Table S2. GSEA result

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| NAME | NES | FDR q-val |
| KEGG\_T\_CELL\_RECEPTOR\_SIGNALING\_PATHWAY | 1.9679703 | 0.011186934 |
| KEGG\_B\_CELL\_RECEPTOR\_SIGNALING\_PATHWAY | 1.9687262 | 0.012305628 |
| KEGG\_THYROID\_CANCER | 1.9485633 | 0.012329184 |
| KEGG\_VIRAL\_MYOCARDITIS | 1.9096992 | 0.012988648 |
| KEGG\_ANTIGEN\_PROCESSING\_AND\_PRESENTATION | 1.9140121 | 0.013140841 |
| KEGG\_CYTOSOLIC\_DNA\_SENSING\_PATHWAY | 1.9214497 | 0.013221422 |
| KEGG\_PATHWAYS\_IN\_CANCER | 1.8948677 | 0.013399627 |
| KEGG\_ACUTE\_MYELOID\_LEUKEMIA | 1.8753215 | 0.013537006 |
| KEGG\_JAK\_STAT\_SIGNALING\_PATHWAY | 1.9690794 | 0.01367292 |
| KEGG\_MELANOMA | 1.8702184 | 0.013819198 |
| KEGG\_REGULATION\_OF\_ACTIN\_CYTOSKELETON | 1.8852228 | 0.013924948 |
| KEGG\_TOLL\_LIKE\_RECEPTOR\_SIGNALING\_PATHWAY | 1.9730792 | 0.013941464 |
| KEGG\_NATURAL\_KILLER\_CELL\_MEDIATED\_CYTOTOXICITY | 1.8982568 | 0.013972604 |
| KEGG\_FOCAL\_ADHESION | 1.9846122 | 0.01413481 |
| KEGG\_CELL\_ADHESION\_MOLECULES\_CAMS | 1.8761733 | 0.014249481 |
| KEGG\_APOPTOSIS | 1.8519711 | 0.014250504 |
| KEGG\_BLADDER\_CANCER | 1.8469603 | 0.014311257 |
| KEGG\_FC\_EPSILON\_RI\_SIGNALING\_PATHWAY | 1.8538568 | 0.01445137 |
| KEGG\_FC\_GAMMA\_R\_MEDIATED\_PHAGOCYTOSIS | 1.827706 | 0.015062673 |
| KEGG\_EPITHELIAL\_CELL\_SIGNALING\_IN\_HELICOBACTER\_PYLORI\_INFECTION | 1.8328484 | 0.015399291 |
| KEGG\_P53\_SIGNALING\_PATHWAY | 1.8289669 | 0.015501312 |
| KEGG\_COMPLEMENT\_AND\_COAGULATION\_CASCADES | 1.8160152 | 0.015641205 |
| KEGG\_MAPK\_SIGNALING\_PATHWAY | 1.8358859 | 0.015729984 |
| KEGG\_ENDOCYTOSIS | 1.8168267 | 0.01605978 |
| KEGG\_GLIOMA | 1.9850134 | 0.016490612 |
| KEGG\_VEGF\_SIGNALING\_PATHWAY | 1.8082213 | 0.016948847 |
| KEGG\_NOD\_LIKE\_RECEPTOR\_SIGNALING\_PATHWAY | 1.9980444 | 0.018506942 |
| KEGG\_SYSTEMIC\_LUPUS\_ERYTHEMATOSUS | 1.7877082 | 0.020078 |
| KEGG\_AUTOIMMUNE\_THYROID\_DISEASE | 1.7741663 | 0.022324922 |
| KEGG\_LEUKOCYTE\_TRANSENDOTHELIAL\_MIGRATION | 2.0017166 | 0.023133678 |
| KEGG\_CHEMOKINE\_SIGNALING\_PATHWAY | 2.0173671 | 0.023225814 |
| KEGG\_HEMATOPOIETIC\_CELL\_LINEAGE | 1.7503996 | 0.025810858 |
| KEGG\_PATHOGENIC\_ESCHERICHIA\_COLI\_INFECTION | 1.7310413 | 0.029528983 |
| KEGG\_PRION\_DISEASES | 2.0336232 | 0.030109525 |
| KEGG\_INTESTINAL\_IMMUNE\_NETWORK\_FOR\_IGA\_PRODUCTION | 1.7312804 | 0.030294549 |
| KEGG\_TYPE\_I\_DIABETES\_MELLITUS | 1.7168776 | 0.031916395 |
| KEGG\_CHRONIC\_MYELOID\_LEUKEMIA | 1.7173792 | 0.032547187 |
| KEGG\_GLYCOSPHINGOLIPID\_BIOSYNTHESIS\_GANGLIO\_SERIES | 1.704451 | 0.03268027 |
| KEGG\_HYPERTROPHIC\_CARDIOMYOPATHY\_HCM | 1.7047552 | 0.033379454 |
| KEGG\_ECM\_RECEPTOR\_INTERACTION | 1.7056044 | 0.034020223 |
| KEGG\_WNT\_SIGNALING\_PATHWAY | 2.067703 | 0.03435898 |
| KEGG\_NON\_SMALL\_CELL\_LUNG\_CANCER | 1.6948732 | 0.034590226 |
| KEGG\_GLYCOSAMINOGLYCAN\_DEGRADATION | 1.695668 | 0.034925435 |
| KEGG\_TGF\_BETA\_SIGNALING\_PATHWAY | 1.6905918 | 0.0351595 |
| KEGG\_SMALL\_CELL\_LUNG\_CANCER | 1.685816 | 0.035191026 |
| KEGG\_ASTHMA | 1.6858925 | 0.035878006 |
| KEGG\_LYSOSOME | 1.6743429 | 0.038381774 |
| KEGG\_MELANOGENESIS | 1.6668857 | 0.03920388 |
| KEGG\_PROSTATE\_CANCER | 1.6691301 | 0.039378446 |
| KEGG\_PROTEASOME | 1.6586006 | 0.041423593 |
| KEGG\_RIG\_I\_LIKE\_RECEPTOR\_SIGNALING\_PATHWAY | 1.6521294 | 0.04170561 |
| KEGG\_CELL\_CYCLE | 1.6540781 | 0.04188579 |
| KEGG\_RENIN\_ANGIOTENSIN\_SYSTEM | 1.6296556 | 0.049647715 |