

Supplementary Table 3: At a FDR *P*-value cut-off of 0.25, significant enrichment was found for 351/2675 gene sets from the C2: chemical and genetic perturbation gene set collection

Name	Size	ES	NES	NO M P-value	FDR Q-value
MUELLER_PLURINET	280	0.5245	1.9204	0.0042	0.0755
PUIFFE_INVASION_INHIBITED_BY_ASCITES_UP	79	0.4784	1.9164	0.0041	0.0758
HONMA_DOCETAXEL_RESISTANCE	33	0.4650	1.9248	0.0104	0.0760
ZHAN_VARIABLE_EARLY_DIFFERENTIATION_GENES_DN	28	0.5080	1.9396	0.0040	0.0792
DANG_REGULATED_BY_MYC_UP	67	0.5391	1.9079	0.0020	0.0793
CAIRO_HEPATOBLASTOMA_UP	192	0.5312	1.8972	0.0021	0.0808
CHANG_CORE_SERUM_RESPONSE_UP	196	0.4535	1.9260	0.0000	0.0808
BASAKI_YBX1_TARGETS_UP	270	0.6148	1.8934	0.0000	0.0809
BENPORATH_ES_1	356	0.5570	1.9314	0.0000	0.0817
SHAFFER_IRF4_TARGETS_IN_ACTIVATED_B_LYMPHOCYTE	75	0.4544	1.8834	0.0000	0.0829
TOYOTA_TARGETS_OF_MIR34B_AND_MIR34C	409	0.5379	1.8771	0.0020	0.0830
BLUM_RESPONSE_TO_SALIRASIB_DN	325	0.5735	1.8977	0.0000	0.0841
RHEIN_ALL_GLUCOCORTICOID_THERAPY_DN	349	0.4245	1.8793	0.0083	0.0842
PAL_PRMT5_TARGETS_UP	192	0.4682	1.8856	0.0000	0.0844
FUJII_YBX1_TARGETS_DN	198	0.6675	1.8721	0.0000	0.0847
WANG_RESPONSE_TO_GSK3_INHIBITOR_SB216763_DN	337	0.6009	1.8630	0.0000	0.0851
ZHANG_BREAST_CANCER_PROGENITORS_UP	396	0.4905	1.8549	0.0082	0.0853
MITSIADES_RESPONSE_TO_APLIDIN_DN	239	0.5560	1.7912	0.0080	0.0854
CHOW_RASSF1_TARGETS_UP	26	0.5022	1.9409	0.0019	0.0857

HORIUCHI_WTAP_TARGETS_DN	28 3	0.59 95	1.79 61	0.011 9	0.085 9
WINNEPENNINGKX_MELANOMA_METASTASIS_UP	14 8	0.66 27	1.80 22	0.006 0	0.085 9
PENG_RAPAMYCIN_RESPONSE_DN	23 5	0.35 98	1.85 71	0.018 6	0.085 9
RHODES_CANCER_META_SIGNATURE	62	0.51 38	1.78 93	0.006 0	0.086 1
SHEDDEN_LUNG_CANCER_POOR_SURVIVAL_A6	43 1	0.64 59	1.79 43	0.002 0	0.086 1
KOBAYASHI_EGFR_SIGNALING_24HR_DN	23 8	0.72 02	1.79 19	0.000 0	0.086 2
BOYALT_LIVER_CANCER_SUBCLASS_G3_UP	18 3	0.56 20	1.74 89	0.024 0	0.086 2
PUJANA_BRCA2_PCC_NETWORK	40 4	0.57 24	1.86 73	0.002 0	0.086 6
LIAO_METASTASIS	48 9	0.54 16	1.74 75	0.000 0	0.086 7
PEART_HDAC_PROLIFERATION_CLUSTER_UP	54	0.55 53	1.79 65	0.010 1	0.086 8
ZHOU_CELL_CYCLE_GENES_IN_IR_RESPONSE_6HR	80	0.75 11	1.74 90	0.002 0	0.086 9
CHIN_BREAST_CANCER_COPY_NUMBER_UP	26	0.60 82	1.74 99	0.000 0	0.087 0
SASAKI_ADULT_T_CELL_LEUKEMIA	17 0	0.46 17	1.75 15	0.006 3	0.087 0
ZHENG_GLIOMASTOMA_PLASTICITY_UP	24 2	0.53 76	1.74 62	0.002 1	0.087 1
JAZAERI_BREAST_CANCER_BRCA1_VS_BRCA2_UP	49	0.50 02	1.80 25	0.002 1	0.087 1
HONRADO_BREAST_CANCER_BRCA1_VS_BRCA2	18	0.67 41	1.75 42	0.002 1	0.087 1
PUJANA_BREAST_CANCER_LIT_INT_NETWORK	99	0.51 74	1.79 22	0.002 0	0.087 3
BROWNE_HCMV_INFECTION_14HR_UP	14 5	0.40 40	1.79 76	0.002 1	0.087 3
POMEROY_MEDULLOBLASTOMA_PROGNOSIS_DN	42	0.58 15	1.75 31	0.006 1	0.087 4
XU_HGF_TARGETS_INDUCED_BY_AKT1_48HR_DN	25	0.71 37	1.75 03	0.003 9	0.087 4
ZAMORA_NOS2_TARGETS_UP	68	0.49 59	1.86 38	0.007 9	0.087 4
JAIN_NFKB_SIGNALING	73	0.42 42	1.78 68	0.004 0	0.087 6

LI_WILMS_TUMOR_VS_FETAL_KIDNEY_1_DN	15 7	0.63 91	1.80 58	0.000 0	0.087 6
HOLLEMAN_VINCRIStINE_RESISTANCE_B_ALL_UP	36	0.49 91	1.85 05	0.003 8	0.087 7
WEST_ADRENOCORTICAL_TUMOR_UP	27 5	0.47 45	1.74 41	0.014 1	0.087 7
BENPORATH_PROLIFERATION	13 7	0.66 91	1.75 45	0.004 0	0.087 8
ZHOU_CELL_CYCLE_GENES_IN_IR_RESPONSE_24HR	12 0	0.73 21	1.75 77	0.000 0	0.087 8
OUELLET_CULTURED_OVARIAN_CANCER_INVASIVE_VS_LMP_UP	66	0.47 08	1.75 15	0.008 5	0.087 9
TARTE_PLASMA_CELL_VS_PLASMABLAST_DN	29 9	0.46 48	1.75 84	0.019 8	0.088 0
MANALO_HYPOXIA_DN	26 8	0.57 03	1.80 30	0.012 3	0.088 1
SMID_BREAST_CANCER_LUMINAL_A_DN	17	0.82 30	1.74 44	0.000 0	0.088 2
HOSHIDA_LIVER_CANCER_SUBCLASS_S2	11 3	0.45 16	1.80 41	0.055 4	0.088 4
CHNG_MULTIPLE_MYELOMA_HYPERPLOID_UP	52	0.45 24	1.80 65	0.012 1	0.088 4
HIRSCH_CELLULAR_TRANSFORMATION_SIGNATURE_DN	95	0.43 36	1.76 97	0.000 0	0.088 4
PUJANA_XPRSS_INT_NETWORK	16 0	0.64 45	1.84 71	0.000 0	0.088 4
WHITFIELD_CELL_CYCLE_S	14 6	0.51 14	1.74 24	0.023 5	0.088 4
WHITFIELD_CELL_CYCLE_G2_M	20 3	0.51 69	1.75 89	0.007 9	0.088 6
GROSS_HYPOXIA_VIA_HIF1A_UP	73	0.40 73	1.79 78	0.004 1	0.088 6
BILANGES_RAPAMYCIN_SENSITIVE_VIA_TSC1_AND_TSC2	67	0.36 82	1.85 73	0.013 2	0.088 7
IRITANI_MAD1_TARGETS_DN	44	0.51 43	1.75 45	0.028 4	0.088 7
LINDGREN_BLADDER_CANCER_CLUSTER_1_DN	35 8	0.50 21	1.75 55	0.004 0	0.088 7
WINTER_HYPOXIA_UP	82	0.55 33	1.76 32	0.006 1	0.088 8
RUIZ_TNC_TARGETS_DN	13 6	0.63 57	1.76 10	0.005 8	0.088 9
GARCIA_TARGETS_OF_FLI1_AND_DAX1_DN	16 0	0.52 70	1.77 02	0.004 1	0.089 0

GHO_ATF5_TARGETS_DN	16	0.68 78	1.81 60	0.004 0	0.089 0
SARRIO_EPITHELIAL_MESENCHYMAL_TRANSITION_UP	16 3	0.64 79	1.78 39	0.002 0	0.089 1
HOFFMANN_LARGE_TO_SMALL_PRE_BII_LYMPHOCYTE_UP	15 8	0.66 33	1.80 89	0.005 9	0.089 1
NUNODA_RESPONSE_TO_DASATINIB_IMATINIB_UP	28	0.63 68	1.77 22	0.008 1	0.089 3
LINDGREN_BLADDER_CANCER_CLUSTER_3_UP	30 5	0.52 96	1.77 09	0.006 0	0.089 3
JIANG_HYPOXIA_VIA_VHL	31	0.45 36	1.75 92	0.016 2	0.089 4
CHIARADONNA_NEOPLASTIC_TRANSFORMATION_KRAS_UP	12 3	0.55 03	1.80 72	0.000 0	0.089 4
PENG_Glutamine_Deprivation_DN	31 9	0.36 11	1.77 32	0.036 8	0.089 4
STEIN_ESRRA_TARGETS_DN	97	0.37 62	1.77 43	0.004 0	0.089 6
BIDUS_METASTASIS_UP	20 0	0.52 56	1.74 03	0.025 5	0.089 6
MALONEY_RESPONSE_TO_17AAG_DN	74	0.46 98	1.76 11	0.018 1	0.089 7
DUTERTRE ESTRADIOL RESPONSE_6HR_UP	21 6	0.45 11	1.76 33	0.004 1	0.089 8
GRADE_COLON_AND_RECTAL_CANCER_UP	26 6	0.40 43	1.81 71	0.011 9	0.090 1
TURASHVILI_BREAST_CARCINOMA_DUCTAL_VS_LOBULAR_UP	19	0.68 47	1.78 04	0.007 9	0.090 1
SENGUPTA_NASOPHARYNGEAL_CARCINOMA_UP	27 3	0.56 42	1.77 92	0.002 0	0.090 3
MISSIAGLIA_REGULATED_BY_METHYLATION_DN	11 4	0.63 08	1.78 14	0.008 1	0.090 3
NAKAYAMA_SOFT_TISSUE_TUMORS_PCA2_UP	85	0.77 96	1.76 38	0.000 0	0.090 3
DUTERTRE ESTRADIOL RESPONSE_24HR_UP	30 9	0.67 91	1.80 93	0.004 0	0.090 5
RICKMAN_TUMOR_DIFFERENTIATED_WELL_VS_POORLY_UP	21 3	0.42 73	1.77 43	0.012 7	0.090 6
VECCHI_GASTRIC_CANCER_EARLY_UP	38 9	0.57 19	1.77 54	0.004 0	0.090 6
GEORGES_CELL_CYCLE_MIR192_TARGETS	58	0.60 91	1.84 30	0.001 9	0.090 7
DACOSTA_UV_RESPONSE_VIA_ERCC3_UP	29 6	0.34 49	1.73 80	0.006 2	0.090 8

LE_EGR2_TARGETS_UP	10 5	0.66 21	1.76 43	0.002 1	0.090 9
GARGALOVIC_RESPONSE_TO_OXIDIZED_PHOSPHOLIPIDS_TURQUOISE_DN	49	0.71 82	1.76 63	0.002 0	0.091 1
FERREIRA_EWINGS_SARCOMA_UNSTABLE_VS_STABLE_UP	15 7	0.63 20	1.81 01	0.006 0	0.091 4
KAUFFMANN_DNA_REPLICATION_GENES	13 6	0.47 28	1.77 57	0.010 5	0.091 5
CUI_GLUCOSE_DEPRIVATION	58	0.54 57	1.76 46	0.006 2	0.091 6
FRASOR_RESPONSE_TO_SERM_OR_FULVESTRANT_DN	49	0.71 60	1.73 12	0.002 0	0.091 7
NADERI_BREAST_CANCER_PROGNOSIS_UP	50	0.66 98	1.77 65	0.002 1	0.091 7
ODONNELL_TFRC_TARGETS_DN	12 7	0.71 26	1.81 74	0.002 0	0.091 9
NIELSEN_SCHWANNOMA_UP	17	0.71 58	1.73 18	0.000 0	0.092 0
FERRANDO_T_ALL_WITH_MLL_ENL_FUSION_DN	84	0.46 43	1.73 33	0.012 4	0.092 1
WHITEFORD_PEDIATRIC_CANCER_MARKERS	11 3	0.73 71	1.73 38	0.004 0	0.092 3
WANG_CISPLATIN_RESPONSE_AND_XPC_UP	19 3	0.52 70	1.95 05	0.000 0	0.092 3
ABRAMSON_INTERACT_WITH_AIRE	42	0.59 78	1.73 21	0.017 9	0.092 3
GRAHAM_CML_DIVIDING_VS_NORMAL QUIESCENT_UP	17 5	0.66 36	1.72 88	0.004 1	0.092 5
LY_AGING_OLD_DN	55	0.70 60	1.72 96	0.000 0	0.092 5
HU_GENOTOXIC_DAMAGE_24HR	33	0.60 37	1.73 41	0.004 0	0.092 8
SCHLOSSER_MYC_TARGETS_AND_SERUM_RESPONSE_DN	46	0.51 31	1.81 04	0.008 0	0.092 9
CHEMNITZ_RESPONSE_TO_PROSTAGLANDIN_E2_UP	13 1	0.61 68	1.72 73	0.011 8	0.093 3
SONG_TARGETS_OF_IE86_CMV_PROTEIN	58	0.72 50	1.73 41	0.006 1	0.093 6
WHITFIELD_CELL_CYCLE_G1_S	12 6	0.51 02	1.81 75	0.006 0	0.093 7
SCHLOSSER_MYC_TARGETS_AND_SERUM_RESPONSE_UP	45	0.53 28	1.94 15	0.002 1	0.093 8
PENG_LEUCINE_DEPRIVATION_DN	17 5	0.39 76	1.81 94	0.028 3	0.093 9

SHEPARD_CRUSH_AND_BURN_MUTANT_DN	17 3	0.52 76	1.72 50	0.004 1	0.094 8
SANSOM_APC_TARGETS_REQUIRE_MYC	19 5	0.44 06	1.82 03	0.002 1	0.095 5
WONG_EMBRYONIC_STEM_CELL_CORE	32 3	0.57 51	1.95 68	0.000 0	0.096 0
MORI_LARGE_PRE_BII_LYMPHOCYTE_UP	83	0.68 40	1.72 02	0.006 0	0.096 3
PEART_HDAC_PROLIFERATION_CLUSTER_DN	74	0.50 73	1.70 79	0.013 8	0.096 5
JIANG_TIP30_TARGETS_DN	23	0.55 65	1.70 82	0.019 9	0.096 8
KANG_FLUOROURACIL_RESISTANCE_DN	16	0.69 32	1.72 19	0.002 2	0.097 0
VERNELL_RETINOBLASTOMA_PATHWAY_UP	68	0.65 10	1.72 04	0.010 2	0.097 0
MORI_PRE_BI_LYMPHOCYTE_UP	76	0.63 88	1.71 88	0.010 2	0.097 0
BURTON_ADIPOGENESIS_PEAK_AT_16HR	40	0.67 43	1.83 21	0.000 0	0.097 0
PUJANA_BRCA_CENTERED_NETWORK	11 4	0.65 86	1.82 10	0.000 0	0.097 1
MARTINEZ_RESPONSE_TO TRABECTEDIN_DN	25 0	0.43 53	1.96 46	0.007 8	0.097 2
GAVIN_FOXP3_TARGETS_CLUSTER_T7	95	0.35 77	1.70 84	0.030 7	0.097 3
HEDENFALK_BREAST_CANCER_HEREDITARY_VS_SPO RADIC	49	0.43 76	1.71 79	0.012 3	0.097 4
ZHANG_TLX_TARGETS_60HR_DN	25 5	0.63 64	1.72 05	0.010 3	0.097 6
SHAFFER_IRF4_TARGETS_IN_ACTIVATED_DENDRITIC_ CELL	61	0.49 02	1.70 88	0.006 0	0.097 6
CAFFAREL_RESPONSE_TO_THC_DN	27	0.58 06	1.82 88	0.004 0	0.097 8
LEE_EARLY_T_LYMPHOCYTE_UP	97	0.75 80	1.70 94	0.007 8	0.097 8
DAZARD_RESPONSE_TO_UV_SCC_DN	11 4	0.43 03	1.83 36	0.004 0	0.098 2
RHODES_UNDIFFERENTIATED_CANCER	67	0.69 26	1.71 39	0.003 9	0.098 5
BILANGES_SERUM_SENSITIVE_VIA_TSC2	38	0.49 48	1.71 31	0.011 9	0.098 5
BOYAULT_LIVER_CANCER_SUBCLASS_G123_UP	44	0.66 03	1.71 16	0.015 8	0.098 5

MORI_IMMATURE_B_LYMPHOCYTE_DN	87	0.68 51	1.70 94	0.010 0	0.098 5
HSIAO_HOUSEKEEPING_GENES	38 4	0.27 86	1.82 17	0.072 1	0.098 7
GOLUB_ALL_VS_AML_UP	24	0.63 52	1.71 07	0.012 7	0.098 7
SCHUHMACHER_MYC_TARGETS_UP	78	0.47 69	1.71 51	0.041 8	0.098 8
WU_APOPTOSIS_BY_CDKN1A_VIA_TP53	52	0.78 36	1.70 98	0.002 0	0.098 8
SCHLOSSER_MYC_TARGETS_REPRESSED_BY_SERUM	15 2	0.43 88	1.70 40	0.050 8	0.098 9
CAFFAREL_RESPONSE_TO_THC_24HR_5_DN	55	0.46 00	1.71 43	0.016 7	0.098 9
TANG_SENESCENCE_TP53_TARGETS_DN	55	0.74 77	1.71 18	0.002 0	0.099 1
CAIRO_PML_TARGETS_BOUND_BY_MYC_UP	23	0.66 82	1.70 10	0.005 7	0.099 1
OXFORD_RALA_OR_RALB_TARGETS_UP	47	0.74 91	1.70 03	0.002 0	0.099 1
BURTON_ADIPOGENESIS_3	98	0.69 35	1.70 16	0.009 9	0.099 3
WANG_TUMOR_INVASIVENESS_UP	35 8	0.29 09	1.82 29	0.002 0	0.099 4
DAIRKEE_CANCER_PRONE_RESPONSE_BPA_E2	11 6	0.41 35	1.71 53	0.000 0	0.099 4
AFFAR_YY1_TARGETS_DN	22 9	0.51 02	1.69 61	0.004 1	0.099 4
CHANG_CYCLING_GENES	13 7	0.73 83	1.70 27	0.009 7	0.099 4
GOLDRATH_ANTIGEN_RESPONSE	33 3	0.52 08	1.70 41	0.008 0	0.099 5
PARK_HSC_AND_MULTIPOTENT_PROGENITORS	46	0.37 22	1.70 20	0.016 2	0.099 5
DANG_MYC_TARGETS_UP	13 8	0.40 08	1.69 92	0.039 8	0.099 7
KONG_E2F3_TARGETS	96	0.77 98	1.69 64	0.002 0	0.099 8
FOURNIER_ACINAR_DEVELOPMENT_LATE_2	26 1	0.57 15	1.97 57	0.000 0	0.099 8
MARKEY_RB1_ACUTE_LOF_UP	22 0	0.58 32	1.82 47	0.006 0	0.099 9
JAEGER_METASTASIS_UP	43	0.64 71	1.69 69	0.002 0	0.099 9

LUI_THYROID_CANCER_CLUSTER_1	46	0.51 93	1.69 76	0.010 5	0.100 4
CHIANG_LIVER_CANCER_SUBCLASS_PROLIFERATION_UP	16 6	0.79 51	1.69 69	0.000 0	0.100 5
AMUNDSON_GAMMA_RADIATION_RESPONSE	39	0.85 32	1.69 33	0.000 0	0.101 3
AIYAR_COBRA1_TARGETS_DN	28	0.55 32	1.69 16	0.013 5	0.102 4
YAMASHITA_LIVER_CANCER_WITH_EPCAM_UP	52	0.56 75	1.68 89	0.010 5	0.104 4
YAO_TEMPORAL_RESPONSE_TO_PROGESTERONE_CLUSTER_14	13 4	0.33 83	1.68 71	0.023 1	0.104 5
VANDESLUIS_COMMD1_TARGETS_GROUP_4_UP	19	0.62 33	1.68 78	0.006 4	0.104 9
JOHANSSON_GLIOMAGENESIS_BY_PDGFB_UP	53	0.51 17	1.68 72	0.019 6	0.105 0
SPIELMAN_LYMPHOBLAST_EUROPEAN_VS_ASIAN_UP	46 3	0.30 47	1.68 22	0.016 8	0.106 4
WHITFIELD_CELL_CYCLE_G2	16 3	0.51 72	1.68 13	0.016 1	0.106 7
BENPORATH_ES_2	34	0.62 98	1.68 24	0.006 2	0.106 8
YAMAZAKI_TCEB3_TARGETS_DN	20 4	0.41 45	1.68 25	0.004 2	0.107 3
FOURNIER_ACINAR_DEVELOPMENT_LATE_DN	21	0.77 14	1.68 30	0.004 1	0.107 4
ZHAN_V2_LATE_DIFFERENTIATION_GENES	43	0.50 56	1.68 33	0.006 1	0.107 7
HU_GENOTOXIC_DAMAGE_4HR	33	0.73 41	1.67 57	0.002 0	0.108 6
MODY_HIPPOCAMPUS_PRENATAL	40	0.46 85	1.67 85	0.035 9	0.108 7
XU_HGF_SIGNALING_NOT_VIA_AKT1_48HR_DN	17	0.79 61	1.67 57	0.004 1	0.109 2
LY_AGING_PREMATURE_DN	29	0.70 97	1.67 44	0.002 0	0.109 3
ODONNELL_TARGETS_OF_MYC_AND_TFRC_DN	43	0.76 89	1.67 66	0.009 6	0.109 6
PUJANA_BREAST_CANCER_WITH_BRCA1_MUTATED_UP	52	0.70 31	1.67 59	0.008 0	0.109 7
AMUNDSON_GENOTOXIC_SIGNATURE	10 1	0.47 79	1.67 67	0.010 1	0.110 2
ISHIDA_E2F_TARGETS	52	0.76 89	1.67 07	0.004 1	0.112 4

GAVIN_FOXP3_TARGETS_CLUSTER_P6	87	0.67 87	1.67 07	0.014 1	0.113 0
BILANGES_SERUM_RESPONSE_TRANSLATION	35	0.48 79	1.66 82	0.009 8	0.114 6
SAKAI_CHRONIC_HEPATITIS_VS_LIVER_CANCER_UP	80	0.37 19	1.66 45	0.030 1	0.118 0
CHIARETTI_T_ALL_RELAPSE_PROGNOSIS	19	0.71 11	1.66 08	0.008 2	0.118 4
MATTIOLI_MGUS_VS_PCL	97	0.43 44	1.66 35	0.024 8	0.118 6
YU_MYC_TARGETS_UP	40	0.75 06	1.66 10	0.005 8	0.118 8
NIELSEN_GIST_VS_SYNOVIAL_SARCOMA_UP	19	0.80 66	1.66 12	0.000 0	0.119 2
MENSSEN_MYC_TARGETS	52	0.42 75	1.65 89	0.044 4	0.119 3
WELCSH_BRCA1_TARGETS_DN	13 5	0.42 94	1.97 62	0.006 1	0.119 4
BENPORATH_ES_CORE_NINE_CORRELATED	99	0.49 38	1.66 14	0.012 3	0.119 6
BHATTACHARYA_EMBRYONIC_STEM_CELL	86	0.50 42	1.65 91	0.013 5	0.119 7
BORCZUK_MALIGNANT_MESOTHELIOMA_UP	29 1	0.33 83	1.65 78	0.062 4	0.120 1
MOLENAAR_TARGETS_OF_CCND1_AND_CDK4_DN	52	0.76 48	1.66 14	0.008 0	0.120 3
MARKS_HDAC_TARGETS_DN	15	0.78 01	1.65 51	0.002 0	0.120 4
IWANAGA_E2F1_TARGETS_INDUCED_BY_SERUM	27	0.63 86	1.65 54	0.027 7	0.120 7
GREENBAUM_E2A_TARGETS_UP	33	0.79 91	1.65 55	0.002 0	0.121 1
SHEPARD_BMYB_MORPHOLINO_DN	18 7	0.49 28	1.65 24	0.005 9	0.121 2
SHIPP_DLCL_VS_FOLLICULAR_LYMPHOMA_UP	44	0.60 47	1.65 38	0.031 3	0.121 4
LOPEZ_MESOTHELIOMA_SURVIVAL_OVERALL_DN	15	0.76 90	1.65 27	0.007 8	0.121 5
SHEPARD_BMYB_TARGETS	68	0.62 57	1.65 57	0.018 1	0.121 6
EPPERT_LSC_R	35	0.46 74	1.65 29	0.012 3	0.122 0
COLDREN_GEFITINIB_RESISTANCE_UP	72	0.48 67	1.65 14	0.013 6	0.122 0

KIM_WT1_TARGETS_DN	42 3	0.38 36	1.65 01	0.026 7	0.122 8
CAFFAREL_RESPONSE_TO_THC_24HR_5_UP	31	0.47 12	1.64 69	0.038 8	0.126 0
GRAHAM_NORMAL_QUIESCENT_VS_NORMAL_DIVIDING_DN	85	0.72 16	1.64 43	0.013 9	0.127 3
GENTILE_UV_LOW_DOSE_UP	27	0.56 04	1.64 38	0.014 9	0.127 4
ZHANG_RESPONSE_TO_CANTHARIDIN_DN	68	0.39 38	1.64 44	0.069 8	0.127 8
MOREAUX_B_LYMPHOCYTE_MATURATION_BY_TACI_DN	66	0.49 56	1.64 45	0.058 5	0.128 4
HOLLEMAN_VINCRIStINE_RESISTANCE_ALL_UP	24	0.47 60	1.64 17	0.021 0	0.128 7
CROONQUIST_NRAS_VS_STROMAL_STIMULATION_DN	96	0.64 24	1.64 19	0.008 2	0.129 1
YU_BAP1_TARGETS	26	0.67 41	1.64 03	0.013 8	0.129 7
RIZ_ERYTHROID_DIFFERENTIATION	77	0.51 88	1.63 58	0.040 4	0.132 1
FLECHNER_PBL_KIDNEY_TRANSPLANT_REJECTED_VS_OK_UP	62	0.34 57	1.63 59	0.031 9	0.132 5
HESS_TARGETS_OF_HOXA9_AND_MEIS1_UP	63	0.45 48	1.63 62	0.022 7	0.132 7
SOTIRIOU_BREAST_CANCER_GRADE_1_VS_3_UP	14 2	0.75 91	1.63 41	0.017 5	0.132 8
ROSTY_CERVICAL_CANCER_PROLIFERATION_CLUSTER	13 7	0.79 81	1.63 70	0.005 9	0.133 1
HOLLEMAN_PREDNISOLONE_RESISTANCE_B_ALL_UP	21	0.47 14	1.63 43	0.046 6	0.133 3
HOFMANN_MYELODYSPLASTIC_SYNDROM_RISK_UP	24	0.62 35	1.63 62	0.021 1	0.133 3
YANG_BREAST_CANCER_ESR1_DN	25	0.68 46	1.62 93	0.004 2	0.138 3
PETROVA_PROX1_TARGETS_UP	27	0.59 19	1.62 74	0.028 2	0.138 7
REN_BOUND_BY_E2F	59	0.67 44	1.62 83	0.026 2	0.138 7
KARLSSON_TGFB1_TARGETS_UP	11 6	0.36 82	1.62 70	0.031 6	0.138 7
ZHANG_TLX_TARGETS_36HR_DN	17 3	0.58 76	1.62 77	0.057 0	0.138 9
SHAFFER_IRF4_MULTIPLE_MYELOMA_PROGRAM	35	0.53 73	1.62 59	0.038 1	0.138 9

BROWNE_HCMV_INFECTION_18HR_UP	17 1	0.39 13	1.62 62	0.002 3	0.138 9
CROONQUIST_NRAS_SIGNALING_DN	71	0.78 72	1.62 49	0.006 0	0.139 7
KAUFFMANN_MELANOMA_RELAPSE_UP	57	0.69 30	1.62 03	0.016 4	0.143 4
SHAFFER_IRF4_TARGETS_IN_PLASMA_CELL_VS_MATURE_B_LYMPHOCYTE	66	0.50 07	1.61 97	0.030 1	0.143 5
ZHANG_TLX_TARGETS_DN	84	0.71 37	1.62 14	0.031 7	0.143 5
JIANG_HYPOXIA_CANCER	76	0.34 40	1.62 03	0.012 2	0.144 0
SMID_BREAST_CANCER_RELAPSE_IN_LUNG_UP	21	0.72 97	1.61 87	0.004 1	0.144 2
LEE_LIVER_CANCER_SURVIVAL_DN	16 6	0.58 00	1.97 84	0.002 0	0.147 2
CROONQUIST_IL6_DEPRIVATION_DN	95	0.75 54	1.61 55	0.008 0	0.147 9
VANTVEER_BREAST_CANCER_BRCA1_UP	33	0.52 59	1.61 43	0.023 9	0.148 8
WILCOX_RESPONSE_TO_PROGESTERONE_UP	13 9	0.48 32	1.61 23	0.025 8	0.150 7
VANTVEER_BREAST_CANCER_METASTASIS_DN	11 1	0.59 81	1.61 01	0.040 0	0.151 9
LAU_APOPTOSIS_CDKN2A_UP	55	0.37 33	1.61 02	0.037 1	0.152 4
STEIN_ESRRA_TARGETS_RESPONSIVE_TO_ESTROGEN_DN	41	0.63 46	1.60 47	0.024 8	0.152 8
GARY_CD5_TARGETS_DN	41 1	0.35 16	1.61 03	0.058 8	0.152 9
LE_NEURONAL_DIFFERENTIATION_DN	19	0.77 47	1.60 54	0.011 8	0.153 2
YAO_TEMPORAL_RESPONSE_TO_PROGESTERONE_CLUSTER_12	76	0.37 94	1.60 49	0.014 7	0.153 2
GROSS_HYPOXIA_VIA_ELK3_UP	19 7	0.36 37	1.60 66	0.024 0	0.153 6
ALONSO_METASTASIS_NEURAL_UP	18	0.66 59	1.60 61	0.022 3	0.153 6
SARTIPY_NORMAL_AT_INSULIN_RESISTANCE_UP	32	0.64 32	1.60 54	0.030 2	0.153 8
OZEN_MIR125B1_TARGETS	24	0.50 23	1.60 67	0.034 7	0.154 1
MORI_MATURE_B_LYMPHOCYTE_DN	74	0.47 56	1.60 08	0.033 5	0.154 1

FURUKAWA_DUSP6_TARGETS_PCI35_DN	67	0.64 46	1.60 75	0.033 9	0.154 3
ALONSO_METASTASIS_UP	18 7	0.32 61	1.60 09	0.034 9	0.154 6
BOHN_PRIMARY_IMMUNODEFICIENCY_SYNDROM_UP	44	0.51 08	1.60 68	0.035 6	0.154 7
BENPORATH_MYC_TARGETS_WITH_EBOX	22 6	0.32 16	1.60 12	0.008 3	0.154 9
HOLLEMAN_PREDNISOLONE_RESISTANCE_ALL_UP	19	0.51 52	1.60 24	0.036 2	0.155 1
BACOLOD_RESISTANCE_TO_ALKYLATING_AGENTS_D N	54	0.40 04	1.60 13	0.014 1	0.155 4
MARKS_ACETYLATED_NON_HISTONE_PROTEINS	15	0.55 15	1.60 14	0.049 3	0.155 9
WHITFIELD_CELL_CYCLE_LITERATURE	42	0.81 87	1.59 78	0.008 0	0.157 5
KAMMINGA_EZH2_TARGETS	41	0.71 47	1.59 65	0.006 0	0.158 5
GENTILE_UV_HIGH_DOSE_DN	29 8	0.36 40	1.59 13	0.055 4	0.164 7
DACOSTA_UV_RESPONSE_VIA_ERCC3_TTD_UP	62	0.37 80	1.58 92	0.018 9	0.164 8
BOYLAN_MULTIPLE_MYELOMA_C_CLUSTER_UP	36	0.45 61	1.58 95	0.010 2	0.165 0
CHAUHAN_RESPONSE_TO_METHOXYESTRADIOL_DN	98	0.35 81	1.59 08	0.069 0	0.165 0
SANSOM_APC_TARGETS	19 3	0.41 94	1.59 02	0.008 4	0.165 3
BILANGES_SERUM_AND_RAPAMYCIN_SENSITIVE_GE NES	68	0.39 85	1.58 97	0.057 4	0.165 4
LIAO_HAVE_SOX4_BINDING_SITES	40	0.64 19	1.58 70	0.014 2	0.165 6
JUBAN_TARGETS_OF_SPI1_AND_FLI1_DN	85	0.37 99	1.58 73	0.021 7	0.165 8
BURTON_ADIPOGENESIS_PEAK_AT_24HR	40	0.67 71	1.58 75	0.039 4	0.166 2
SCIBETTA_KDM5B_TARGETS_DN	77	0.49 52	1.58 45	0.024 3	0.166 7
KANG_DOXORUBICIN_RESISTANCE_UP	53	0.82 08	1.58 75	0.006 0	0.166 7
KOKKINAKIS_METHIONINE_DEPRIVATION_48HR_UP	12 3	0.42 73	1.58 47	0.035 4	0.167 0
APPIERTO_RESPONSE_TO_FENRETINIDE_DN	47	0.42 60	1.58 50	0.031 8	0.167 1

AKL_HTLV1_INFECTION_UP	25	0.48 43	1.58 54	0.036 7	0.167 1
EPPERT_PROGENITOR	13 1	0.44 00	1.58 30	0.050 4	0.168 0
GENTILE_RESPONSE_CLUSTER_D3	59	0.58 22	2.01 87	0.000 0	0.170 2
OUELLET_OVARIAN_CANCER_INVASIVE_VS_LMP_UP	11 3	0.34 33	1.57 98	0.087 8	0.171 3
DEBIASI_APOPTOSIS_BY_REOVIRUS_INFECTION_DN	27 1	0.33 55	1.57 98	0.014 6	0.171 9
VANDESLUIS_COMMD1_TARGETS_GROUP_3_UP	82	0.46 84	1.57 64	0.010 7	0.173 8
MOHANKUMAR_TLX1_TARGETS_UP	39 4	0.31 89	1.57 65	0.024 5	0.174 3
SCHLOSSER_MYC_AND_SERUM_RESPONSE_SYNERGY	31	0.43 19	1.57 68	0.078 5	0.174 5
ZHAN_MULTIPLE_MYELOMA_PR_UP	44	0.83 03	1.57 72	0.011 9	0.174 5
COLLER_MYC_TARGETS_UP	24	0.52 05	1.57 22	0.052 8	0.177 8
LI_WILMS_TUMOR_ANAPLASTIC_UP	18	0.81 34	1.57 30	0.012 1	0.178 1
KRASNOSELSKAYA_ILF3_TARGETS_DN	44	0.57 06	1.57 24	0.014 5	0.178 1
KARAKAS_TGFB1_SIGNALING	18	0.71 61	1.57 11	0.012 0	0.178 8
SU_TESTIS	73	0.52 79	1.56 94	0.045 4	0.179 5
RAHMAN_TP53_TARGETS_PHOSPHORYLATED	21	0.46 33	1.56 96	0.047 6	0.179 7
SMID_BREAST_CANCER_RELAPSE_IN_BRAIN_UP	39	0.65 48	1.56 98	0.006 3	0.180 1
HOFMANN_MYELODYSPLASTIC_SYNDROM_LOW_RISK_DN	30	0.56 52	1.56 81	0.026 1	0.180 8
LOPEZ_MBD_TARGETS_IMPRINTED_AND_X_LINKED	17	0.63 99	1.56 70	0.030 4	0.181 7
OUILLETTE_CLL_13Q14_DELETION_DN	53	0.48 51	1.56 61	0.010 5	0.182 4
FARMER_BREAST_CANCER_CLUSTER_2	32	0.83 84	1.56 51	0.011 9	0.182 5
GARGALOVIC_RESPONSE_TO_OXIDIZED_PHOSPHOLIPIDS_GREEN_DN	24	0.46 93	1.56 51	0.024 5	0.183 1
THILLAINADESAN_ZNF217_TARGETS_UP	40	0.49 27	1.56 15	0.046 2	0.185 3

MMS_MOUSE_LYMPH_HIGH_4HRS_UP	35	0.48 77	1.56 19	0.065 6	0.185 5
CHIANG_LIVER_CANCER_SUBCLASS_UNANNOTATED_DN	18 1	0.40 79	1.56 08	0.098 2	0.185 6
WEST_ADRENOCORTICAL_TUMOR_MARKERS_UP	20	0.66 11	1.56 21	0.040 4	0.185 7
KYNG_RESPONSE_TO_H2O2_VIA_ERCC6	17	0.52 86	1.56 22	0.039 6	0.186 3
TOOKER_GEMCITABINE_RESISTANCE_UP	75	0.30 94	1.55 94	0.021 4	0.187 1
LI_WILMS_TUMOR	27	0.73 37	1.55 80	0.010 1	0.187 9
CHICAS_RB1_TARGETS_GROWING	23 3	0.48 41	1.55 84	0.032 0	0.188 0
BILD_E2F3_ONCOGENIC_SIGNATURE	21 6	0.41 40	1.55 74	0.012 5	0.188 1
MORI_EMU_MYC_LYMPHOMA_BY_ONSET_TIME_UP	94	0.53 61	1.98 26	0.000 0	0.189 3
MARIADASON_RESPONSE_TO_CURCUMIN_SULINDAC_7	16	0.55 88	1.55 62	0.043 8	0.189 3
MEINHOLD_OVARIAN_CANCER_LOW_GRADE_DN	20	0.59 32	1.55 48	0.031 8	0.190 2
LY_AGING_MIDDLE_DN	16	0.91 20	1.55 51	0.002 0	0.190 4
NIELSEN_SYNOVIAL_SARCOMA_UP	18	0.72 48	1.55 35	0.016 9	0.191 5
LEE_TARGETS_OF_PTCH1_AND_SUFU_UP	49	0.55 50	1.55 23	0.032 9	0.192 8
FIRESTEIN_CTNNB1_PATHWAY	32	0.45 06	1.55 12	0.054 2	0.193 6
SANSOM_APC_MYC_TARGETS	20 3	0.33 74	1.55 03	0.026 3	0.193 6
FOSTER_KDM1A_TARGETS_DN	19 1	0.31 17	1.55 03	0.006 1	0.194 2
ONO_FOXP3_TARGETS_DN	41	0.66 01	1.54 27	0.030 9	0.205 0
DAZARD_UV_RESPONSE_CLUSTER_G6	14 1	0.39 38	1.54 16	0.048 7	0.205 4
BOYLAN_MULTIPLE_MYELOMA_C_UP	43	0.44 18	1.54 20	0.029 0	0.205 5
DEN_INTERACT_WITH_LCA5	26	0.44 40	1.53 88	0.069 5	0.208 7
CERVERA_SDHB_TARGETS_1_DN	35	0.60 70	1.53 88	0.012 6	0.209 4

BHATI_G2M_ARREST_BY_2METHOXYESTRADIOL_UP	11 5	0.45 93	1.53 58	0.020 3	0.209 5
HEDENFALK_BREAST_CANCER_BRCA1_VS_BRCA2	15 6	0.31 57	1.53 61	0.055 4	0.209 6
WANG_METHYLATED_IN_BREAST_CANCER	35	0.59 90	1.53 63	0.042 6	0.209 9
HAMAI_APOPTOSIS_VIA_TRAIL_DN	17 9	0.45 99	1.53 63	0.021 6	0.210 6
LIANG_HEMATOPOIESIS_STEM_CELL_NUMBER_QTL	15	0.61 62	1.53 66	0.047 2	0.210 8
DORSAM_HOXA9_TARGETS_UP	33	0.40 90	1.53 69	0.050 3	0.211 0
GRAHAM_CML QUIESCENT_VS_NORMAL QUIESCENT_UP	83	0.52 13	1.53 33	0.036 9	0.212 1
SMIRNOV_RESPONSE_TO_IR_6HR_DN	10 7	0.62 24	1.53 34	0.033 0	0.212 5
DAZARD_RESPONSE_TO_UV_NHEK_DN	29 6	0.32 58	1.53 17	0.060 9	0.212 6
CAFFAREL_RESPONSE_TO_THC_UP	31	0.40 58	1.52 99	0.094 2	0.212 9
REICHERT_MITOSIS_LIN9_TARGETS	26	0.80 02	1.53 02	0.015 4	0.213 0
ZHAN_EARLY_DIFFERENTIATION_GENES_DN	42	0.58 91	1.53 10	0.057 7	0.213 1
HOLLEMAN_VINCRISTINE_RESISTANCE_B_ALL_DN	15	0.48 63	1.53 18	0.068 6	0.213 2
COLLIS_PRKDC_SUBSTRATES	19	0.47 18	1.53 03	0.075 5	0.213 6
SLEBOS_HEAD_AND_NECK_CANCER_WITH_HPV_UP	75	0.49 13	1.53 19	0.058 5	0.213 8
DAZARD_RESPONSE_TO_UV_SCC_UP	11 3	0.37 75	1.52 64	0.075 6	0.217 6
KYNG_RESPONSE_TO_H2O2_VIA_ERCC6_DN	46	0.36 08	1.52 43	0.035 1	0.220 1
WILLIAMS_ESR1_TARGETS_UP	26	0.57 35	1.52 36	0.014 8	0.220 6
JIANG_VHL_TARGETS	12 2	0.31 27	1.52 25	0.050 7	0.221 6
SWEET_KRAS_TARGETS_DN	63	0.46 96	1.52 02	0.012 5	0.222 7
JISON_SICKLE_CELL_DISEASE_DN	16 3	0.31 70	1.52 12	0.040 4	0.223 1
KIM_TIAL1_TARGETS	32	0.44 55	1.52 02	0.049 4	0.223 4

PYEON_CANCER_HEAD_AND_NECK_VS_CERVICAL_UP	16 7	0.45 08	1.52 03	0.084 2	0.224 0
SIMBULAN_UV_RESPONSE_IMMORTALIZED_DN	30	0.53 22	1.51 76	0.037 4	0.226 4
BOYAULT_LIVER_CANCER_SUBCLASS_G23_UP	50	0.61 51	1.51 65	0.078 6	0.227 7
MUNSHI_MULTIPLE_MYELOMA_UP	78	0.37 73	1.51 61	0.068 8	0.227 7
HUMMEL_BURKITTTS_LYMPHOMA_UP	38	0.52 23	1.51 34	0.018 1	0.230 9
PARK_HSC_MARKERS	41	0.49 16	1.51 37	0.070 1	0.231 0
HOLLEMAN_ASPARAGINASE_RESISTANCE_B_ALL_UP	26	0.48 59	1.50 88	0.093 6	0.237 9
SMITH_TERT_TARGETS_UP	14 0	0.35 59	1.50 81	0.071 7	0.238 0
BONCI_TARGETS_OF_MIR15A_AND_MIR16_1	88	0.44 11	1.50 82	0.027 3	0.238 3
SANA_RESPONSE_TO_IFNG_DN	82	0.41 73	1.50 69	0.050 7	0.238 5
STEIN_ESR1_TARGETS	85	0.46 41	1.50 71	0.032 5	0.238 9
GUENTHER_GROWTH_SPHERICAL_VS_ADHERENT_UP	20	0.62 66	1.50 52	0.010 4	0.239 2
ALCALAY_AML_BY_NPM1_LOCALIZATION_DN	17 9	0.45 06	1.50 46	0.032 7	0.239 4
GENTILE_UV_RESPONSE_CLUSTER_D2	40	0.48 43	1.50 55	0.087 0	0.239 4
AMIT_EGF_RESPONSE_480_MCF10A	42	0.50 94	1.50 56	0.046 7	0.240 0
CUI_TCF21_TARGETS_2_UP	39 7	0.44 52	1.50 28	0.022 0	0.240 5
SENESE_HDAC3_TARGETS_DN	47 0	0.33 96	1.50 31	0.015 0	0.240 7
CONCANNON_APOPTOSIS_BY_EPOXOMICIN_DN	16 1	0.46 08	1.50 32	0.038 5	0.241 2
EGUCHI_CELL_CYCLE_RB1_TARGETS	23	0.81 57	1.50 05	0.017 8	0.243 6
MATTHEWS_SKIN_CARCINOGENESIS_VIA_JUN	15	0.63 66	1.50 01	0.043 9	0.243 6
GENTILE_UV_RESPONSE_CLUSTER_D4	52	0.36 69	1.49 80	0.062 6	0.246 7
KUUSELO_PANCREATIC_CANCER_19Q13_AMPLIFICATI ON	28	0.50 80	1.49 62	0.044 1	0.249 1

SHIN_B_CELL_LYMPHOMA_CLUSTER_8	36	0.56 74	1.49 52	0.044 1	0.249 3
--------------------------------	----	------------	------------	------------	------------