

GY\_DIRECTED\_REPAIR, REACTOME\_HOMOLOGY\_DIRECTED\_REPAIR

REACTOME\_DNA\_DOUBLE\_STRAND\_BREAK\_REPAIR, REACTOME\_DNA\_DOUBLE\_STRAND\_BREAK\_REPAIR  
REACTOME\_HATS\_ACETYLATE\_HISTONES, REACTOME\_HATS\_ACETYLATE\_HISTONES  
REACTOME\_HDACS\_DEACETYLATE\_HISTONES, REACTOME\_HDACS\_DEACETYLATE\_HISTONES  
WP\_DNA\_IRDAMAGE\_AND\_CELLULAR\_RESPONSE\_VIA\_ATR, WP\_DNA\_IRDAMAGE\_AND\_CELLULAR\_RESPONSE\_VIA\_ATR  
WP\_DNA\_REPAIR\_PATHWAYS\_FULL\_NETWORK, WP\_DNA\_REPAIR\_PATHWAYS\_FULL\_NETWORK  
REACTOME\_GLOBAL\_GENOME\_NUCLEOTIDE\_EXCISION\_REPAIR\_GG\_NER, REACTOME\_GLOBAL\_GENOME\_NUCLEOTIDE\_EXCISION\_REPAIR\_GG\_NER  
WP\_RETINOBLASTOMA\_GENE\_IN\_CANCER, WP\_RETINOBLASTOMA\_GENE\_IN\_CANCER  
REACTOME\_EPIGENETIC\_REGULATION\_OF\_GENE\_EXPRESSION, REACTOME\_EPIGENETIC\_REGULATION\_OF\_GENE\_EXPRESSION  
REACTOME\_REGULATION\_OF\_TP53\_ACTIVITY\_THROUGH\_PHOSPHORYLATION, REACTOME\_REGULATION\_OF\_TP53\_ACTIVITY\_THROUGH\_PHOSPHORYLATION  
REACTOME\_CONDENSATION\_OF\_PROPHASE\_CHROMOSOMES, REACTOME\_CONDENSATION\_OF\_PROPHASE\_CHROMOSOMES  
REACTOME\_PROCESSING\_OF\_DNA\_DOUBLE\_STRAND\_BREAK\_ENDS, REACTOME\_PROCESSING\_OF\_DNA\_DOUBLE\_STRAND\_BREAK\_ENDS  
WP\_DNA\_REPLICATION, WP\_DNA\_REPLICATION  
REACTOME\_FORMATION\_OF\_INCISION\_COMPLEX\_IN\_GG\_NER, REACTOME\_FORMATION\_OF\_INCISION\_COMPLEX\_IN\_GG\_NER  
REACTOME\_ERCC6\_CSB\_AND\_EHMT2\_G9A\_POSITIVELY\_REGULATE\_RRNA\_EXPRESSION, REACTOME\_ERCC6\_CSB\_AND\_EHMT2\_G9A\_POSITIVELY\_REGULATE\_RRNA\_EXPRESSION  
REACTOME\_DUAL\_INCISION\_IN\_GG\_NER, REACTOME\_DUAL\_INCISION\_IN\_GG\_NER  
REACTOME\_POSITIVE\_EPIGENETIC\_REGULATION\_OF\_RRNA\_EXPRESSION, REACTOME\_POSITIVE\_EPIGENETIC\_REGULATION\_OF\_RRNA\_EXPRESSION  
REACTOME\_NEGATIVE\_EPIGENETIC\_REGULATION\_OF\_RRNA\_EXPRESSION, REACTOME\_NEGATIVE\_EPIGENETIC\_REGULATION\_OF\_RRNA\_EXPRESSION  
REACTOME\_HDR\_THROUGH\_HOMOLOGOUS\_RECOMBINATION\_HRR, REACTOME\_HDR\_THROUGH\_HOMOLOGOUS\_RECOMBINATION\_HRR  
REACTOME\_DNA\_METHYLATION, REACTOME\_DNA\_METHYLATION  
REACTOME\_G2\_M\_DNA\_DAMAGE\_CHECKPOINT, REACTOME\_G2\_M\_DNA\_DAMAGE\_CHECKPOINT  
REACTOME\_TRANSLESION\_SYNTHESIS\_BY\_Y\_FAMILY\_DNA\_POLYMERASES\_BYPASSES\_LESIONS\_ON\_DNA\_TEMPLATE, REACTOME\_TRANSLESION\_SYNTHESIS\_BY\_Y\_FAMILY\_DNA\_POLYMERASES\_BYPASSES\_LESIONS\_ON\_DNA\_TEMPLATE  
REACTOME\_PRC2\_METHYLATES\_HISTONES\_AND\_DNA, REACTOME\_PRC2\_METHYLATES\_HISTONES\_AND\_DNA  
REACTOME\_DNA\_DAMAGE\_BYPASS, REACTOME\_DNA\_DAMAGE\_BYPASS  
REACTOME\_ACTIVATION\_OF\_ATR\_IN\_RESPONSE\_TO\_REPLICATION\_STRESS, REACTOME\_ACTIVATION\_OF\_ATR\_IN\_RESPONSE\_TO\_REPLICATION\_STRESS  
REACTOME\_DNA\_DOUBLE\_STRAND\_BREAK\_RESPONSE, REACTOME\_DNA\_DOUBLE\_STRAND\_BREAK\_RESPONSE  
REACTOME\_SIRT1\_NEGATIVELY\_REGULATES\_RRNA\_EXPRESSION, REACTOME\_SIRT1\_NEGATIVELY\_REGULATES\_RRNA\_EXPRESSION  
REACTOME\_MEIOTIC\_RECOMBINATION, REACTOME\_MEIOTIC\_RECOMBINATION  
WP\_GENOTOXICITY\_PATHWAY, WP\_GENOTOXICITY\_PATHWAY  
REACTOME\_RNA\_POLYMERASE\_I\_TRANSCRIPTION, REACTOME\_RNA\_POLYMERASE\_I\_TRANSCRIPTION  
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\_BASE\_EXCISION\_REPAIR, REACTOME\_BASE\_EXCISION\_REPAIR  
REACTOME\_NUCLEOTIDE\_BINDING\_DOMAIN\_LEUCINE\_RICH\_REPEAT\_CONTAINING\_RECEPTOR\_NLR\_SIGNALING\_PATHWAYS, REACTOME\_NUCLEOTIDE\_BINDING\_DOMAIN\_LEUCINE\_RICH\_REPEAT\_CONTAINING\_RECEPTOR\_NLR\_SIGNALING\_PATHWAYS  
REACTOME\_FORMATION\_OF\_THE\_BETA\_CATENIN\_TCF\_TRANSACTIVATING\_COMPLEX, REACTOME\_FORMATION\_OF\_THE\_BETA\_CATENIN\_TCF\_TRANSACTIVATING\_COMPLEX  
PID\_ATM\_PATHWAY, PID\_ATM\_PATHWAY  
KEGG\_HOMOLOGOUS\_RECOMBINATION, KEGG\_HOMOLOGOUS\_RECOMBINATION  
KEGG\_MISMATCH\_REPAIR, KEGG\_MISMATCH\_REPAIR  
WP\_NUCLEOTIDE\_EXCISION\_REPAIR, WP\_NUCLEOTIDE\_EXCISION\_REPAIR  
KEGG\_NUCLEOTIDE\_EXCISION\_REPAIR, KEGG\_NUCLEOTIDE\_EXCISION\_REPAIR  
KEGG\_DNA\_REPLICATION, KEGG\_DNA\_REPLICATION  
REACTOME\_MEIOSIS, REACTOME\_MEIOSIS  
PID\_P53\_REGULATION\_PATHWAY, PID\_P53\_REGULATION\_PATHWAY  
REACTOME\_ACTIVATION\_OF\_THE\_PRE\_REPLICATIVE\_COMPLEX, REACTOME\_ACTIVATION\_OF\_THE\_PRE\_REPLICATIVE\_COMPLEX  
REACTOME\_DNA\_DAMAGE\_TELOMERE\_STRESS\_INDUCED\_SENESCENCE, REACTOME\_DNA\_DAMAGE\_TELOMERE\_STRESS\_INDUCED\_SENESCENCE  
REACTOME\_HDR\_THROUGH\_SINGLE\_STRAND\_ANNEALING\_SSA, REACTOME\_HDR\_THROUGH\_SINGLE\_STRAND\_ANNEALING\_SSA  
REACTOME\_OXIDATIVE\_STRESS\_INDUCED\_SENESCENCE, REACTOME\_OXIDATIVE\_STRESS\_INDUCED\_SENESCENCE  
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\_TRANSCRIPTIONAL\_REGULATION\_OF\_GRANULOPOIESIS, REACTOME\_TRANSCRIPTIONAL\_REGULATION\_OF\_GRANULOPOIESIS  
REACTOME\_MISMATCH\_REPAIR, REACTOME\_MISMATCH\_REPAIR  
REACTOME\_TP53\_REGULATES\_TRANSCRIPTION\_OF\_CELL\_CYCLE\_GENES, REACTOME\_TP53\_REGULATES\_TRANSCRIPTION\_OF\_CELL\_CYCLE\_GENES  
REACTOME\_RNA\_POLYMERASE\_I\_PROMOTER\_ESCAPE, REACTOME\_RNA\_POLYMERASE\_I\_PROMOTER\_ESCAPE  
PID\_FANCONI\_PATHWAY, PID\_FANCONI\_PATHWAY  
REACTOME\_RMTS\_METHYLATE\_HISTONE\_ARGININES, REACTOME\_RMTS\_METHYLATE\_HISTONE\_ARGININES  
REACTOME\_RESOLUTION\_OF\_ABASIC\_SITES\_AP\_SITES, REACTOME\_RESOLUTION\_OF\_ABASIC\_SITES\_AP\_SITES  
REACTOME\_HOMOLOGOUS\_DNA\_PAIRING\_AND\_STRAND\_EXCHANGE, REACTOME\_HOMOLOGOUS\_DNA\_PAIRING\_AND\_STRAND\_EXCHANGE  
REACTOME\_DNA\_STRAND\_ELONGATION, REACTOME\_DNA\_STRAND\_ELONGATION  
REACTOME\_EXTENSION\_OF\_TELOMERES, REACTOME\_EXTENSION\_OF\_TELOMERES  
REACTOME\_RHO\_GTPASES\_ACTIVATE\_PKNS, REACTOME\_RHO\_GTPASES\_ACTIVATE\_PKNS  
REACTOME\_RUNX1\_REGULATES\_GENES\_INVOLVED\_IN\_MEGAKARYOCYTE\_DIFFERENTIATION\_AND\_PLATELET\_FUNCTION, REACTOME\_RUNX1\_REGULATES\_GENES\_INVOLVED\_IN\_MEGAKARYOCYTE\_DIFFERENTIATION\_AND\_PLATELET\_FUNCTION  
REACTOME\_TELOMERE\_C\_STRAND\_LAGGING\_STRAND\_SYNTHESIS, REACTOME\_TELOMERE\_C\_STRAND\_LAGGING\_STRAND\_SYNTHESIS  
WP\_DNA\_MISMATCH\_REPAIR, WP\_DNA\_MISMATCH\_REPAIR  
REACTOME\_HDMS\_DEMETHYLATE\_HISTONES, REACTOME\_HDMS\_DEMETHYLATE\_HISTONES  
WP\_BASE\_EXCISION\_REPAIR, WP\_BASE\_EXCISION\_REPAIR  
PID\_BARD1\_PATHWAY, PID\_BARD1\_PATHWAY  
REACTOME\_PCNA\_DEPENDENT\_LONG\_PATCH\_BASE\_EXCISION\_REPAIR, REACTOME\_PCNA\_DEPENDENT\_LONG\_PATCH\_BASE\_EXCISION\_REPAIR  
REACTOME\_PROCESSIVE\_SYNTHESIS\_ON\_THE\_C\_STRAND\_OF\_THE\_TELOMERE, REACTOME\_PROCESSIVE\_SYNTHESIS\_ON\_THE\_C\_STRAND\_OF\_THE\_TELOMERE  
KEGG\_BASE\_EXCISION\_REPAIR, KEGG\_BASE\_EXCISION\_REPAIR  
REACTOME\_NONHOMOLOGOUS\_END\_JOINING\_NHEJ, REACTOME\_NONHOMOLOGOUS\_END\_JOINING\_NHEJ  
REACTOME\_SUMOYLATION\_OF\_TRANSCRIPTION\_COFACTORS, REACTOME\_SUMOYLATION\_OF\_TRANSCRIPTION\_COFACTORS  
PID\_E2F\_PATHWAY, PID\_E2F\_PATHWAY  
REACTOME\_IRON\_UPTAKE\_AND\_TRANSPORT, REACTOME\_IRON\_UPTAKE\_AND\_TRANSPORT  
WP\_ATM\_SIGNALING\_PATHWAY, WP\_ATM\_SIGNALING\_PATHWAY  
REACTOME\_LAGGING\_STRAND\_SYNTHESIS, REACTOME\_LAGGING\_STRAND\_SYNTHESIS  
PID\_TELOMERASE\_PATHWAY, PID\_TELOMERASE\_PATHWAY  
PID\_ATR\_PATHWAY, PID\_ATR\_PATHWAY  
WP\_ATM\_SIGNALING\_NETWORK\_IN\_DEVELOPMENT\_AND\_DISEASE, WP\_ATM\_SIGNALING\_NETWORK\_IN\_DEVELOPMENT\_AND\_DISEASE  
REACTOME\_PROCESSIVE\_SYNTHESIS\_ON\_THE\_LAGGING\_STRAND, REACTOME\_PROCESSIVE\_SYNTHESIS\_ON\_THE\_LAGGING\_STRAND  
WP\_HOMOLOGOUS\_RECOMBINATION, WP\_HOMOLOGOUS\_RECOMBINATION  
REACTOME\_RECOGNITION\_AND\_ASSOCIATION\_OF\_DNA\_GLYCOSYLASE\_WITH\_SITE\_CONTAINING\_AN\_AFFECTED\_PURINE, REACTOME\_RECOGNITION\_AND\_ASSOCIATION\_OF\_DNA\_GLYCOSYLASE\_WITH\_SITE\_CONTAINING\_AN\_AFFECTED\_PURINE  
WP\_22Q112\_COPY\_NUMBER\_VARIATION\_SYNDROME, WP\_22Q112\_COPY\_NUMBER\_VARIATION\_SYNDROME  
REACTOME\_POLYMERASE\_SWITCHING\_ON\_THE\_C\_STRAND\_OF\_THE\_TELOMERE, REACTOME\_POLYMERASE\_SWITCHING\_ON\_THE\_C\_STRAND\_OF\_THE\_TELOMERE  
WP\_HISTONE\_MODIFICATIONS, WP\_HISTONE\_MODIFICATIONS  
PID\_PRL\_SIGNALING\_EVENTS\_PATHWAY, PID\_PRL\_SIGNALING\_EVENTS\_PATHWAY  
REACTOME\_BASE\_EXCISION\_REPAIR\_AP\_SITE\_FORMATION, REACTOME\_BASE\_EXCISION\_REPAIR\_AP\_SITE\_FORMATION  
BIOCARTA\_ATRBRCA\_PATHWAY, BIOCARTA\_ATRBRCA\_PATHWAY  
REACTOME\_POLYMERASE\_SWITCHING, REACTOME\_POLYMERASE\_SWITCHING  
REACTOME\_SARS\_COV\_2\_INFECTION, REACTOME\_SARS\_COV\_2\_INFECTION  
WP\_G1\_TO\_S\_CELL\_CYCLE\_CONTROL, WP\_G1\_TO\_S\_CELL\_CYCLE\_CONTROL