

Primary Supervisor: Dr Beth Coyle

Project Title: Modelling evolution of metastasis in paediatric medulloblastoma using 3D models

Description: Medulloblastoma, the most common malignant paediatric brain tumour, accounts for 25% of paediatric brain tumour cases. Metastasis is the most important clinical predictor of poor outcome in medulloblastoma. Approximately 30-35% of children present with metastatic disease, seen as leptomeningeal spread via the cerebrospinal fluid. The mechanism whereby tumour cells evolve and disseminate away from the site of the primary tumour is very poorly understood due to the rarity of metastatic samples. As a result, little is known about the intrinsic and extrinsic mechanisms that underlie the metastatic process. Metastatic medulloblastoma is refractory to current treatments, hence there is a need to identify biomarkers that could be used to detect metastatic potential, and more importantly be targeted therapeutically.

We have successfully used Cultrex BME to study the initial stages of medulloblastoma metastasis in 3D cell culture and shown that cells elevate an EMT-like expression signature. There is evidence from our research, and that of others, supporting a link between EMT and drug resistant cancers stem cells. The aim of this project is to explore this relationship in more detail in the hope of identifying appropriate therapeutic targets.

Key words: Metastasis, cancer stem cells, multidrug resistance

Fees: High cost laboratory-based research

Please email a CV with a covering letter to Dr Beth Coyle (beth.coyle@nottingham.ac.uk).