

| Module | Geneset | P Value | Odds Ratio | Adjusted P Value |
|----------------------|---|---------|------------|------------------|
| Immunological Module | REACTOME_IMMUNE_SYSTEM | 0.00000 | 3.01558 | 0.00000 |
| Immunological Module | REACTOME_IMMUNOREGULATORY_INTERACTIONS_BETWEEN_A_LYMPHOID_AND_A_NON_LYMPHOID_CELL | 0.00000 | 10.44369 | 0.00000 |
| Immunological Module | PID_IL12_STAT4_PATHWAY | 0.00000 | 15.89957 | 0.00003 |
| Immunological Module | REACTOME_ADAPTIVE_IMMUNE_SYSTEM | 0.00000 | 2.90630 | 0.00004 |
| Immunological Module | KEGG_NATURAL_KILLER_CELL_MEDIATED_CYTOTOXICITY | 0.00000 | 6.02636 | 0.00005 |
| Immunological Module | KEGG_SYSTEMIC_LUPUS_ERYTHEMATOSUS | 0.00000 | 5.41138 | 0.00015 |
| Immunological Module | PID_IL12_2PATHWAY | 0.00000 | 8.22179 | 0.00034 |
| Immunological Module | BIOCARTA_CTLA4_PATHWAY | 0.00001 | 17.67200 | 0.00104 |
| Immunological Module | BIOCARTA_CTL_PATHWAY | 0.00001 | 25.25499 | 0.00161 |
| Immunological Module | KEGG_LEISHMANIA_INFECTION | 0.00001 | 6.42797 | 0.00161 |
| Immunological Module | KEGG_ANTIGEN_PROCESSING_AND_PRESENTATION | 0.00002 | 6.09559 | 0.00204 |
| Immunological Module | KEGG_AUTOIMMUNE_THYROID_DISEASE | 0.00002 | 10.31298 | 0.00204 |
| Immunological Module | KEGG_TYPE_I_DIABETES_MELLITUS | 0.00003 | 9.51715 | 0.00270 |
| Immunological Module | KEGG_GRAFT_VERSUS_HOST_DISEASE | 0.00003 | 9.51715 | 0.00270 |
| Immunological Module | KEGG_CELL_ADHESION_MOLECULES_CAMS | 0.00004 | 4.21698 | 0.00343 |
| Immunological Module | KEGG_ALLOGRAFT_REJECTION | 0.00010 | 9.64259 | 0.00834 |
| Immunological Module | KEGG_PRION_DISEASES | 0.00012 | 9.22171 | 0.00966 |
| Immunological Module | REACTOME_CYTOKINE_SIGNALING_IN_IMMUNE_SYSTEM | 0.00015 | 2.87999 | 0.01143 |
| Immunological Module | REACTOME_INTERFERON_GAMMA_SIGNALING | 0.00017 | 5.77266 | 0.01200 |
| Immunological Module | KEGG_HEMATOPOIETIC_CELL_LINEAGE | 0.00021 | 4.89585 | 0.01402 |
| Immunological Module | BIOCARTA_THELPER_PATHWAY | 0.00024 | 17.67198 | 0.01531 |
| Immunological Module | REACTOME_INNATE_IMMUNE_SYSTEM | 0.00027 | 2.94664 | 0.01646 |
| Immunological Module | KEGG_VIRAL_MYOCARDITIS | 0.00031 | 5.23785 | 0.01706 |
| Immunological Module | BIOCARTA_NO2IL12_PATHWAY | 0.00034 | 15.70324 | 0.01706 |
| Immunological Module | BIOCARTA_TH1TH2_PATHWAY | 0.00034 | 15.70324 | 0.01706 |
| Immunological Module | REACTOME_TRAF6_MEDIATED_INDUCION_OF_TAK1_COMPLEX | 0.00034 | 15.70324 | 0.01706 |
| Immunological Module | KEGG_TOLL_LIKE_RECEPTOR_SIGNALING_PATHWAY | 0.00035 | 4.54580 | 0.01706 |
| Immunological Module | PID_CXCR4_PATHWAY | 0.00038 | 4.06416 | 0.01792 |
| Immunological Module | KEGG_JAK_STAT_SIGNALING_PATHWAY | 0.00047 | 3.63473 | 0.02164 |
| Immunological Module | REACTOME_INTERFERON_SIGNALING | 0.00057 | 3.31491 | 0.02545 |
| Immunological Module | PID_IL2_STAT5_PATHWAY | 0.00065 | 8.41727 | 0.02808 |
| Immunological Module | BIOCARTA_IL12_PATHWAY | 0.00081 | 11.78220 | 0.03379 |
| Immunological Module | REACTOME_CREATION_OF_C4_AND_C2_ACTIVATORS | 0.00106 | 21.20233 | 0.04281 |
| Immunological Module | ST_T_CELL_SIGNAL_TRANSDUCTION | 0.00114 | 5.73388 | 0.04444 |
| Immunological Module | PID_PI3KCI_PATHWAY | 0.00128 | 5.58179 | 0.04882 |
| Malignancy Module | REACTOME_CELL_CYCLE | 0.00000 | 3.90163 | 0.00000 |
| Malignancy Module | KEGG_SYSTEMIC_LUPUS_ERYTHEMATOSUS | 0.00000 | 6.85359 | 0.00000 |
| Malignancy Module | REACTOME_RNA_POL_I_PROMOTER_OPENING | 0.00000 | 10.74950 | 0.00000 |
| Malignancy Module | REACTOME_RNA_POL_I_TRANSCRIPTION | 0.00000 | 8.07380 | 0.00000 |
| Malignancy Module | REACTOME_TRANSCRIPTION | 0.00000 | 4.67007 | 0.00000 |
| Malignancy Module | REACTOME_DNA_REPLICATION | 0.00000 | 4.75236 | 0.00000 |
| Malignancy Module | REACTOME_CELL_CYCLE_MITOTIC | 0.00000 | 3.71162 | 0.00000 |
| Malignancy Module | REACTOME_RNA_POL_I_RNA_POL_III_AND_MITOCHONDRIAL_TRANSCRIPTION | 0.00000 | 6.26584 | 0.00000 |
| Malignancy Module | REACTOME_MEIOTIC_RECOMBINATION | 0.00000 | 8.04648 | 0.00000 |
| Malignancy Module | REACTOME_MEIOSIS | 0.00000 | 6.53664 | 0.00000 |
| Malignancy Module | REACTOME_AMYLOIDS | 0.00000 | 8.01518 | 0.00001 |
| Malignancy Module | REACTOME_CHROMOSOME_MAINTENANCE | 0.00000 | 5.41111 | 0.00007 |
| Malignancy Module | REACTOME_DEPOSITION_OF_NEW_CENPA_CONTAINING_NUCLEOSOMES_AT_THE_CENTROMERE | 0.00000 | 7.93662 | 0.00008 |
| Malignancy Module | REACTOME_MITOTIC_M_M_G1_PHASES | 0.00000 | 4.29897 | 0.00011 |
| Malignancy Module | REACTOME_G1_S_TRANSITION | 0.00004 | 4.52156 | 0.00368 |
| Malignancy Module | REACTOME_MITOTIC_G1_G1_S_PHASES | 0.00007 | 3.93643 | 0.00620 |
| Malignancy Module | REACTOME_FACTORS_INVOLVED_IN_MEGAKARYOCYTE_DEVELOPMENT_AND_PLATELET_PRODUCTION | 0.00008 | 4.19538 | 0.00625 |

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| Malignancy Module | REACTOME_MEIOTIC_SYNAPSIS | 0.00010 | 5.44968 | 0.00764 |
| Malignancy Module | REACTOME_TELOMERE_MAINTENANCE | 0.00015 | 5.17283 | 0.01032 |
| Malignancy Module | REACTOME_SYNTHESIS_OF_DNA | 0.00016 | 4.58255 | 0.01057 |
| Malignancy Module | REACTOME_REGULATION_OF_MITOTIC_CELL_CYCLE | 0.00021 | 4.92296 | 0.01297 |
| Malignancy Module | REACTOME_PACKAGING_OF_TELOMERE_ENDS | 0.00021 | 6.59333 | 0.01297 |
| Malignancy Module | REACTOME_CYCLIN_E_ASSOCIATED_EVENTS_DURING_G1_S_TRANSITION | 0.00032 | 5.21701 | 0.01864 |
| Malignancy Module | REACTOME_ORC1_REMOVAL_FROM_CHROMATIN | 0.00040 | 5.02460 | 0.02242 |
| Malignancy Module | REACTOME_S_PHASE | 0.00065 | 3.76844 | 0.03407 |
| Malignancy Module | REACTOME_MITOTIC_PROMETAPHASE | 0.00067 | 4.12453 | 0.03407 |
| Malignancy Module | KEGG_CELL_CYCLE | 0.00081 | 3.39137 | 0.03983 |
| Malignancy Module | REACTOME_CELL_CYCLE_CHECKPOINTS | 0.00096 | 3.56978 | 0.04548 |
| Malignancy Module | REACTOME_APC_C_CDC20_MEDIATED_DEGRADATION_OF_MITOTIC_PROTEINS | 0.00152 | 4.56496 | 0.06959 |
| Malignancy Module | REACTOME_MITOTIC_G2_G2_M_PHASES | 0.00158 | 3.98982 | 0.06993 |
| Malignancy Module | REACTOME_ASSEMBLY_OF_THE_PRE_REPLICATIVE_COMPLEX | 0.00168 | 4.47909 | 0.07187 |
| Malignancy Module | REACTOME_P53_INDEPENDENT_G1_S_DNA_DAMAGE_CHECKPOINT | 0.00177 | 5.21701 | 0.07375 |
| Malignancy Module | REACTOME_SCF_BETA_TRCP_MEDIATED_DEGRADATION_OF_EMI1 | 0.00199 | 5.08618 | 0.08024 |
| Malignancy Module | REACTOME_METABOLISM_OF_RNA | 0.00282 | 2.31903 | 0.11032 |
| Malignancy Module | REACTOME_G0_AND_EARLY_G1 | 0.00331 | 7.53664 | 0.12510 |
| Malignancy Module | REACTOME_SCFSKP2_MEDIATED_DEGRADATION_OF_P27_P21 | 0.00339 | 4.52155 | 0.12510 |
| Malignancy Module | REACTOME_AUTODEGRADATION_OF_CDH1_BY_CDH1_APC_C | 0.00374 | 4.42316 | 0.13427 |
| Malignancy Module | REACTOME_M_G1_TRANSITION | 0.00511 | 3.59676 | 0.17875 |
| Malignancy Module | REACTOME_ACTIVATION_OF_NF_KAPPAB_IN_B_CELLS | 0.00641 | 3.91316 | 0.21874 |
| Malignancy Module | REACTOME_APC_C_CDH1_MEDIATED_DEGRADATION_OF_CDC20_AND_OTHER_APC_C_CDH1_TARGETED | 0.00697 | 3.83943 | 0.23171 |
| Malignancy Module | REACTOME_CROSS_PRESENTATION_OF_SOLUBLE_EXOGENOUS_ANTIGENS_ENDOSOMES | 0.00765 | 4.46262 | 0.24236 |
| Malignancy Module | REACTOME_CDK_MEDIATED_PHOSPHORYLATION_AND_REMOVAL_OF_CDC6 | 0.00765 | 4.46262 | 0.24236 |
| Malignancy Module | REACTOME_CYCLIN_A_B1_ASSOCIATED_EVENTS_DURING_G2_M_TRANSITION | 0.00834 | 8.47689 | 0.25489 |
| Malignancy Module | REACTOME_AUTODEGRADATION_OF_THE_E3_UBIQUITIN_LIGASE_COP1 | 0.00843 | 4.34752 | 0.25489 |
| Malignancy Module | BIOCARTA_P53_PATHWAY | 0.01004 | 7.82586 | 0.28727 |
| Malignancy Module | REACTOME_G1_S_SPECIFIC_TRANSCRIPTION | 0.01004 | 7.82586 | 0.28727 |
| Malignancy Module | REACTOME_VIF_MEDIATED_DEGRADATION_OF_APOBEC3G | 0.01015 | 4.13570 | 0.28727 |
| Malignancy Module | REACTOME_CLASS_I_MHC_MEDIATED_ANTIGEN_PROCESSING_PRESENTATION | 0.01065 | 2.17198 | 0.29513 |
| Malignancy Module | KEGG_PANCREATIC_CANCER | 0.01104 | 3.44884 | 0.29513 |
| Malignancy Module | REACTOME_DESTABILIZATION_OF_MRNA_BY_AUF1_HNRNP_D0 | 0.01110 | 4.03728 | 0.29513 |
| Malignancy Module | REACTOME_ANTIGEN_PROCESSING_CROSS_PRESENTATION | 0.01186 | 3.39137 | 0.30530 |
| Malignancy Module | REACTOME_APC_C_CDC20_MEDIATED_DEGRADATION_OF_CYCLIN_B | 0.01194 | 7.26490 | 0.30530 |
| Malignancy Module | KEGG_P53_SIGNALING_PATHWAY | 0.01271 | 3.33578 | 0.31865 |
| Malignancy Module | REACTOME_E2F_MEDIATED_REGULATION_OF_DNA_REPLICATION | 0.01294 | 4.84467 | 0.31865 |
| Malignancy Module | KEGG_CHRONIC_MYELOID_LEUKEMIA | 0.01361 | 3.28198 | 0.32907 |
| Malignancy Module | REACTOME_P53_DEPENDENT_G1_DNA_DAMAGE_RESPONSE | 0.01428 | 3.76845 | 0.33570 |
| Malignancy Module | PID_E2F_PATHWAY | 0.01455 | 3.22988 | 0.33570 |
| Malignancy Module | REACTOME_PROCESSING_OF_CAPPED_INTRON_CONTAINING_PRE_MRNA | 0.01464 | 2.48150 | 0.33570 |
| Malignancy Module | REACTOME_REGULATION_OF_APOPTOSIS | 0.01546 | 3.68587 | 0.34277 |
| Malignancy Module | REACTOME_CDT1_ASSOCIATION_WITH_THE_CDC6_ORC_ORIGIN_COMPLEX | 0.01546 | 3.68587 | 0.34277 |
| Malignancy Module | REACTOME_REGULATION_OF_THE_FANCONI_ANEMIA_PATHWAY | 0.01573 | 13.55914 | 0.34306 |
| Malignancy Module | REACTOME_TRANSPORT_OF_MATURE_TRANSCRIPT_TO_CYTOPLASM | 0.01671 | 3.60767 | 0.35847 |
| Malignancy Module | REACTOME_ANTIGEN_PROCESSING_UBIQUITINATION_PROTEASOME_DEGRADATION | 0.01723 | 2.18175 | 0.36345 |
| Malignancy Module | REACTOME_G1_PHASE | 0.01760 | 4.37575 | 0.36345 |
| Malignancy Module | REACTOME_METABOLISM_OF_MRNA | 0.01787 | 2.08716 | 0.36345 |
| Malignancy Module | BIOCARTA_ATM_PATHWAY | 0.01877 | 5.98403 | 0.36345 |
| Malignancy Module | REACTOME_FANCONI_ANEMIA_PATHWAY | 0.01877 | 5.98403 | 0.36345 |
| Malignancy Module | KEGG_SNARE_INTERACTIONS_IN_VESICULAR_TRANSPORT | 0.01936 | 4.23906 | 0.36345 |
| Malignancy Module | KEGG_TYPE_II_DIABETES_MELLITUS | 0.01936 | 4.23906 | 0.36345 |
| Malignancy Module | REACTOME_ER_PHAGOSOME_PATHWAY | 0.01940 | 3.46057 | 0.36345 |

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|-------------------|--|---------|---------|---------|
| Malignancy Module | REACTOME_LOSS_OF_NLP_FROM_MITOTIC_CENTROSOMES | 0.01940 | 3.46057 | 0.36345 |
| Malignancy Module | REACTOME_MEMBRANE_TRAFFICKING | 0.02030 | 2.48907 | 0.36970 |
| Malignancy Module | REACTOME_HOST_INTERACTIONS_OF_HIV_FACTORS | 0.02030 | 2.48907 | 0.36970 |
| Malignancy Module | REACTOME_INTERFERON_SIGNALING | 0.02064 | 2.33009 | 0.36970 |
| Malignancy Module | REACTOME_RIG_I_MDA5_MEDIATED_INDUCION_OF_IFN_ALPHA_BETA_PATHWAYS | 0.02085 | 3.39137 | 0.36970 |
| Malignancy Module | PID_P73PATHWAY | 0.02115 | 2.94907 | 0.37008 |
| Malignancy Module | REACTOME_CYTOKINE_SIGNALING_IN_IMMUNE_SYSTEM | 0.02254 | 1.95096 | 0.38937 |
| Malignancy Module | PID_ATR_PATHWAY | 0.02526 | 3.87594 | 0.41998 |
| Malignancy Module | PID_FOXM1_PATHWAY | 0.02526 | 3.87594 | 0.41998 |
| Malignancy Module | REACTOME_CLEAVAGE_OF_GROWING_TRANSCRIPT_IN_THE_TERMINATION_REGION_ | 0.02526 | 3.87594 | 0.41998 |
| Malignancy Module | REACTOME_NFKB_IS_ACTIVATED_AND_SIGNALS_SURVIVAL | 0.02596 | 9.68763 | 0.42107 |
| Malignancy Module | REACTOME_G2_M_DNA_DAMAGE_CHECKPOINT | 0.02596 | 9.68763 | 0.42107 |
| Malignancy Module | BIOCARTA_CELLCYCLE_PATHWAY | 0.02736 | 5.08619 | 0.43313 |
| Malignancy Module | REACTOME_KINESINS | 0.02736 | 5.08619 | 0.43313 |
| Malignancy Module | REACTOME_SIGNALING_BY_WNT | 0.02912 | 3.08309 | 0.45049 |
| Malignancy Module | KEGG_SMALL_CELL_LUNG_CANCER | 0.02952 | 2.71307 | 0.45049 |
| Malignancy Module | REACTOME_G2_M_CHECKPOINTS | 0.02974 | 3.66600 | 0.45049 |
| Malignancy Module | BIOCARTA_G2_PATHWAY | 0.03061 | 4.84467 | 0.45049 |
| Malignancy Module | REACTOME_HEMOSTASIS | 0.03077 | 1.65237 | 0.45049 |
| Malignancy Module | REACTOME_RECRUITMENT_OF_MITOTIC_CENTROSOME_PROTEINS_AND_COMPLEXES | 0.03099 | 3.02805 | 0.45049 |
| Malignancy Module | REACTOME_MRNA_PROCESSING | 0.03153 | 2.14962 | 0.45049 |
| Malignancy Module | BIOCARTA_DNAFRAGMENT_PATHWAY | 0.03184 | 8.47688 | 0.45049 |
| Malignancy Module | BIOCARTA_SKP2E2F_PATHWAY | 0.03184 | 8.47688 | 0.45049 |
| Malignancy Module | REACTOME_HYALURONAN_UPTAKE_AND_DEGRADATION | 0.03184 | 8.47688 | 0.45049 |