Frederick National Laboratory
for Cancer Research
sponsored by the National Cancer Institute

Polymeric Delivery Platform for Therapeutics

Inventor
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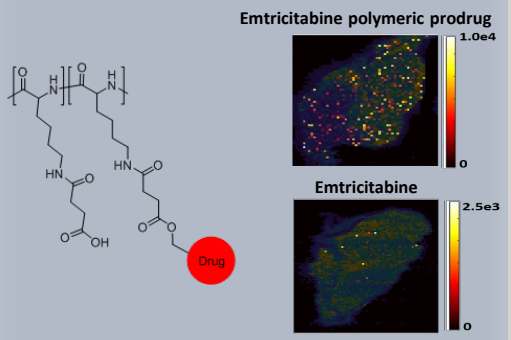

Spatial distribution of emtricitabine and emtricitabine formulated with polymeric platform in axillary lymph node tissue. IR-MALDESI MSI ion maps indicate greater signal abundance and frequency of detection for prodrug.

STATE OF DEVELOPMENT

Pre-clinical (in vivo)

APPLICATIONS

- Targeted drug delivery of immunomodulatory small molecule drugs, peptide therapeutics, and vaccine antigens
- Cancer therapeutic
- Immunotherapies
- Vaccines
- Anti-viral therapeutic, including infectious diseases (e.g., HIV)
- CNS therapeutic

INTELLECTUAL PROPERTY

U.S. Patent Filed: 62/572,733

DESIRED PARTNERSHIP

Licensing,
Further Development

LICENSING CONTACT

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Problem

Drug delivery technologies have long claimed the ability to selectively deliver therapeutic cargo to target cells. Despite advances, there are no targeted nanoscale drug delivery technologies on the market, leaving an untapped potential for improved therapeutic efficacy when targeted delivery is achieved.

Solution

A drug delivery platform has been developed that targets scavenger receptor A1 (SR-A1), a receptor highly expressed in macrophages, monocytes, mast cells, dendritic cells (myeloid lineages), and endothelial cells. The polymeric platform allows hydrolysable conjugation of small molecule drugs, peptide therapeutics and vaccine antigens. The highly selective SR-A1 targeted macromolecular platform has potential for both cancer and anti-viral immunotherapies.

Advantages

- High levels of prodrug preferentially distributed to SR-A1-expressing cells, including antigen presenting cells to achieve better vaccine efficacy.
- Active drug released slowly in a controlled manner, without burst release—something not yet been achieved with current nanomedicine platforms.
- Preferential accumulation in the lymphatic system because of SR-A1-mediated transcytosis.
- Application in a wide range of therapeutics which require crossing the blood-brain barrier.