AI-15. EPIDERMAL GROWTH FACTOR-LIKE MODULE CONTAINING MUCIN-LIKE HORMONE RECEPTOR 2 ROLE IN PREDICTING SURVIVAL IN INVASIVE GLIOMAS

Michael Ivan1, Michael Safaee1, Taemin Oh1, Aaron Clark1, Matthew Sun1, Joseph Kim1, Orin Bloch1, Arman Jahangiri1, Manish Aghi1, and Andrew Parsa2; 1University of California, San Francisco, San Francisco, Ca, USA; 2Northwestern University, Chicago, Il, USA

Epidermal growth factor (EGF) module-containing mucin-like receptor 2 (EMR2) is a member of the seven span transmembrane adhesion G-protein coupled receptor subclass. This protein is expressed in a subset of glioblastoma (GBM) cells and associated with an invasive phenotype. The expression pattern and functional significance of EMR2 in low grade or anaplastic astrocytomas is unknown and our goal was to expand and further define EMR2’s role in gliomas with an aggressive invasive phenotype. Using the TCGA survival data we describe EMR2 expression patterns across histologic grades of gliomas and demonstrate an association between increased EMR2 expression and poor survival (p < 0.05). We support this data with qPCR of EMR2 expression in 3 separate tumor grades from our own brain tumor research center showing increase in EMR2 expression correlates with tumor grade (p < 0.05). This data supports our prior functional data depicting that EMR2-positive neoplasms possess a greater capacity for infiltrative and metastatic spread. Genomic analysis suggests that EMR2 overexpression is associated with the mesenchy mal GBM subtype (p < 0.0001). We also demonstrate that immunohistochemistry (IHC) is a feasible method for screening GBM patients for EMR2 expression. Protein and mRNA analysis demonstrated variable expression of all isoforms of EMR2 in all glioma grades, however GBM displayed the most diverse isoforms expression pattern as well as the highest expression of the EGF1-5 isoform of EMR2. Finally, a correlation of an increase in EMR2 expression after bevacizumab treatment in glioma cells lines as well as in an animal model is identified (P < 0.05). This observation should serve as the impetus for future studies to determine if this up-regulation of EMR2 plays a role in the observation of the diffuse and increasingly invasive recurrence patterns witnessed in a subset of GBM patients after bevacizumab treatment.