POSTER

COORDINATION OF MITOPHAGY AND EMT PROGRAMS IN BRAIN TUMOR CELL PLASTICITY

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The coordinated interplay between mitophagy and the epithelial–mesenchymal transition (EMT) is essential for tumor adaptation, survival, and metastasis, enabling dynamic shifts between stationary and migratory states, evasion of therapeutic stress, and the acquisition of stem-like traits through mitochondrial quality control and energy regulation. Medulloblastoma is the most common malignant pediatric brain tumor and is classified into four molecular and clinical subgroups, among which Group 3 represents the most aggressive subtype, characterized by a high metastatic propensity and poor prognosis. Metastatic dissemination in MB is tightly associated with EMT; however, the role of mitophagy and the molecular mechanisms linking EMT and mitophagy remain poorly understood. Here, we identify an E3 ubiquitin ligase as a negative regulator of both mitophagy and EMT in MB. Its depletion enhances these processes and is accompanied by modulation of EMT markers, including ZEB1, as well as key mitophagy drivers, suggesting that this protein coordinates mitochondrial quality control with EMT-associated transcriptional programs. Collectively, our findings identify this protein as a previously unrecognized tumor suppressor that functionally links EMT and mitophagy, providing novel insight into the mechanisms underlying tumor cell plasticity and highlighting this crosstalk as a clinically relevant and potentially targetable vulnerability in aggressive disease.