

SUMOYLATION, REACTOME_SUMOYLATION

REACTOME_HATS_ACETYLATE_HISTONES, REACTOME_HATS_ACETYLATE_HISTONES
 REACTOME_EPIGENETIC_REGULATION_OF_GENE_EXPRESSION, REACTOME_EPIGENETIC_REGULATION_OF_GENE_EXPRESSION
 WP_DNA_REPAIR_PATHWAYS_FULL_NETWORK, WP_DNA_REPAIR_PATHWAYS_FULL_NETWORK
 REACTOME_HCMV_INFECTION, REACTOME_HCMV_INFECTION
 REACTOME_HDAC5_DEACETYLATE_HISTONES, REACTOME_HDAC5_DEACETYLATE_HISTONES
 KEGG_UBIQUITIN_MEDIATED_PROTEOLYSIS, KEGG_UBIQUITIN_MEDIATED_PROTEOLYSIS
 REACTOME_FORMATION_OF_INCISION_COMPLEX_IN_GG_NER, REACTOME_FORMATION_OF_INCISION_COMPLEX_IN_GG_NER
 PID_P53_REGULATION_PATHWAY, PID_P53_REGULATION_PATHWAY
 PID_TELOMERASE_PATHWAY, PID_TELOMERASE_PATHWAY
 REACTOME_NEGATIVE_EPIGENETIC_REGULATION_OF_RRNA_EXPRESSION, REACTOME_NEGATIVE_EPIGENETIC_REGULATION_OF_RRNA_EXPRESSION
 REACTOME_RNA_POLYMERASE_I_TRANSCRIPTION, REACTOME_RNA_POLYMERASE_I_TRANSCRIPTION
 REACTOME_ERCC6_CSB_AND_EHMT2_G9A_POSITIVELY_REGULATE_RRNA_EXPRESSION, REACTOME_ERCC6_CSB_AND_EHMT2_G9A_POSITIVELY_REGULATE_RRNA_EXPRESSION
 WP_TGFBETA_SIGNALING_PATHWAY, WP_TGFBETA_SIGNALING_PATHWAY
 KEGG_CHRONIC_MYELOID_LEUKEMIA, KEGG_CHRONIC_MYELOID_LEUKEMIA
 REACTOME_SARS_COV_INFECTIONS, REACTOME_SARS_COV_INFECTIONS
 PID_AR_PATHWAY, PID_AR_PATHWAY
 REACTOME_DNA_DOUBLE_STRAND_BREAK_RESPONSE, REACTOME_DNA_DOUBLE_STRAND_BREAK_RESPONSE
 PID_P53_DOWNSTREAM_PATHWAY, PID_P53_DOWNSTREAM_PATHWAY
 PID_MYC_ACTIV_PATHWAY, PID_MYC_ACTIV_PATHWAY
 KEGG_NUCLEOTIDE_EXCISION_REPAIR, KEGG_NUCLEOTIDE_EXCISION_REPAIR
 REACTOME_PKMTS_METHYLATE_HISTONE_LYSINES, REACTOME_PKMTS_METHYLATE_HISTONE_LYSINES
 LAU_APOPTOSIS_CDKN2A_UP, LAU_APOPTOSIS_CDKN2A_UP
 BYSTROEM_CORRELATED_WITH_IL5_DN, BYSTROEM_CORRELATED_WITH_IL5_DN
 REACTOME_NONHOMOLOGOUS_END_JOINING_NHEJ, REACTOME_NONHOMOLOGOUS_END_JOINING_NHEJ
 WP_NUCLEOTIDE_EXCISION_REPAIR, WP_NUCLEOTIDE_EXCISION_REPAIR
 GAZDA_DIAMOND_BLACKFAN_ANEMIA_PROGENITOR_DN, GAZDA_DIAMOND_BLACKFAN_ANEMIA_PROGENITOR_DN
 REACTOME_DNA_METHYLATION, REACTOME_DNA_METHYLATION
 WP_SIGNALING_PATHWAYS_IN_GLIOMASTOMA, WP_SIGNALING_PATHWAYS_IN_GLIOMASTOMA
 REACTOME_RHO_GTPASES_ACTIVATE_PKNS, REACTOME_RHO_GTPASES_ACTIVATE_PKNS
 REACTOME_FORMATION_OF_THE_BETA_CATENIN_TCF_TRANSACTIVATING_COMPLEX, REACTOME_FORMATION_OF_THE_BETA_CATENIN_TCF_TRANSACTIVATING_COMPLEX
 REACTOME_ACTIVATED_PKN1_STIMULATES_TRANSCRIPTION_OF_AR_ANDROGEN_RECEPTOR_REGULATED_GENES_KLK2_AND_KLK3, REACTOME_ACTIVATED_PKN1_STIMULATES_TRANSCRIPTION_OF_AR_ANDROGEN_RECEPTOR_REGULATED_GENES_KLK2_AND_KLK3
 REACTOME_RMTS_METHYLATE_HISTONE_ARGININES, REACTOME_RMTS_METHYLATE_HISTONE_ARGININES
 WP_RANKLRANK_RECEPTOR_ACTIVATOR_OF_NFKB_LIGAND_SIGNALING_PATHWAY, WP_RANKLRANK_RECEPTOR_ACTIVATOR_OF_NFKB_LIGAND_SIGNALING_PATHWAY
 REACTOME_PRE_NOTCH_EXPRESSION_AND_PROCESSING, REACTOME_PRE_NOTCH_EXPRESSION_AND_PROCESSING
 REACTOME_POTENTIAL_THERAPEUTICS_FOR_SARS, REACTOME_POTENTIAL_THERAPEUTICS_FOR_SARS
 KEGG_SMALL_CELL_LUNG_CANCER, KEGG_SMALL_CELL_LUNG_CANCER
 REACTOME_RESOLUTION_OF_AP_SITES_VIA_THE_MULTIPLE_NUCLEOTIDE_PATCH_REPLACEMENT_PATHWAY, REACTOME_RESOLUTION_OF_AP_SITES_VIA_THE_MULTIPLE_NUCLEOTIDE_PATCH_REPLACEMENT_PATHWAY
 REACTOME_RUNX1_INTERACTS_WITH_CO_FACTORS_WHOSE_PRECISE_EFFECT_ON_RUNX1_TARGETS_IS_NOT_KNOWN, REACTOME_RUNX1_INTERACTS_WITH_CO_FACTORS_WHOSE_PRECISE_EFFECT_ON_RUNX1_TARGETS_IS_NOT_KNOWN
 REACTOME_SIRT1_NEGATIVELY_REGULATES_RRNA_EXPRESSION, REACTOME_SIRT1_NEGATIVELY_REGULATES_RRNA_EXPRESSION
 WP_THE_EFFECT_OF_PROGERIN_ON_THE_INVOLVED_GENES_IN_HUTCHINSONGILFORD_PROGERIA_SYNDROME, WP_THE_EFFECT_OF_PROGERIN_ON_THE_INVOLVED_GENES_IN_HUTCHINSONGILFORD_PROGERIA_SYNDROME
 REACTOME_MISMATCH_REPAIR, REACTOME_MISMATCH_REPAIR
 CROMER_METASTASIS_UP, CROMER_METASTASIS_UP
 REACTOME_HDMS_DEMETHYLATE_HISTONES, REACTOME_HDMS_DEMETHYLATE_HISTONES
 REACTOME_REGULATION_OF_PTEN_GENE_TRANSCRIPTION, REACTOME_REGULATION_OF_PTEN_GENE_TRANSCRIPTION
 BIOCARTE_STRESS_PATHWAY, BIOCARTE_STRESS_PATHWAY
 WP_SENESCENCE_AND_AUTOPHAGY_IN_CANCER, WP_SENESCENCE_AND_AUTOPHAGY_IN_CANCER
 RASHI_RESPONSE_TO_IONIZING_RADIATION_2, RASHI_RESPONSE_TO_IONIZING_RADIATION_2
 WP_22Q112_COPY_NUMBER_VARIATION_SYNDROME, WP_22Q112_COPY_NUMBER_VARIATION_SYNDROME
 REACTOME_REGULATION_OF_TP53_ACTIVITY_THROUGH_ACETYLATION, REACTOME_REGULATION_OF_TP53_ACTIVITY_THROUGH_ACETYLATION
 REACTOME_RUNX1_REGULATES_GENES_INVOLVED_IN_MEGAKARYOCYTE_DIFFERENTIATION_AND_PLATELET_FUNCTION, REACTOME_RUNX1_REGULATES_GENES_INVOLVED_IN_MEGAKARYOCYTE_DIFFERENTIATION_AND_PLATELET_FUNCTION
 REACTOME_REGULATION_OF_LIPID_METABOLISM_BY_PPARG, REACTOME_REGULATION_OF_LIPID_METABOLISM_BY_PPARG
 PID_HDAC_CLASSI_PATHWAY, PID_HDAC_CLASSI_PATHWAY
 PID_HEDGEHOG_GLI_PATHWAY, PID_HEDGEHOG_GLI_PATHWAY
 REACTOME_RESOLUTION_OF_ABASIC_SITES_AP_SITES, REACTOME_RESOLUTION_OF_ABASIC_SITES_AP_SITES
 WP_PATHWAYS_AFFECTED_IN_ADENOID_CYSTIC_CARCINOMA, WP_PATHWAYS_AFFECTED_IN_ADENOID_CYSTIC_CARCINOMA
 SCHLESINGER_METHYLATED_DE_NOVO_IN_CANCER, SCHLESINGER_METHYLATED_DE_NOVO_IN_CANCER
 WP_EBOLA_VIRUS_PATHWAY_ON_HOST, WP_EBOLA_VIRUS_PATHWAY_ON_HOST
 REACTOME_SUMOYLATION_OF_TRANSCRIPTION_COFACTORS, REACTOME_SUMOYLATION_OF_TRANSCRIPTION_COFACTORS
 WP_HOSTPATHOGEN_INTERACTION_OF_HUMAN_CORONA_VIRUSES_INTERFERON_INDUCTION, WP_HOSTPATHOGEN_INTERACTION_OF_HUMAN_CORONA_VIRUSES_INTERFERON_INDUCTION
 KEGG_PANCREATIC_CANCER, KEGG_PANCREATIC_CANCER
 KEGG_THYROID_CANCER, KEGG_THYROID_CANCER
 BIOCARTE_HIVNEF_PATHWAY, BIOCARTE_HIVNEF_PATHWAY
 JACKSON_DNMT1_TARGETS_UP, JACKSON_DNMT1_TARGETS_UP
 PARK_HSC_AND_MULTIPOTENT_PROGENITORS, PARK_HSC_AND_MULTIPOTENT_PROGENITORS
 REACTOME_REGULATION_OF_CHOLESTEROL_BIOSYNTHESIS_BY_SREBP_SREBF, REACTOME_REGULATION_OF_CHOLESTEROL_BIOSYNTHESIS_BY_SREBP_SREBF
 REACTOME_SARS_COV_2_INFECTION, REACTOME_SARS_COV_2_INFECTION
 PID_CASPASE_PATHWAY, PID_CASPASE_PATHWAY
 BIOCARTE_NFKB_PATHWAY, BIOCARTE_NFKB_PATHWAY
 WP_NOVEL_INTRACELLULAR_COMPONENTS_OF_RIGILIKE_RECEPTOR_RLR_PATHWAY, WP_NOVEL_INTRACELLULAR_COMPONENTS_OF_RIGILIKE_RECEPTOR_RLR_PATHWAY
 KEGG_PROSTATE_CANCER, KEGG_PROSTATE_CANCER
 WP_GLUCCORTICOID_RECEPTOR_PATHWAY, WP_GLUCCORTICOID_RECEPTOR_PATHWAY
 SCIAN_INVERSED_TARGETS_OF_TP53_AND_TP73_DN, SCIAN_INVERSED_TARGETS_OF_TP53_AND_TP73_DN
 WP_ONCOSTATIN_M_SIGNALING_PATHWAY, WP_ONCOSTATIN_M_SIGNALING_PATHWAY
 WP_HISTONE_MODIFICATIONS, WP_HISTONE_MODIFICATIONS
 REACTOME_AMYLOID_FIBER_FORMATION, REACTOME_AMYLOID_FIBER_FORMATION
 WP_ADIPOGENESIS, WP_ADIPOGENESIS
 PID_BARD1_PATHWAY, PID_BARD1_PATHWAY
 SIG_CD40PATHWAYMAP, SIG_CD40PATHWAYMAP
 FIRESTEIN_PROLIFERATION, FIRESTEIN_PROLIFERATION
 WP_ENERGY_METABOLISM, WP_ENERGY_METABOLISM
 BIOCARTE_CTCF_PATHWAY, BIOCARTE_CTCF_PATHWAY
 WP_PPARG_SIGNALING_PATHWAY, WP_PPARG_SIGNALING_PATHWAY
 WP_FARNESOID_X_RECEPTOR_PATHWAY, WP_FARNESOID_X_RECEPTOR_PATHWAY
 PID_IFNG_PATHWAY, PID_IFNG_PATHWAY
 RUAN_RESPONSE_TO_TNF_DN, RUAN_RESPONSE_TO_TNF_DN
 WP_BREAST_CANCER_PATHWAY, WP_BREAST_CANCER_PATHWAY
 FRIDMAN_SENESCENCE_UP, FRIDMAN_SENESCENCE_UP
 REACTOME_ESTABLISHMENT_OF_SISTER_CHROMATID_COHESION, REACTOME_ESTABLISHMENT_OF_SISTER_CHROMATID_COHESION
 KEGG_APOPTOSIS, KEGG_APOPTOSIS
 WP_BASE_EXCISION_REPAIR, WP_BASE_EXCISION_REPAIR
 BIOCARTE_ETS_PATHWAY, BIOCARTE_ETS_PATHWAY
 WP_BLADDER_CANCER, WP_BLADDER_CANCER
 REACTOME_HEME_SIGNALING, REACTOME_HEME_SIGNALING
 KEGG_WNT_SIGNALING_PATHWAY, KEGG_WNT_SIGNALING_PATHWAY
 PID_P51_PATHWAY, PID_P51_PATHWAY
 PID_TAP63_PATHWAY, PID_TAP63_PATHWAY
 REACTOME_SUMOYLATION_OF_DNA_METHYLATION_PROTEINS, REACTOME_SUMOYLATION_OF_DNA_METHYLATION_PROTEINS
 REACTOME_NRIH2_NRIH3_REGULATE_GENE_EXPRESSION_TO_LIMIT_CHOLESTEROL_UPTAKE, REACTOME_NRIH2_NRIH3_REGULATE_GENE_EXPRESSION_TO_LIMIT_CHOLESTEROL_UPTAKE
 KEGG_PPARG_SIGNALING_PATHWAY, KEGG_PPARG_SIGNALING_PATHWAY
 WP_MIRNA_REGULATION_OF_PROSTATE_CANCER_SIGNALING_PATHWAYS, WP_MIRNA_REGULATION_OF_PROSTATE_CANCER_SIGNALING_PATHWAYS
 REACTOME_CIRCADIEN_CLOCK, REACTOME_CIRCADIEN_CLOCK
 IVANOVA_HEMATOPOIESIS_STEM_CELL, IVANOVA_HEMATOPOIESIS_STEM_CELL
 REACTOME_ACTIVATION_OF_GENE_EXPRESSION_BY_SREBF_SREBP, REACTOME_ACTIVATION_OF_GENE_EXPRESSION_BY_SREBF_SREBP
 WP_ETHANOL_EFFECTS_ON_HISTONE_MODIFICATIONS, WP_ETHANOL_EFFECTS_ON_HISTONE_MODIFICATIONS
 WP_APOPTOSIS_MODULATION_AND_SIGNALING, WP_APOPTOSIS_MODULATION_AND_SIGNALING
 REACTOME_TRANSCRIPTIONAL_REGULATION_OF_WHITE_ADIPOCYTE_DIFFERENTIATION, REACTOME_TRANSCRIPTIONAL_REGULATION_OF_WHITE_ADIPOCYTE_DIFFERENTIATION
 PID_NFKAPPAB_CANONICAL_PATHWAY, PID_NFKAPPAB_CANONICAL_PATHWAY
 REACTOME_SUMOYLATION_OF_IMMUNE_RESPONSE_PROTEINS, REACTOME_SUMOYLATION_OF_IMMUNE_RESPONSE_PROTEINS
 REACTOME_TRAF6_MEDIATED_IRF7_ACTIVATION, REACTOME_TRAF6_MEDIATED_IRF7_ACTIVATION
 REACTOME_NOTCH_HLH_TRANSCRIPTION_PATHWAY, REACTOME_NOTCH_HLH_TRANSCRIPTION_PATHWAY
 PID_HDAC_CLASSII_PATHWAY, PID_HDAC_CLASSII_PATHWAY
 WP_APOPTOSIS, WP_APOPTOSIS
 HOQUE_METHYLATED_IN_CANCER, HOQUE_METHYLATED_IN_CANCER
 KEGG_NON_SMALL_CELL_LUNG_CANCER, KEGG_NON_SMALL_CELL_LUNG_CANCER
 HOFMANN_CELL_LYMPHOMA_DN, HOFMANN_CELL_LYMPHOMA_DN
 ZHU_CMV_ALL_DN, ZHU_CMV_ALL_DN
 REACTOME_ZBP1_DAI_MEDIATED_INDUCION_OF_TYPE_I_IFNS, REACTOME_ZBP1_DAI_MEDIATED_INDUCION_OF_TYPE_I_IFNS
 KEGG_BLADDER_CANCER, KEGG_BLADDER_CANCER
 BIOCARTE_CARM_ER_PATHWAY, BIOCARTE_CARM_ER_PATHWAY
 REACTOME_RIP_MEDIATED_NFKB_ACTIVATION_VIA_ZBP1, REACTOME_RIP_MEDIATED_NFKB_ACTIVATION_VIA_ZBP1
 PID_BETA_CATENIN_NUC_PATHWAY, PID_BETA_CATENIN_NUC_PATHWAY
 KEGG_ADIPOCYTOKINE_SIGNALING_PATHWAY, KEGG_ADIPOCYTOKINE_SIGNALING_PATHWAY
 DORN_ADENOVIRUS_INFECTION_24HR_DN, DORN_ADENOVIRUS_INFECTION_24HR_DN
 WP_THYMIC_STROMAL_LYMPHOPOIETIN_TSLP_SIGNALING_PATHWAY, WP_THYMIC_STROMAL_LYMPHOPOIETIN_TSLP_SIGNALING_PATHWAY
 WP_STING_PATHWAY_IN_KAWASAKILIKE_DISEASE_AND_COVID19, WP_STING_PATHWAY_IN_KAWASAKILIKE_DISEASE_AND_COVID19
 PID_NFKAPPAB_ATYPICAL_PATHWAY, PID_NFKAPPAB_ATYPICAL_PATHWAY
 KEGG_BASE_EXCISION_REPAIR, KEGG_BASE_EXCISION_REPAIR
 REACTOME_SIGNALING_BY_NOTCH1, REACTOME_SIGNALING_BY_NOTCH1
 REACTOME_PROCESSIVE_SYNTHESIS_ON_THE_LAGGING_STRAND, REACTOME_PROCESSIVE_SYNTHESIS_ON_THE_LAGGING_STRAND
 REACTOME_NRIH3_NRIH2_REGULATE_GENE_EXPRESSION_LINKED_TO_CHOLESTEROL_TRANSPORT_AND_EFFLUX, REACTOME_NRIH3_NRIH2_REGULATE_GENE_EXPRESSION_LINKED_TO_CHOLESTEROL_TRANSPORT_AND_EFFLUX
 DORN_ADENOVIRUS_INFECTION_48HR_UP, DORN_ADENOVIRUS_INFECTION_48HR_UP
 BIOCARTE_P53HYPOXIA_PATHWAY, BIOCARTE_P53HYPOXIA_PATHWAY
 BIOCARTE_NTH1_PATHWAY, BIOCARTE_NTH1_PATHWAY
 LIU_TOPBP1_TARGETS, LIU_TOPBP1_TARGETS
 REACTOME_DDX58_IFIH1_MEDIATED_INDUCION_OF_INTERFERON_ALPHA_BETA, REACTOME_DDX58_IFIH1_MEDIATED_INDUCION_OF_INTERFERON_ALPHA_BETA
 KEGG_RIG_I_LIKE_RECEPTOR_SIGNALING_PATHWAY, KEGG_RIG_I_LIKE_RECEPTOR_SIGNALING_PATHWAY
 WP_MAMMALIAN_DISORDER_OF_SEXUAL_DEVELOPMENT, WP_MAMMALIAN_DISORDER_OF_SEXUAL_DEVELOPMENT
 WP_TNF_RELATED_WEAK_INDUCER_OF_APOPTOSIS_TWEAK_SIGNALING_PATHWAY, WP_TNF_RELATED_WEAK_INDUCER_OF_APOPTOSIS_TWEAK_SIGNALING_PATHWAY
 BIOCARTE_WNT_PATHWAY, BIOCARTE_WNT_PATHWAY
 REACTOME_VLDLR_INTERNALISATION_AND_DEGRADATION, REACTOME_VLDLR_INTERNALISATION_AND_DEGRADATION
 WP_TYPE_I_INTERFERON_INDUCION_AND_SIGNALING_DURING_SARSCOV2_INFECTION, WP_TYPE_I_INTERFERON_INDUCION_AND_SIGNALING_DURING_SARSCOV2_INFECTION
 NGO_MALIGNANT_GLIOMA_IP_LOH, NGO_MALIGNANT_GLIOMA_IP_LOH
 BIOCARTE_TOLL_PATHWAY, BIOCARTE_TOLL_PATHWAY