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MDB-85. THE MIGRATORY ROLE OF BAIAP2 IN MEDULLOBLASTOMA
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BACKGROUND: Medulloblastoma is the most common malignant brain tumor in adolescents. There is still a dire need for a more effective treatment despite advances in technology. One challenge in treating medulloblastoma is its migratory and invasive properties. The underlying mechanisms that lead to these characteristics are still not understood. METHODS: We sought to identify targets related to invasion and migration in medulloblastoma, first by mining single-cell RNA sequencing and microarray data. RESULTS: We determined that BAIAP2 is differentially expressed in medulloblastoma compared to non-tumor brain cells and other brain cancers. In addition, there is a significant increase in BAIAP2 in metastatic medulloblastoma compared to non-metastatic. We found that CDC42 and RAC1, small GTPases, are protein-protein interactors with BAIAP2. In three medulloblastoma cell lines, we have demonstrated that these genes modulate each other’s expression. Furthermore, we show that the knockdown of BAIAP2, CDC42, and RAC1 decreases medulloblastoma cell migration and filopodia length. Using surface plasmon resonance, we identified compounds that target BAIAP2 protein. After characterizing these compounds, we have identified potential compound candidates that target these genes and impede their roles in migration and invasion in medulloblastoma. CONCLUSIONS: These findings demonstrate a migratory role for BAIAP2 in medulloblastoma through the modulation of CDC42 and RAC1. We also demonstrate that BAIAP2 is a therapeutic target and have identified novel compounds that target it.