Screening for genes which are frequently methylated in one of the tumour types that readily metastasise to the brain — Lung, Melanoma, RCC

Screening of genes Downregulated in Epithelial Mesenchymal Transition (EMT) — Claudins, microRNAs, Keratins, Other

Bioinformatic analysis of the TCGA data — Probes with B value ≤ 0.25 in breast and ≥ 0.75 in lung tumours

Methylated in BBM samples?

No

The gene may NOT contribute to brain metastases

Yes

20 Genes

Methylated in unrelated (non-metastatic) primary tumours?

Yes

Gene dysregulation common in primary breast tumours and BBM, NOT specific to metastases

No

Gene dysregulation specific to BBM, NOT to primary breast tumours

3 Genes: BNC1, CCDC8 and GALNT9

Expression and Functional analyses