

## Peptide-based brain tumour targeting

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Primary brain tumours and brain metastases are incurable central nervous system (CNS) disorders and represent an unmet medical need. Glioblastoma is the most malignant primary brain tumour in adults with a median survival of only one year. Brain metastases are common complications of other systemic cancers and associate with significant morbidity and mortality. We use patient-derived cells and organoids, pre-clinical animal models of brain tumours as well as clinical patient samples and profiling data available in the iCAN Digital Precision Cancer Medicine Flagship to reveal novel therapy targets and to understand the interactions between brain tumour cells, brain-resident, and tumour infiltrating cells to define the molecular mechanisms underlying brain tumour malignancy and immune suppression as well as develop novel therapeutic tools. Using our phage displayed peptide-screening platform, we identified the NAVIGATOR agent that very specifically targets the brain metastases. The NAVIGATOR was further validated as a diagnostics tool to detect brain metastases in preclinical models. [<sup>18</sup>F]NAVIGATOR also showed specific labelling of both breast and lung cancer derived brain metastases in clinical patient samples. In addition, we have identified the protein target of the NAVIGATOR in brain metastasis. Based on the literature the target is highly expressed in several different primary and metastatic cancers. Thus, the NAVIGATOR has potential to target multiple tumour types.