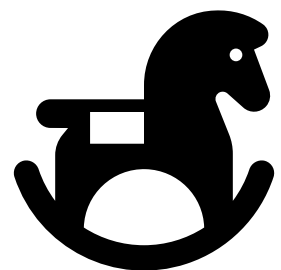


2023 대한심장혈관흉부외과학회

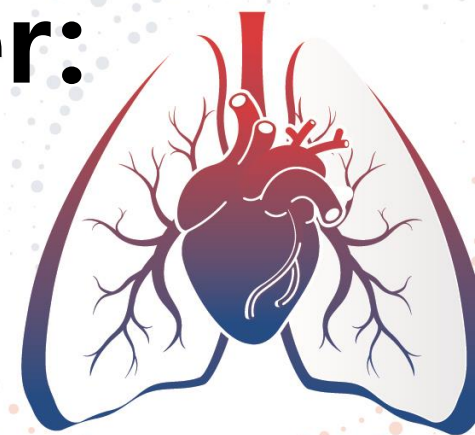
제55차 추계학술대회 & APELSO 2023

2023. 11. 02 (Thu) - 11. 04 (Sat), 그랜드 인터컨티넨탈 파르나스 서울

Genetic treatment of lung cancer:

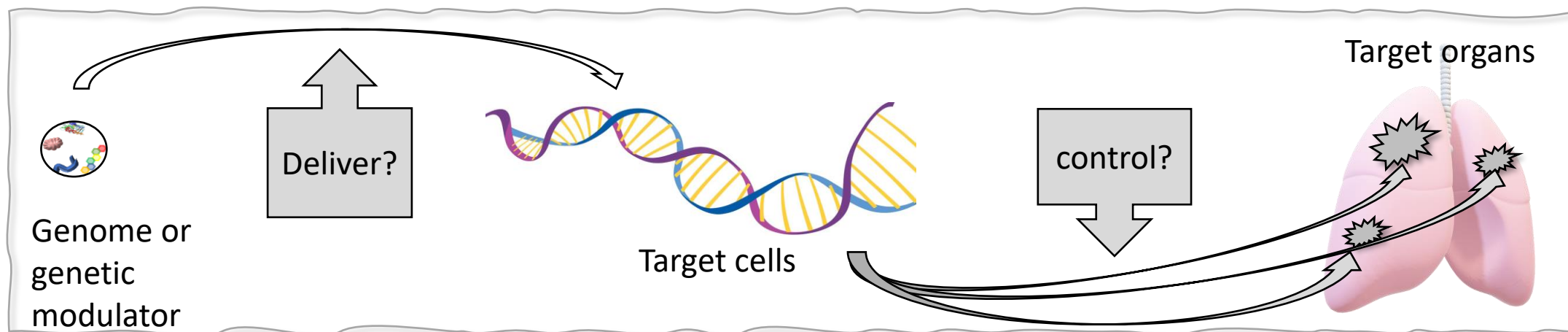


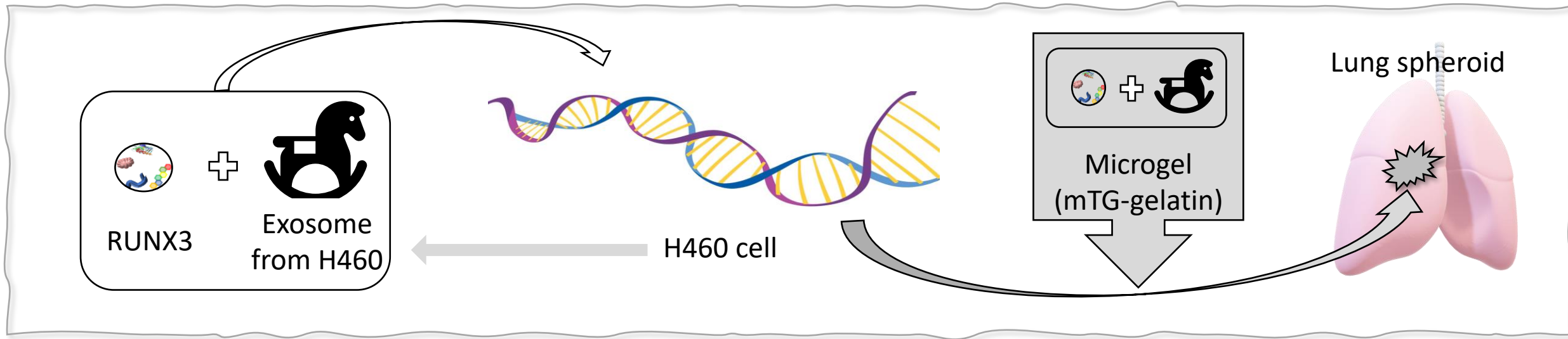
Is Trojan horse still valid?



To develop genetic treatment for lung cancer

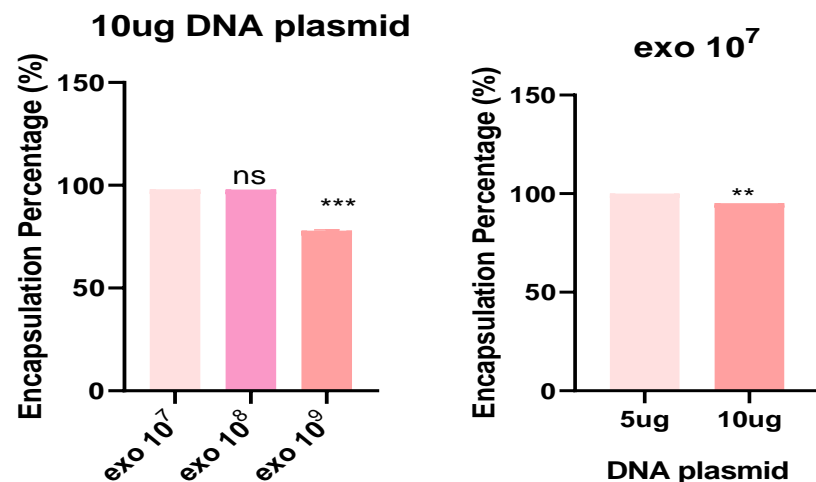
- The ideal cancer drug
 - Killing cancer cells, but no harm to normal
 - Sustainable and controllable
- Conventional drug is omnipotent?
 - Cancer is not a disease of immune system, but of genetic problem
 - So GD (genetic drug) could be an ideal cancer drug
- Two obstacles of GD: how to deliver and control?



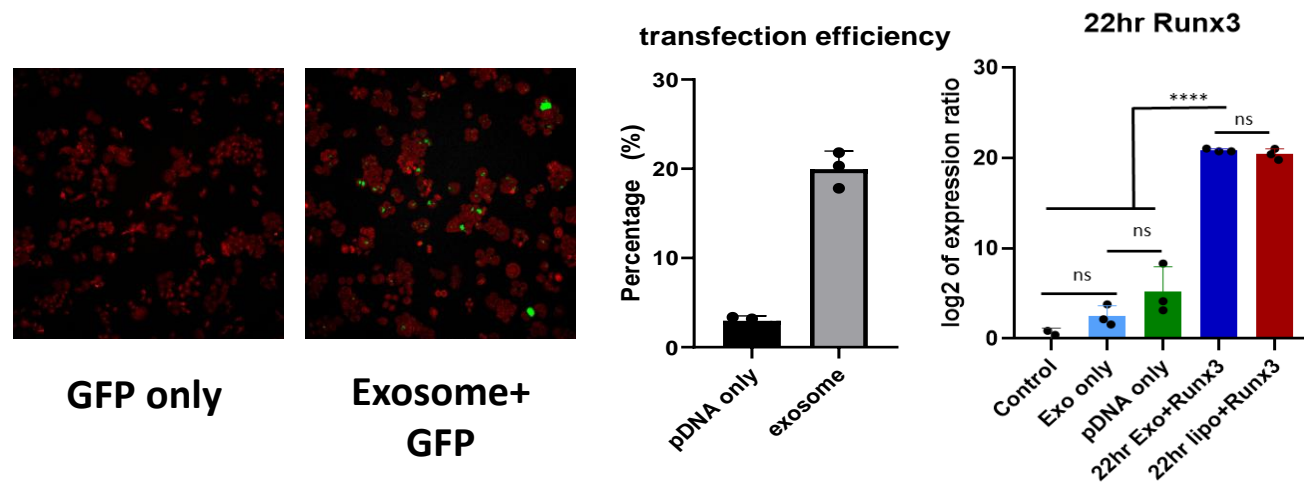


- Acting gene; RUNX3
 - RUNX3 modulates cell cycle and acts as a gate keeper to distinguish cancer and normal cells
- Vehicle; Exosome from H460 cancer cell line → Trojan horse
 - Exosome is a messenger or communicator between cells, and it has a homing effect
- Target cells; H460
 - H460 is a cell line of human adenocarcinoma
- Controller; mTG- gelatine
 - Gelatine hydrogel crosslinked with microbial transglutaminase (mTG)

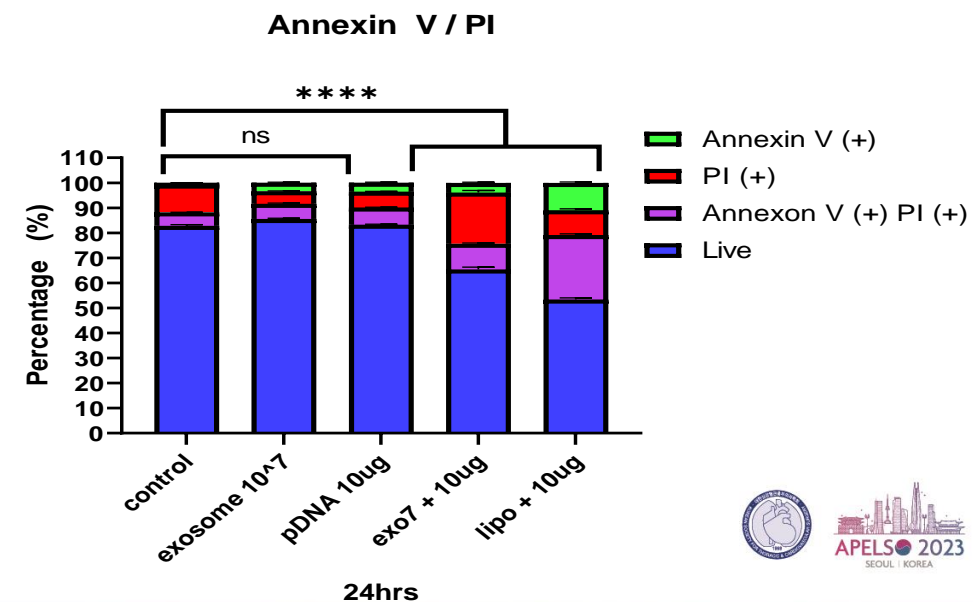
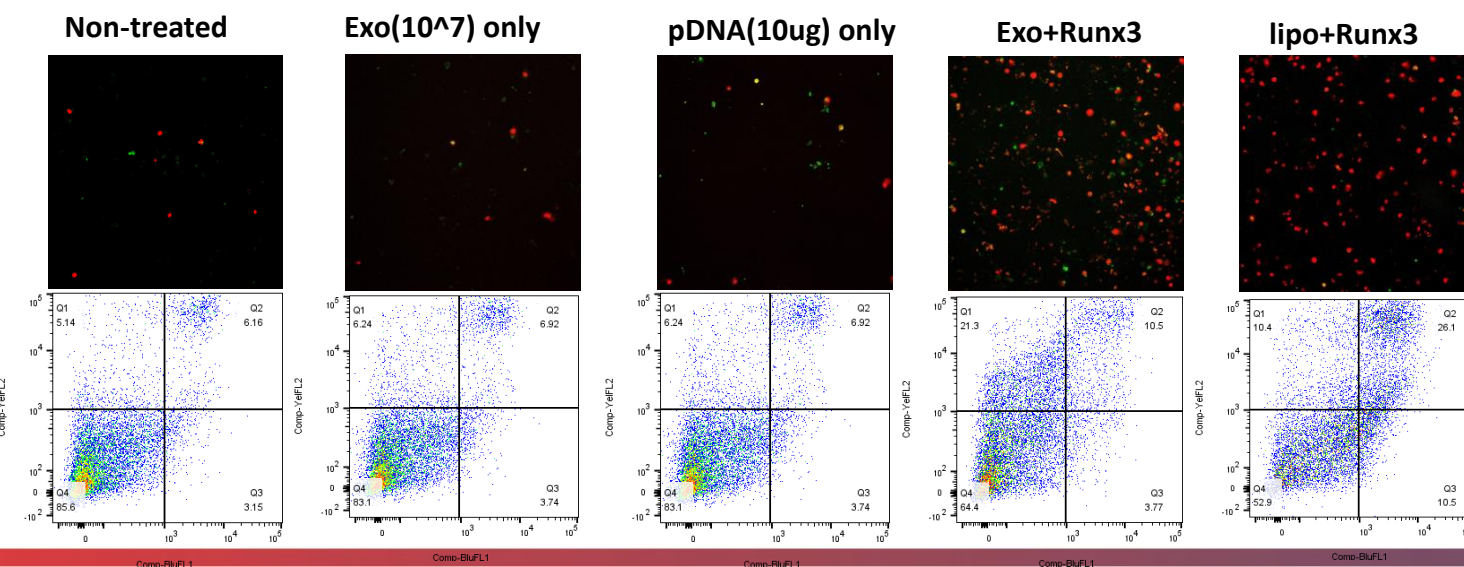
I. RUNX3 is encapsulated in the exosome of H460



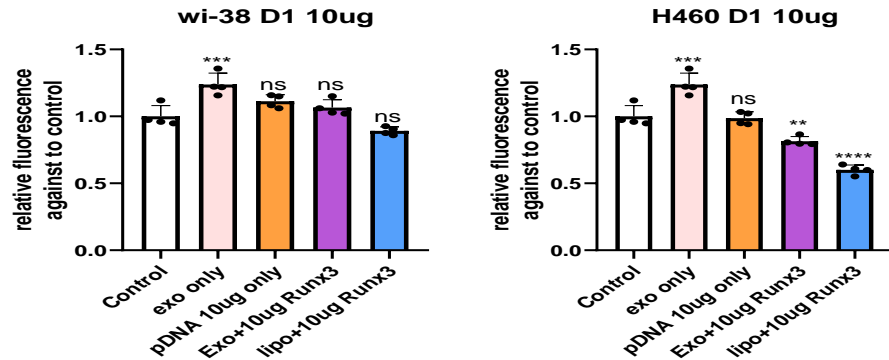
II. RUNX3-ExoH460 can be transfected into the H460



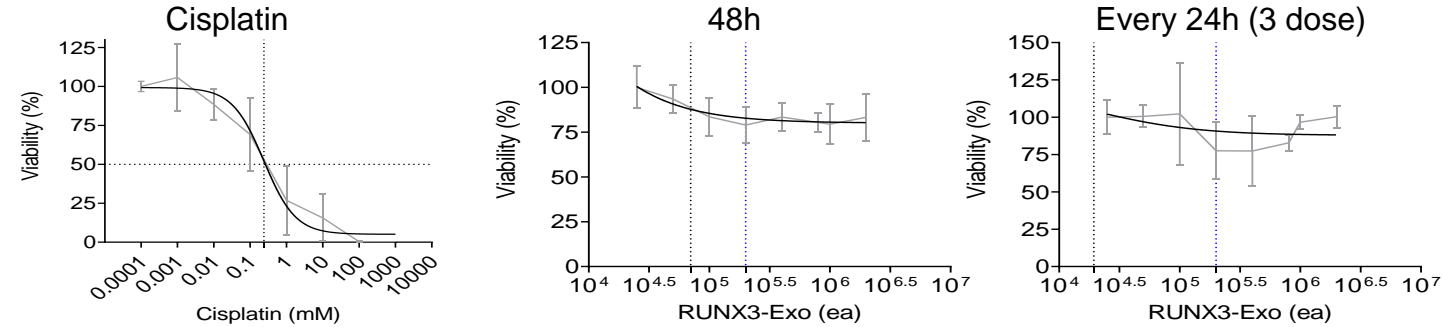
III. RUNX3-ExoH460 evokes apoptosis of H460



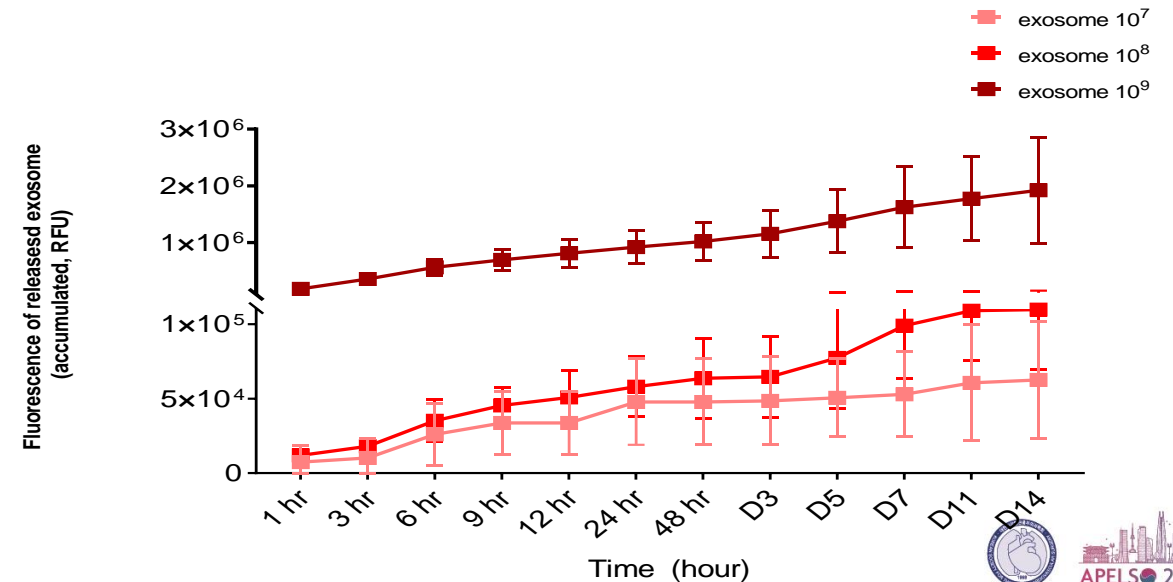
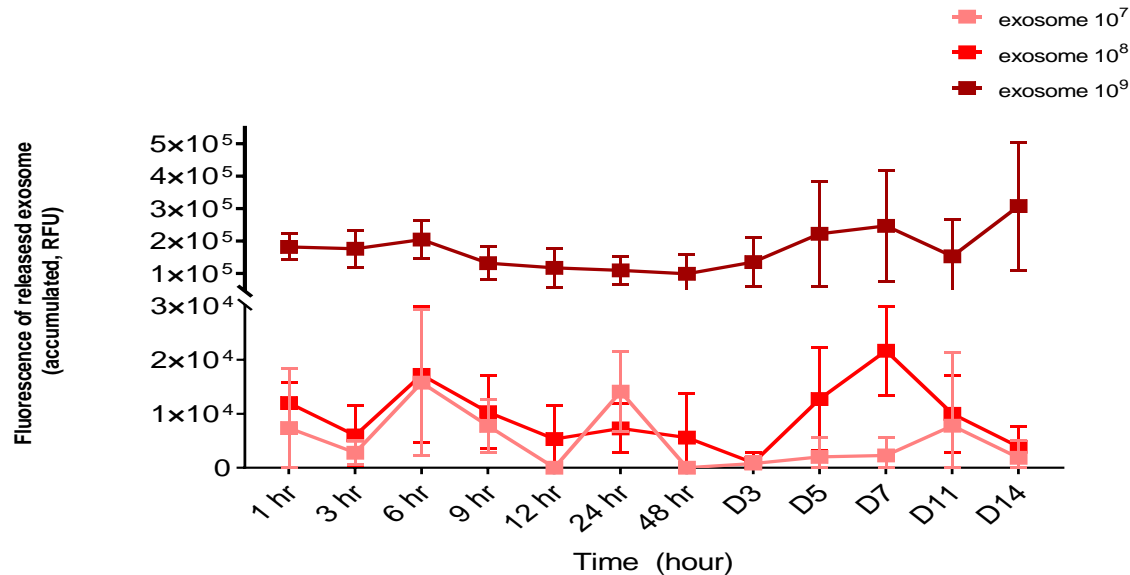
IV. RUNX3-ExoH460 shows selective apoptosis



V. RUNX3-ExoH460 shows apoptosis in cancer spheroid



VI. RUNX3-ExoH460 embedded 8% mTG gelatin could release exosome till Day14



RUNX3-ExoH460 embedded microgel could be a potential genetic drug for lung cancer

- Exosome is an effective vehicles for gene delivery to the mother cells
- Selective apoptosis can be achieved
 - H460 exosome (Trojan horse) can deliver RUNX3 into the H460 (cancer cells), and It evokes apoptosis
 - However, it was not in Wi-38 (normal lung cells)
- RUNX-ExoH460 release can be controlled using microgel
 - RUNX3-ExoH460 embedded mTG-gelatin could release exosome till 2 weeks
 - It can be controlled by the concentration of RUNX3-ExoH460