The Microenvironment of the Subventricular Zone Enhances the Malignancy of Glioblastoma Multiforme
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Introduction
- GBM (glioblastoma multiforme) is a primary brain tumor with one of the worst survival rates in neuro-oncology.

Researchers have found that GBM tumors are more aggressive and proliferative if located close to the subventricular zone (SVZ) of the brain.
- Coculture of GBM cells with NPCs, either with direct physical interaction or indirect interaction, can demonstrate the role of the NPCs in promoting malignancy.

Methods
A transwell system was used to conduct a migration assay, monitoring the reaction of GBM cells (seeded in the top chamber at 50,000 cells/well) to a variety of conditions in the bottom chamber. These conditions included: control GBM media, control NPC media, conditioned media collected from either GBM cells or NPCs, GBM cells, and NPCs. The migration of the GBM cells in the top chamber to the bottom chamber was recorded via staining the migrated cells with DAPI and imaging the transwell membrane with a confocal microscope.

Results
Graphs: Below are graphs depicting the results of all migration assays

Future Directions
- Quantify changes in protein expression since it could explain this significant change in morphology
- Repeat experiments with different GBM and NPC cell lines to validate results
- Repeat this experiment not only in vitro but also in vivo to note the behavior of each cell type in its natural microenvironment and any differences from the in vitro culture model

Conclusion
- Migration of GBM cells increases significantly when in presence of NPCs or when interacting with more GBM cells.
- NPCs (F50) have a more pronounced effect on the migration of GBM cells than GBM cells
- Actual cells more instrumental in enhancing migration than conditioned media of the cells
  - Indicates some sort of cell-to-cell interaction is taking place that elicits the NPCs or GBM cells in the bottom chamber to release some sort of soluble factor that increase the migration of the GBM cells on the top
  - This interaction is one that does not occur when the cells are by themselves: a new discovery that should be investigated precisely

Selected References