**Table S1.**

|  |  |  |  |  |  |  |  |  |  |
| --- | --- | --- | --- | --- | --- | --- | --- | --- | --- |
| **Pathway****ID** | **KEGG****Pathway** | **Fisher P-value** | **Selection****Counts** | **Selection****Size** | **Count** | **Size** | **FDR** | **Enrichment****Score** | **Genes** |
| mmu04512 | ECM-receptor interaction | 0.000608536 | 11 | 278 | 86 | 6913 | 0.06815431 | 3.215713 | COL1A1/COL1A2/COL4A6/COL6A2/COL6A3/ITGA2B/ITGA5/ITGB4/RELN/SPP1/THBS2 |
| mmu04510 | Focal adhesion | 0.001090355 | 18 | 278 | 200 | 6913 | 0.06815431 | 2.962432 | COL1A1/COL1A2/COL4A6/COL6A2/COL6A3/FLT1/FYN/ITGA2B/ITGA5/ITGB4/MYL7/MYLK/PDGFD/PDGFRB/PIK3CB/RELN/SPP1/THBS2 |
| mmu05200 | Pathways in cancer | 0.001345151 | 25 | 278 | 326 | 6913 | 0.06815431 | 2.871229 | AXIN2/BAX/BMP2/BMP4/CCDC6/COL4A6/CUL2/CYCS/E2F2/FGF7/FGF9/FGFR1/FZD1/HHIP/ITGA2B/KIT/MITF/PAX8/PDGFRB/PIK3CB/RB1/RUNX1/RUNX1T1/TCF7/WNT5B |
| mmu05218 | Melanoma | 0.002223185 | 9 | 278 | 72 | 6913 | 0.08448104 | 2.653024 | E2F2/FGF7/FGF9/FGFR1/MITF/PDGFD/PDGFRB/PIK3CB/RB1 |
| mmu05217 | Basal cell carcinoma | 0.00611762 | 7 | 278 | 55 | 6913 | 0.1859757 | 2.213417 | AXIN2/BMP2/BMP4**/**FZD1/HHIP/TCF7/WNT5B |
| mmu04975 | Fat digestion and absorption | 0.008718624 | 6 | 278 | 45 | 6913 | 0.2025715 | 2.059552 | ABCG5/AGPAT2/PLA2G12A/PLA2G4B/PNLIPRP2/SCARB1 |
| mmu05412 | Arrhythmogenic right ventricular cardiomyopathy | 0.009328949 | 8 | 278 | 74 | 6913 | 0.2025715 | 2.030167 | CACNB2/CACNG1/DMD/GJA1/ITGA2B/ITGA5/ITGB4/TCF7 |
| mmu04060 | Cytokine-cytokine receptor interaction | 0.02024678 | 17 | 278 | 246 | 6913 | 0.2838806 | 1.693644 | BMP2/CCL21A/CCL27A/CXCR4/FLT1/IL17RB/IL9/INHBA/KIT/LEPR/NGFR/PDGFD/PDGFRB/RELT/TNFRSF13C/TNFRSF18/TNFRSF19 |
| mmu04350 | TGF-beta signaling pathway | 0.02043581 | 8 | 278 | 85 | 6913 | 0.2838806 | 1.689608 | BMP2/BMP4/DCN/FST/INHBA/PPP2R1B/SMAD5/THBS2 |
| mmu04310 | Wnt signaling pathway | 0.02094991 | 12 | 278 | 154 | 6913 | 0.2838806 | 1.678818 | AXIN2/CAMK2G/CSNK1A1/DKK2/FZD1/NKD1/NKD2/PPP2R1B/PPP2R5A/TCF7/WIF1/WNT5B |
| Pathway ID stands for Pathway identifiers used in KEGGFisher P-value stands for the enrichment p-value of the Pathway ID used Fisher's exact testSelection Counts stands for the Count of the differentially expressed genes’ entities directly associated with the listed PathwayIDSelection Size stands for the total number of the differentially expressed genes’ entitiesCount stands for the count of the chosen background population genes’ entities associated with the listed Pathway IDSize stands for the total number of chosen background population genes’ entitiesFDR stands for the false discover rate of the Pathway IDEnrichment Score stands for the Enrichment Score value of the Pathway ID, it equals -log10(P-value) |