Harnessing threose nucleic acid (TNA)-based nanotherapeutics to curb chemoresistance in pancreatic cancer

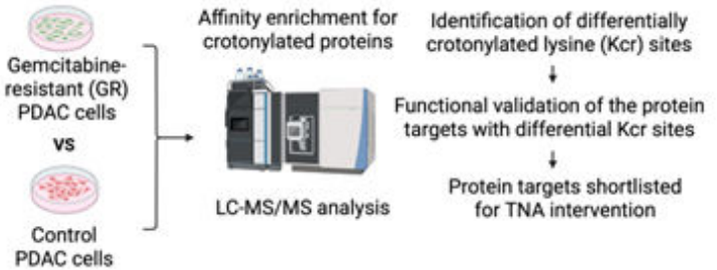
Principal Investigator: Regina Lo

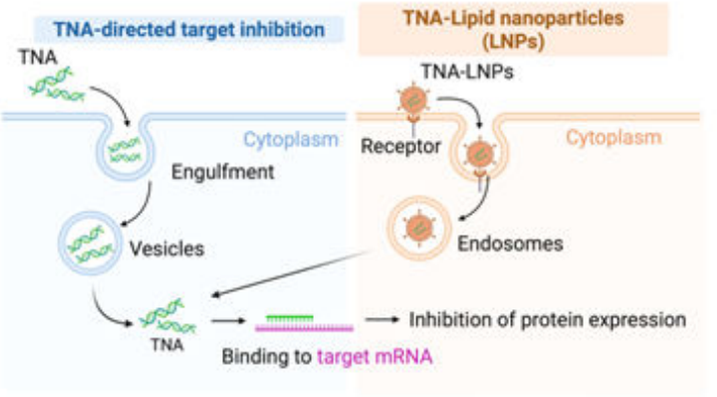
Technology

- Proteins with functional lysine crotonylation sites are identified in gemcitabine-resistant pancreatic cancer cells using liquid chromatography-tandem mass spectrometry (LC-MS/MS)
- Sequence-specific TNAs are synthesized & purified to target proteins at the crotonylation sites
- TNA-Lipid nanoparticles (LNPs) are developed for the delivery of TNA to human cells

Key Advantages

- TNAs are chemically stable & internalized into human cells with minimal toxicity
- LNPs are used in the delivery of TNAs to enhance cellular uptake & provide targeted TNA delivery
- Sequence-specific TNAs are adopted to target functional proteins unraveled by LC-MS/MS





Stage of Development

- **Stage 1:** Identification & validation of functional protein targets
- **Stage 2:** Synthesis, purification & validation of sequence-specific TNAs with preclinical *in vitro* & *in vivo* models
- **Stage 3:** Development & evaluation of surface-modified TNA-LNPs as a target delivery & treatment system
- **Stage 4:** Patent application & commercialization

Opportunities

- Research products for commercialization
- Collaboration with academic institutions & industrial partners on other disease models
- Launching tests with clinical samples for personalized medicine

Intellectual Property

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