## Pathway Group: Hallmark expression levels normalized per row (pathway) Pathologist major category Pathologist category and grade Pathologist subcategory Resultant genotype UV\_RESPONSE\_UP | REACTIVE\_OXYGEN\_SPECIES\_PATHWAY OXIDATIVE\_PHOSPHORYLATION Resultant genotype nf1 KO; pten KO; ink KO; atrx KO nf1 KO; pten KO; ink KO; atrx wt nf1 wt; pten KO; ink KO; atrx Wt nf1 wt; pten wt; ink wt; atrx wt Pathologist grade HEME\_METABOLISM SPERMATOGENESIS PANCREAS\_BETA\_CELLS KRAS\_SIGNALING\_DN NED HEDGEHOG\_SIGNALING Age of Death Pathologist major category PI3K\_AKT\_MTOR\_SIGNALING Nerve sheath tumors UV\_RESPONSE\_DN Spindle and epithelioid tumors APICAL\_SURFACE Gliomas Glioneuronal tumors No evidence of disease ESTROGEN\_RESPONSE\_EARLY ESTROGEN\_RESPONSE\_LATE Pathologist category and grade COMPLEMENT Nerve sheath tumor, low grade Nerve sheath tumor, high grade Spindle and epithelioid tumor, high grade Glioma, grade 2 Glioma, grade 3 Glioma, grade 4 Glioneuronal tumor, diffuse low grade (DLGNT) Glioneuronal tumor, no grade assigned No evidence of disease ALLOGRAFT\_REJECTION IL6\_JAK\_STAT3\_SIGNALING INFLAMMATORY\_RESPONSE KRAS\_SIGNALING\_UP TNFA\_SIGNALING\_VIA\_NFKB INTERFERON\_ALPHA\_RESPONSE INTERFERON\_GAMMA\_RESPONSE MYOGENESIS Pathologist subcategory Pathologist subcategory Nerve sheath tumor, low grade with adenoid feat. Nerve sheath tumor, low grade Nerve sheath tumor, high grade Spindle and epithelioid tumor, high grade w/ osteoid feat. Astrocytoma, diffuse, low-grade (Grade 2) Astrocytoma, Grade 3 Astrocytoma, Grade 4 Glioblastoma (GBM) Glioblastoma (GBM) w/ spindle-cell component Astrocytoma, Grade 4, leptomeningeal glioma Glioneuronal tumor, diffuse low grade (DLGNT) Glioneuronal tumor, NOS No evidence of disease WNT\_BETA\_CATENIN\_SIGNALING GLYCOLYSIS UNFOLDED\_PROTEIN\_RESPONSE ANGIOGENESIS EPITHELIAL\_MESENCHYMAL\_TRANSITION NOTCH\_SIGNALING HYPOXIA IL2\_STAT5\_SIGNALING APOPTOSIS COAGULATION TGF\_BETA\_SIGNALING P53\_PATHWAY APICAL\_JUNCTION XENOBIOTIC\_METABOLISM ANDROGEN\_RESPONSE PROTEIN\_SECRETION PEROXISOME ADIPOGENESIS FATTY\_ACID\_METABOLISM BILE\_ACID\_METABOLISM CHOLESTEROL\_HOMEOSTASIS | MTORC1\_SIGNALING MYC\_TARGETS\_V1 MYC\_TARGETS\_V2 DNA\_REPAIR G2M\_CHECKPOINT E2F\_TARGETS MITOTIC\_SPINDLE 25238 23463 26024 26024 25743 25504 25504 23287 26140 23387 23467 22925 23287 22925 23287 22925 23287 22925 23287 22925 23287 26148 26148 25500