEN gene is closely related to the occurrence of esophageal cancer. Increasing PTEN expression levels in tumors represents a promising treatment strategy.

This project aims to create a new type of PEGylated lipids and photoresponsive ionizable lipids, and fabricate photoresponsive lipid nanoparticles to deliver PTEN mRNA. By using an optical fiber to shine light on the cancer cells, researchers can make the nanoparticles release the mRNA inside the cells, boosting PTEN levels and, hopefully, treating the cancer. This study provides a new strategy for safe and efficient esophageal cancer treatment.

港大「聯合科研資助基金計劃」項目

用於食道癌治療的光控 mRNA 藥物遞送系統研究

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項目簡介：

食道癌是中國高發的惡性腫瘤之一。考慮到其手術難度高及治療效果一般，臨床治療極需發展新的治療策略。PTEN 基因突變與食道癌的發生發展密切相關，提高腫瘤部位 PTEN 表達水準有望為食道癌治療帶來新希望。本項目擬設計一類新型聚乙二醇化脂質和光響應性可電離脂質，並構建光響應性脂質納米粒子用於遞送 PTEN mRNA 藥物，以實現安全高效的食道癌治療。結合食道癌的發病部位，研究者將採用光纖照射食道病竈部位，啟動經全身給藥後進入腫瘤細胞的納米粒子。該課題將為安全高效的食道癌治療提供新策略。