Targeted delivery of a microRNA mimic as a novel approach to therapy for malignant pleural mesothelioma

Glen Reid
Asbestos Diseases Research Institute
Sydney, Australia
Disclosures

- Nothing to disclose
Malignant pleural mesothelioma (MPM): a cancer with poor prognosis & few treatments

- Asbestos-related cancer arising from the mesothelium
- Resistant to Treatment: Median survival of 12 months
- 30-40 years between asbestos exposure and diagnosis
- Approximately 700 new cases/year in Australia

- Potentially resectable disease (selected patients)
  - Combined modality therapy: Chemotherapy followed by surgery and radiotherapy

- Unresectable disease
  - Chemotherapy (~50-60%)
  - Palliation, best supportive care (40-50%)
  - Experimental
microRNA expression is repressed in MPM: restoration by mimics inhibits growth
Clinical application of mimics \textit{in vivo}: EDVs are a solution to the delivery problem
miR-16-loaded, EGFR-targeted, EDVs inhibit MPM xenograft tumour growth
Mimics based on the miR-15/16 family consensus are active tumour suppressors.
Meso-miR-1:
a phase 0/1 clinical trial of TargomiRs

- Delivery of novel sequences using EDVs – “TargomiRs”
- Phase 0/1 trial to determine biodistribution, safety and optimal dose of TargomiRs in MPM and NSCLC patients
- Involves clinicians at 3 Sydney hospitals
- Protocol for biodistribution (phase 0) and optimal dose (phase I) approved
- Trial to commence in July
Acknowledgements

ADRI
Michaela Kirschner, Yuen Yee Cheng, Casey Wright, Marissa Williams, Anthony Linton, Steven Kao, Nico van Zandwijk

Baird Institute
Brian McCaughan, James Edelman, Michael Vallely

Flinders Medical Centre, Adelaide
Sonja Klebe, Doug Henderson

EnGeneIC
Jocelyn Weiss, Nancy Mugridge, Jennifer MacDiarmid, Himanshu Brahmbhatt

University of Sydney
Nicola Armstrong

Bill Walsh Cancer Centre, Sydney
Rozelle Harvie, Nick Pavlakis, Amanda Hudson, Stephen Clarke