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Developing an in vitro platform of the glioblastoma perivascular niche

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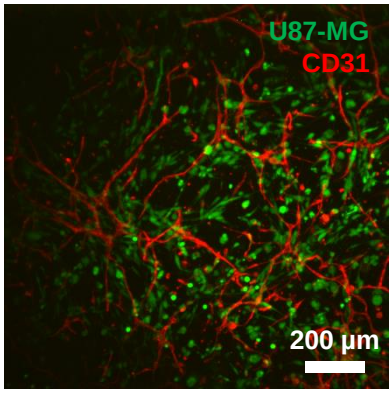
ABSTRACT: Glioblastoma (GBM) is the most common form of malignant brain cancer. Interactions between GBM cells and vasculature *in vivo* contribute to poor clinical outcomes, with GBM induced vessel co-option, regression, and subsequent angiogenesis strongly influencing GBM invasion. Here, we seek to develop an *in vitro* model of GBM that incorporates endothelial cells and stromal cells to represent perivascular components of the native microenvironment. Recent results demonstrate that endothelial network formation can be tuned within gelatin hydrogels, and that the presence of GBM cells causes temporal regression of these networks. The multi-cellular system promotes differentially expressed genes compared to GBM cells cultured alone. Remaining project goals include understanding how cell-cell signaling within the perivascular environment contributes to invasion, cancer stem cell activity, and therapeutic resistance.



AWARDS/PUBLICATIONS:

- SCS Teaching Award, 2018
- Mavis Future Faculty Fellow, 2018
- NSF Graduate Research Fellowship, 2016
- M.T. Ngo, B.A.C. Harley, 'Perivascular signals alter global gene expression profile of glioblastoma and response to temozolomide in a gelatin hydrogel,' *Biomaterials*, 2018, In press.
- M.T. Ngo, B.A.C. Harley, 'The influence of hyaluronic acid and glioblastoma cell co-culture on the formation of endothelial cell networks in gelatin hydrogels,' *Adv. Healthc. Mater.*, 2017.