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| **Supplementary Table 2.** **Overview of significantly enriched gene sets** |
| **geneSetDatabase** | **geneSet** | **systemic Name** | **description** | **ES** | **NES** | **pValue** | **FDR** | **size** |
| WikiPathwaysCancer | Photodynamic therapy-induced NF-kB survival signaling | WP3617 | Photodynamic therapy-induced NF-kB survival signaling | 0.763 | 2.136 | 0.000 | 0.000 | 33 |
| HALLMARK | HALLMARK\_EMT | M5930 | Genes defining epithelial-mesenchymal transition, as in wound healing, fibrosis and metastasis. | 0.532 | 1.996 | 0.000 | 0.000 | 196 |
| WikiPathwaysCancer | TGF-beta Receptor Signaling | WP560 | TGF-beta Receptor Signaling | 0.598 | 1.858 | 0.000 | 0.004 | 54 |
| KEGG | IL-17 signaling pathway | hsa04657 | IL-17 signaling pathway | 0.555 | 1.844 | 0.000 | 0.028 | 82 |
| KEGG | TNF signaling pathway | hsa04668 | TNF signaling pathway | 0.524 | 1.791 | 0.000 | 0.033 | 104 |
| Oncologic Signature | BMI1\_DN\_MEL18\_DN.V1\_UP | M2779 | Genes up-regulated in DAOY cells (medulloblastoma) upon knockdown of BMI1 and PCGF2 genes by RNAi | 0.498 | 1.778 | 0.000 | 0.007 | 142 |
| KEGG | hsa05034 | hsa05034 | Alcoholism | 0.483 | 1.759 | 0.000 | 0.037 | 163 |
| HALLMARK | Genes regulated by NF-kB in response to TNF  | M5890 | Genes regulated by NF-kB in response to TNF  | 0.471 | 1.754 | 0.000 | 0.002 | 192 |
| WikiPathwaysCancer | Cytokines and Inflammatory Response | WP530 | Cytokines and Inflammatory Response | 0.700 | 1.725 | 0.002 | 0.027 | 18 |
| Oncologic Signature | MEL18\_DN.V1\_UP | M2784 | Genes up-regulated in DAOY cells (medulloblastoma) upon knockdown of PCGF2 gene by RNAi | 0.474 | 1.673 | 0.000 | 0.016 | 136 |
| Oncologic Signature | BMI1\_DN.V1\_UP | M2782 | Genes up-regulated in DAOY cells (medulloblastoma) upon knockdown of BMI1 gene by RNAi | 0.456 | 1.632 | 0.000 | 0.022 | 140 |
| Oncologic Signature | PRC2\_SUZ12\_UP.V1\_DN | M2740 | Genes down-regulated in TIG3 cells (fibroblasts) upon knockdown of SUZ12 gene | -0.431 | -1.541 | 0.004 | 0.035 | 164 |
| Oncologic Signature | MEK\_UP.V1\_UP | M2725 | Genes up-regulated in MCF-7 cells (breast cancer) positive for ESR1 MCF-7 cells (breast cancer) stably over-expressing constitutively active MAP2K1 gene | -0.431 | -1.570 | 0.004 | 0.029 | 192 |
| Oncologic Signature | KRAS.BREAST\_UP.V1\_DN | M2887 | Genes down-regulated in epithelial breast cancer cell lines over-expressing an oncogenic form of KRAS gene | -0.453 | -1.581 | 0.000 | 0.028 | 118 |
| Oncologic Signature | MEL18\_DN.V1\_DN | M2783 | Genes down-regulated in DAOY cells (medulloblastoma) upon knockdown of PCGF2 gene by RNAi | -0.451 | -1.595 | 0.000 | 0.027 | 138 |
| Oncologic Signature | BMI1\_DN\_MEL18\_DN.V1\_DN | M2775 | Genes down-regulated in DAOY cells (medulloblastoma) upon knockdown of BMI1 and PCGF2 genes by RNAi | -0.450 | -1.600 | 0.000 | 0.029 | 137 |
| Oncologic Signature | KRAS.KIDNEY\_UP.V1\_UP | M2892 | Genes up-regulated in epithelial kidney cancer cell lines over-expressing an oncogenic form of KRAS gene | -0.467 | -1.609 | 0.000 | 0.030 | 129 |
| Oncologic Signature | PRC1\_BMI\_UP.V1\_DN | M2730 | Genes down-regulated in TIG3 cells (fibroblasts) upon knockdown of BMI1 gene | -0.458 | -1.641 | 0.000 | 0.023 | 166 |
| Oncologic Signature | PIGF\_UP.V1\_DN | M2674 | Genes down-regulated in HUVEC cells (endothelium) by treatment with PIGF | -0.453 | -1.654 | 0.000 | 0.023 | 173 |
| Oncologic Signature | SINGH\_KRAS\_DEPENDENCY\_SIGNATURE | M2851 | Genes defining the KRAS dependency signature | -0.682 | -1.673 | 0.004 | 0.022 | 19 |
| Oncologic Signature | NFE2L2.V2 | M2870 | Genes up-regulated in MEF cells (embryonic fibroblasts) with knockout of NFE2L2 | -0.433 | -1.710 | 0.000 | 0.015 | 409 |
| Oncologic Signature | LEF1\_UP.V1\_DN | M2903 | Genes down-regulated in DLD1 cells (colon carcinoma) over-expressing LEF1 | -0.474 | -1.724 | 0.000 | 0.018 | 178 |
| Oncologic Signature | P53\_DN.V1\_DN | M2697 | Genes down-regulated in NCI-60 panel of cell lines with mutated TP53 | -0.530 | -1.921 | 0.000 | 0.000 | 187 |