32. Single cell genetics

**CYTOSKELETAL PROTEIN PALLADIN IN ADULT GLIOMAS PREDICTS DISEASE, PROGRESSION AND PROGNOSIS**

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Gliomas, originating from neuroglia, are tumors differing in diagnosis, prognosis and treatment. Palladin (PALLD gene) is a structural protein widely expressed in mammals that has a role in cytoskeletal dynamics and motility in health and disease. Palladin has been linked to the progression of breast, pancreatic and renal cancers. In the CNS, palladin is expressed in the neural plate, neural progenitor cells, cortical neurons and astrocytes. It participates in embryonic development, neuronal maturation, cell-cycle, differentiation and apoptosis. In this study, we investigate the role of palladin in adult gliomas.

By analyzing 1130 samples, we determine that wild-type PALLD is overexpressed in gliomas compared to healthy tissue. PALLD expression pattern correlates with disease progression and decreased patient survival. Comparison of prognostic markers with palladin confirm PALLD expression as having the highest predictive value. We injected mouse GBM cells into C57Bl/6J mice brains. Imaging located palladin only in the area of cancer cells. We obtained multi-tissue arrays of 600 cores of CNS pathologies and probed them for palladin. We conclude that palladin is present in glioma tumor but not in healthy tissue. Finally, by analyzing scRNAseq data, we show that PALLD expression originates only from the malignant cell population.

Our findings indicate that palladin expression correlates with glioma progression and suggest that its levels may impact prognosis. Overall, our results point to palladin’s potential as a marker for glioma diagnosis, risk stratification and as a novel molecular target for the treatment of aggressive glioma tumors in the future.