Combinatorial microRNA therapy for malignant pleural mesothelioma

Host School/ Institute
Asbestos Disease Research Institute
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Project Type: Laboratory based
Project Category: Cancer, Molecular biology, Bioinformatics

Project Keywords:
1. mesothelioma
2. microRNA
3. translational research

Project Description:
Malignant Pleural Mesothelioma (MPM) is an aggressive cancer of the membrane lining the thoracic cavity that is primarily caused by exposure to the fibrous mineral asbestos. Even with the best currently available treatments, the median survival duration of MPM is only one year from time of diagnosis. This highlights the importance of a better understanding of MPM biology in order to identify novel therapeutic targets. The ADRI has recently identified a number of downregulated microRNAs with tumour suppressor activity. Restoring the levels of these microRNAs with mimics is associated with reduced mesothelioma growth and is the basis of our current phase I clinical trial.

The aim of this summer project is to investigate the effects of combining mimics to see whether this increases growth inhibitory activity. Towards this end, microRNAs will be re-expressed using synthetic mimics, and the effects on cell proliferation, colony formation, cell migration, apoptosis and the cell cycle as well as predicted target genes will be investigated.

This project will give the student the opportunity to practice skills in molecular and cell biology and mammalian cell culture including transfection, nucleic acid isolation, RT-qPCR, apoptosis and cell cycle analysis.