

**S1 Figure. GO enrichment analysis of the positively related modules in RA.**



**S2 Figure. KEGG enrichment analysis of the positively related modules in RA.**



**S3 Figure. GO enrichment analysis of the positively related modules in pSS.**



**S4 Figure. KEGG enrichment analysis of the positively related modules in pSS.**

**S1 Table. Common targets of RA and pSS in GeneCards and CTD databases.**

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| 322 Common targets of RA and pSS in GeneCards and CTD databases |
| IL6 | IL10 | TNF | STAT4 | MIF | IRF5 | IL2RA | IL2RB | TLR1 |
| CXCL8 | IL2 | IL18 | TLR4 | CCL2 | FAS | IL4 | IL23R | IL1A |
| FASLG | TTR | SPP1 | FCGR3B | SERPINH1 | TNIP1 | ICAM1 | CSF2 | IL13 |
| ALB | HLA-DPB1 | IL23A | FSTL1 | PRTN3 | PTGS1 | HSPD1 | MPO | CCL3 |
| S100A8 | CXCL12 | MICB | HSPA5 | TFRC | TLR9 | JUN | TRAF6 | ITGB2 |
| CRH | CD4 | CCR7 | CCL4 | ALOX5 | TNFRSF10A | NFKB1 | CD86 | SELL |
| HLA-A | IL12A | CALCA | PSMB9 | GSTM1 | CCL21 | INS | HMGB2 | TLR3 |
| ACE | GPT | TNFSF4 | TREX1 | DNASE1 | MYC | ICOSLG | RELA | PON1 |
| HLA-G | CCN1 | CD8A | HIF1A | IGF1 | POMC | XDH | IL1RL1 | FN1 |
| CTLA4 | CRP | CD247 | TNFRSF1A | IL17A | MMP3 | IFNG | IL1RN | BCL2L1 |
| CD40 | MMP9 | TLR2 | VEGFA | TGFB1 | VCAM1 | CCL5 | S100A9 | CXCR2 |
| BGLAP | TNFAIP3 | CD40LG | SELE | CD79A | HMGB1 | CXCL10 | ADAM17 | ATM |
| IFNB1 | NFKBIA | CD28 | MAPK1 | NOS2 | CD44 | HSPA4 | CD36 | C3 |
| MAPK8 | CXCL1 | CXCR4 | CCL20 | CR1 | NR4A2 | NR3C1 | ELANE | APOE |
| CTSG | ITGAL | LTBR | IL12B | PRKCD | IRAK1 | VDR | IL22RA1 | CASP3 |
| TPMT | MYD88 | TP53 | LTF | PRL | VWF | ADA | IL3 | FOS |
| TRAF3IP2 | PPARG | CD58 | BCL2 | IRF4 | ESR1 | NOS3 | MS4A1 | TLR7 |
| VIM | IGHM | CD274 | TNFSF13 | P2RX7 | IRF1 | CALR | HSPA8 | ITGA4 |
| TNFSF10 | ITGB1 | SOCS3 | PTEN | F3 | IL7R | NPY | GSTT1 | KITLG |
| SOD2 | PRDM1 | F2RL1 | EDN1 | GZMA | TAC1 | CD55 | PLAT | KLRK1 |
| NGF | PSMB8 | EGFR | CST3 | CD2 | PARP1 | F2 | IL21R | PDPN |
| KIR2DS2 | COL1A2 | CYP19A1 | SPTAN1 | NFATC1 | CCR8 | CD1D | THBS1 | GTF2I |
| XBP1 | TYRO3 | ALPP | IRF3 | CLU | AIM2 | HSPG2 | MAP2K4 | BAX |
| CXCR6 | BCL6 | ENO2 | CYP1A1 | FPR2 | CYP17A1 | CYP2D6 | CYP3A4 | LCN2 |
| VTCN1 | PF4 | CYCS | CDKN3 | SPHK1 | CCL3L1 | STAT5A | BST2 | SDC1 |
| BAK1 | CASP9 | EZR | CCK | AGTR1 | IRF7 | ITGA1 | RPLP1 | MALT1 |
| ABCA1 | ADIPOR1 | LILRA3 | GAPDH | AQP5 | CTSD | PLA2G7 | AREG | CCR9 |
| PSME3 | HSPB1 | TPI1 | NCF1 | RECK | XRCC5 | PRLR | EIF2AK3 | GFAP |
| CTSS | ADIPOR2 | MX1 | TOP1 | ID3 | DDIT3 | NOS1 | CEACAM5 | MUC16 |
| MKI67 | TRIM63 | ITPR3 | FST | ARHGAP45 | H1-5 | OAS1 | LEF1 | INSR |
| EPX | FUT7 | NR3C2 | COL4A3 | ITGA3 | MOG | CYP4F3 | TCP1 | ITPR1 |
| HNRNPH1 | PLA1A | TFAP2A | DLAT | BCL10 | RORA | NCL | APAF1 | LAMB1 |
| LPO | TNRC6A | IL1B | TNFRSF11B | STAT3 | ADIPOQ | RETN | CTSB | STAT1 |
| CCN2 | CFLAR | CCL11 | HRH2 | CXCL11 | CD27 | SELP | CASP8 | ITGA2 |
| TRIM21 | AKT1 | THBD | TNFRSF17 | CA2 | MBP | CHRM3 | TGFA | PCNA |
| MYB | F2R | ANXA11 | GADD45A | GAD1 | CD93 | ADCYAP1 |  |  |

**S2 Table. The potential drugs of hub genes using DGIbd database.**

|  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |  |
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| search\_term | match\_term | match\_type | gene | drug |
| PSMB9 | PSMB9 | Definite | PSMB9 | CARFILZOMIB |
| PSMB9 | PSMB9 | Definite | PSMB9 | OPROZOMIB |
| PSMB9 | PSMB9 | Definite | PSMB9 | BORTEZOMIB |
| PSMB9 | PSMB9 | Definite | PSMB9 | MARIZOMIB |
| PSMB9 | PSMB9 | Definite | PSMB9 | IXAZOMIB CITRATE |
| CXCL10 | CXCL10 | Definite | CXCL10 | ELDELUMAB |
| CXCL10 | CXCL10 | Definite | CXCL10 | RITONAVIR |
| CXCL10 | CXCL10 | Definite | CXCL10 | NI-0801 |
| CXCL10 | CXCL10 | Definite | CXCL10 | ATROPINE |
| CXCL10 | CXCL10 | Definite | CXCL10 | ANTIBIOTIC |
| CXCL10 | CXCL10 | Definite | CXCL10 | ATORVASTATIN |
| CXCL10 | CXCL10 | Definite | CXCL10 | REGRAMOSTIM |
| CXCL10 | CXCL10 | Definite | CXCL10 | METHYLPREDNISOLONE |
| CXCL10 | CXCL10 | Definite | CXCL10 | OXALIPLATIN |
| CXCL10 | CXCL10 | Definite | CXCL10 | TESTOSTERONE |
| CXCL10 | CXCL10 | Definite | CXCL10 | STAVUDINE |
| CXCL10 | CXCL10 | Definite | CXCL10 | ZIDOVUDINE |
| ITGA4 | ITGA4 | Definite | ITGA4 | CHEMBL88478 |
| ITGA4 | ITGA4 | Definite | ITGA4 | VEDOLIZUMAB |
| ITGA4 | ITGA4 | Definite | ITGA4 | NATALIZUMAB |
| ITGA4 | ITGA4 | Definite | ITGA4 | ABRILUMAB |
| ITGA4 | ITGA4 | Definite | ITGA4 | FIRATEGRAST |
| ITGA4 | ITGA4 | Definite | ITGA4 | SENKTIDE |
| GZMA | GZMA | Definite | GZMA | CYCLOSPORINE |

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