

**Supplementary Table 3.** Differential and statistically significant biological themes

(clusters C1 – C5).

| Cluster | Transcript # | Expression Pattern                                       | Biological Theme   | Example Genes  |
|---------|--------------|--|--|--|
| C1      | 640          | Genes upregulated in MPNST cell lines                    | Cell cycle, Cell differentiation, Establishment and/or maintenance of chromatin architecture, RNA splicing   | AURKA, BMP2, BMP4, CDC25B, EZH2, HGF, LIG1, MCM7, MDK, PAX6, SEMA3A, SEMA6B, SF3A3, SF3B4, SFRS6, SKP2, SRPK1, TBRG4, WEE1, WT1, ZIC1, ZIC2  |
| C2      | 131          | Genes upregulated in NFSCs                               | Cell adhesion, Cell surface receptor linked signal transduction, Development   | ADAM12, ANGPTL4, CD36, CDH13, COL6A1, COL6A2, EN1, INHBA, ITGA5, ITGB1, ITGB5, LIF, SPRY4, TWIST2, WNT5A, WNT5B  |
| C3      | 301          | Genes upregulated in all                                 | Cellular morphogenesis, Erk1/Erk2 Mapk Signaling pathway, Nervous system development, Regulation of programmed cell death, Transmembrane receptor protein tyrosine kinase signaling pathway  | AMIGO2, APBA2, CASP1, DAPK1, EGFR, EPHB4, F2R, FGFR1, FHL1, GNAS, IGFBP3, KIT, MALT1, MAP3K5, MPZL1, NOG, NPTX1, PBX1, PCDH18, PDGFRA, PTPRG, ROBO1, SHOX2, SOCS3, SOX11, THY1   |
| C4      | 764          | Genes downregulated in MPNST cell lines                  | Antigen processing and presentation pathway, Cell proliferation, Cytoskeleton organization and biogenesis, Focal adhesion pathway, Positive regulation of I-kappaB kinase/NF-kappaB cascade, Regulation of angiogenesis, Secretory pathway, Small GTPase mediated signal transduction, Sphingolipid metabolism, Transmembrane receptor protein tyrosine kinase signaling pathway | ACTC, ARPC5, BCL2, BTG1, CD74, CDKN2A, CHRM1, CNN3, CRK, ECM1, EGF, ERBB2, FYN, GSN, HLA-B, HLA-DPA1, HLA-DQA2, HLA-DRA, HLA-DRB1, HLA-DRB3, HLA-DRB4, MAPK1, MIA, NCOA4, PDGFA, PDGFB, PDGFC, PMP22, RAB10, RAB2B, RAB5A, RAB5B, RAB7, RAB7B, RAP1A, RHOA, RHOB, RHOG, RHOQ, TIMP3, TNFAIP1, TNFSF4, TRAPPC4, TUBA3, TUBB2A |
| C5      | 991          | Genes downregulated in MPNST cell lines and class 2 NFSC | Actin cytoskeleton organization and biogenesis, Axon guidance, Cell differentiation, Cell motility, Glycoprotein metabolism, Nerve ensheathment, Neurogenesis, Vitamin metabolism  | CEACAM1, CNP, CNTN4, DNAH9, GAP43, GPM6B, HDAC4, KLK6, KRAS, L1CAM, LAMA2, LARGE, MAL, MBP, METRN, MPZ, NCK2, NDRG4, NGFR, NRCAM, NRP2, NTNG1, NTRK3, PMP2, RXRA, S100B, SEMA3B, SEMA3G, SEMA6A, SORBS1, SPTBN1, SRGAP2, SVIL  |