

Supplementary Information: Bridging Plant and Human Radiation Response and DNA Repair through an *in silico* Approach

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Table S1. Human DNA repair genes. Contents of the Venn diagram presented in Figure 5 in the main text.

BER ∩ NER ∩ HR ∩ MMR ∩ DNA repair:	RPA2 RPA1 RPA3
BER ∩ NER ∩ HR ∩ NHEJ ∩ DNA repair:	LIG3
BER ∩ NER ∩ MMR ∩ DNA repair:	POLD2 PCNA POLD1 POLD3 LIG1 POLD4 HMGB1
BER ∩ NER ∩ HR ∩ DNA repair:	RFC2 RFC3 XRCC1 RFC4 RFC5 PARP1
BER ∩ HR ∩ NHEJ ∩ DNA repair:	POLQ
NER ∩ HR ∩ NHEJ ∩ DNA repair:	SUMO1 UBE2V2 UBE2N
BER ∩ NER ∩ DNA repair:	TP53 PNKP NEIL2 NEIL1 NTHL1 NEIL3 RFC1 OGG1 ERCC6 POLE
BER ∩ MMR ∩ DNA repair:	TDG MUTYH
BER ∩ HR ∩ DNA repair:	SIRT6 DNA2 FEN1 WRN
BER ∩ NHEJ ∩ DNA repair:	HMGA2
NER ∩ MMR ∩ DNA repair:	XPC
NER ∩ HR ∩ DNA repair:	HUS1 FAN1 UBB RAD51D ERCC1 BRCA2 ERCC4 RAD52 SUMO2 SLX4 UBE2I HUS1B UBA52 RBBP8 RPS27A UBC
NER ∩ NHEJ ∩ DNA repair:	POLL LIG4 PRPF19
MMR ∩ HR ∩ DNA repair:	EXO1 ENSG00000282827 ABL1
MMR ∩ NHEJ ∩ DNA repair:	MLH1
HR ∩ NHEJ ∩ DNA repair:	UIMC1 HIST1H4I HIST1H4B NBN HIST4H4 MDC1 HIST1H4J KDM4D BRCC3 HIST1H4E HIST1H4L HERC2 BRCA1 PIAS4 HIST1H4H BARD1 WHSC1 BABAM1 HIST3H3 HIST2H4A RNF8 ATM HIST1H4D RNF168 HIST2H4B KAT5 TP53BP1 HIST1H4A H2AFX HIST1H4C HIST1H4F RAD50 HIST1H4K MRE11A PSMD14 FAM175A BRE
BER ∩ DNA repair:	PARG CCNO USP47 ENSG00000268361 MBD4 SMUG1 APEX2 PARP2 PRMT6 APEX1 POLG HMGA1 ENSG00000254469 MPG UNG POLB HUWE1
NER ∩ DNA repair:	MMS19 SLC30A9 ERCC5 POLR2G COPS6 POLR2L POLK MNAT1 CUL4B DDB1 EP300 XAB2 BIVM-ERCC5 RPA4 COPS7A COPS2 HMGN1 SUMO3 ZNF830 GTF2H1 COPS5 RAD23A CETN2 GTF2H2C CUL4A GTF2H5 GPS1 POLR2C DDB2 ATXN3 POLR2K SIRT1 RAD23B GTF2H2 PPIE RBX1 POLR2F GTF2H4 ERCC8 POLR2B AQR USP45 USP7 COPS4 XPA POLR2I COPS8 POLR2J POLR2E ERCC3 GTF2H3 UVSSA CDK7 COPS3 CHD1L TCEA1 RNF111 POLR2D POLR2H ERCC2 GTF2H2C_2 CCNH POLR2A ISY1 COPS7B

Table S1. Cont.

MMR n DNA repair: RNASEH2A MLH3 SETD2 PRKCG MSH3 MSH5-SAPCD1 MSH5 MSH4 AXIN2 MSH6 PMS1 TREX1 TP73 MSH2 PMS2
HR n DNA repair: YY1 TIPIN ZSWIM7 AP5Z1 RTEL1 KDM1A SMC5 CLSPN RAD1 RMI1 EME1 PPP4R2 TOPBP1 RHNO1 TOP3A RAD51 RAD51B MMS22L BLM NSMCE2 SLX1B DMC1 XRCC3 SFPQ GEN1 WDR48 RAD54B TERF2IP PARPBP BRIP1 RAD9B PALB2 SPIDR RAD51C SWI5 GINS4 SFR1 MEIOB RNF4 MCM9 FIGNL1 AP5S1 CHEK1 FBXO18 NABP2 TONSL MORF4L1 RAD9A INO80 RTEL1-TNFRSF6B ATR ATRIP REC8 MUS81 RAD54L CDC45 SWSAP1 MCM8 FIGN SLX1A RMI2 POLN SHFM1 TEX15 CCDC155 ZFYVE26 CDC7 GINS2 NSMCE1 PPP4C CDK2 NABP1 SMC6 TIMELESS RAD21L1 HELQ RAD17 RAD51AP1 XRCC2
NHEJ n DNA repair: POLA1 PAXIP1 C9orf142 RIF1 UVRAG XRCC4 XRCC5 PRKDC DCLRE1A DEK POLM XRCC6 NHEJ1 KDM2A SETMAR XRCC6BP1 DCLRE1B DCLRE1C
DNA repair: KDM4A ESCO2 DMAP1 NSMCE3 MTOR BTG2 NPAS2 DDX1 ATRX KIN CDKN2D INO80E SLF1 UBR5 SSRP1 GGN IGHMBP2 STUB1 UBE2A HIST3H2A ENSG00000269307 BACH1 EYA1 CHAF1A FAAP100 DTL TFPT ENDOV OTUB1 MORF4L2 TREX2 RFWD3 PRIMPOL NSMCE4A NFRKB MEN1 INO80B FANCA EEPD1 HLTF RECQL POLI CIB1 SMARCA5 PML RPS27L POLG2 BCCIP INIP CSNK1E CDK9 CDC14B MCRS1 NONO PARP3 CHAF1B ACTR8 REV3L TAOX3 PPP5C STRA13 ASCC3 TIGAR ACTL6A TTC5 ALKBH1 TERF2 WDR33 BAZ1B RRM2B HINFP GADD45A RUVBL1 SPATA22 SMC3 KPNA2 NUDT1 RCHY1 FTO EPC2 EYA4 UBE2F ASCC2 UBE2D3 SMARCA4 RBM14 SHPRH RAD21 REV1 UCHL5 EME2 EGFR UBE2U ALKBH2 ZRANB3 KIAA0430 ZBTB1 PARP4 ASF1A PAPD7 FOXM1 UBE2V1 CEP164 TICRR JMY POLE2 USP43 FANCM HSPA1A WRNIP1 UBA7 SETX CDK1 MC1R PIF1 CHRNA4 FANCE SMARCB1 KIF22 CBX8 DTX3L ASCC1 APTX CDC5L CSNK1D EYA3 BOD1L1 MGME1 EXO5 FBXO6 RPAIN TNP1 CINP FANCL SPRTN UHRF1 APLF NPM1 MAPK8 KIAA0101 APBB1 USP10 ALKBH3 RPS3 RAD18 APITD1 CEBPG USP28 SUPT16H FANCI UBE2B PARP9 TRIP12 RUVBL2 FAAP24 INO80D FANCF TRIM25 TAOX1 UFD1L MGMT MUM1 VCP ENSG00000267618 SMG1 ZBTB32 KDM4B TWIST1 SLF2 CHEK2 NUDT16 TDP2 FANCC INO80C ERCC6L2 TRRAP SMC1A SYCP1 TRIP13 EID3 NCOA6 MAD2L2 UBE2L6 PTTG1 USP1 NPLOC4 UPF1 PSME4 EMSY HMGB2 TRIM28 FANCB CDCA5 UBE2T TMEM161A RECQL5 UBE2W ACTR5 MTA1 INTS3 USP3 ISG15 FANCG TDP1 EYA2 RDM1 FGF10 FANCD2 FAAP20 TEX12 ASTE1 POLH RNF169 FZR1

Table S2. *Arabidopsis thaliana* DNA repair genes. Contents of the Venn diagram presented in Figure 6 in the main text.

BER n NER n DNA repair: MRE11 OGG1 FPG1
MMR n NER n DNA repair: ATRAD4
NER n HR n DNA repair: ERCC1 UVH1 AT1G52530
BER n NHEJ n DNA repair: AT1G10520 LIG4
HR n NHEJ n DNA repair: ATR
BER n DNA repair: AT1G19480 MYH AT1G80850 AT5G57970 ATUNG NTH2 AT3G50880 AT1G15970 DML3 MAG AT3G12710 AT3G47830 NTH1 APE2 AT1G75090 AT1G75230 FEN1 AT3G07930 ARP DML2 DME AT2G10550 APE1L ROS1 AT1G13635 AT5G44680
NER n DNA repair: XPB2 AT1G62886 AT1G18340 AT1G12400 AT4G17020 RAD23C UVH3 UVH6 RAD23A DDB1B TFB1-3 ATGTF2H2 RAD23B DDB1A TFB1-1 AT5G16090 PNG1 NRPB9B XPB1 NRPB9A RAD23D
MMR n DNA repair: MLH3 MSH7 AT1G65070 MSH3 AT3G15960 PCNA PCNA2 MSH5 MSH4 AT2G25100 AT5G54090 MSH6 PMS1 MLH1 MSH1 MSH2
HR n DNA repair: ORC3 SDS SMC5 emb1379 AT3G15550 RMI1 RAD51 RAD51B FAS2 CHR25 SNI1 MMS21 RECQL4A AT4G33925 XRCC3 BRCA1 RAD5 AT3G27120 BARD1 ATDSS1(V) ASF1A FAS1 SLD5 AT2G03430 BRCA2B AT1G59760 AT3G42860 POLD3 ASF1B AT5G47870 DMS3 MUS81 CDC45 MCM8 AT1G71310 AT4G16970 BRCA2A POLA2 SMC6B NBS1 SMC6A GINS2 AT3G48210 CTF7 TOR XRCC2
NHEJ n DNA repair: KU80 PARP2 XRCC1 KU70
DNA repair: AT4G32970 AT5G02370 MED34 CHC1 NSE4B RPA3B DET1 RPA2B AT2G01440 AT1G51210 ATRX AT2G02550 WHY2 SSRP1 PA200 RPA1B ATCSA-1 POLIA AT5G05670 GEN2 UVR3 AT5G49110 PHR1 HAM1 ASY1 MAPR4 DRT102 PRP19A AT3G51700 SNM1 RPS3C ASHH1 REV3 TOP3A RAD51D NET1D AT5G43530 BOLA2 AT2G19490 UEV1A DMC1 XRCC4 PARP3 REV7 UBC3 RNR2A RECA3 GEN1 GPAT9 NSE4A AT5G15610 EXO1 CHR8 AT1G12244 CRY2 DRT101 NAP1;1 TRFL10 EME1B AT1G11240 RPA1E HAM2 SMC3 TSO2 AT1G18090 AT1G49250 AT4G14970 UBC1 PRP19B ARP4 DSE1 AT3G13226

MSI4 OFP1 RAD51C DDB2 BRCC36A REV1 AT5G23910 ALKBH2 ATDPB2 ARP4A MND1 AT2G30350
POL2B RPA1D RECQL4B SWI2 AT3G52905 AXR1 XRI1 AT1G77620 WHY1 RPS3A MCM9 AT5G28780
ETL1 ZDP AT1G05840 AT2G23080 CRY3 AT4G31150 CML19 AT3G02400 AT1G14340 TTN8 AT1G78790
CUL4 AT3G11100 SPT16 UBC35 ETG1 RPA1A ATSRP3 RPA2A BRCC36B INO80 RECA AT4G30825 DUF9
CAPH2 AT5G07400 RFC1 AT3G04620 UEV1C EME1A AT5G50340 TAF14B MER3 AT3G51690 RPA1C
AT1G49980 RAD50 AT5G65740 POLIB LIG1 AT1G61410 UBC28 PHR2 RECQSIM CDC5 AT3G12210
RPA3A NAP1;3 DUT AT4G17760 DRT111 SMC4 WHY3 POL2A AT3G09100 UEV1B ATSRP2 RAD9
AT1G11780 SWC4 AT1G02160 ARP5 DRT100 COP1 GR1 CRY1 AT4G32960 NAP1;2 TDP1 MPC1 UBC2
BHLH140 AtLIG6 AT4G30820 AT3G32920 RAD17 PARP1 SYN2 AT2G43280 RPS3B POLH

Table S3. *Homo sapiens* genes that stemmed from the present analysis (i.e. contents of the Venn diagram shown in Figure 8 in the main text).

Name	#	Genes
HR $\cap$ DNA repair $\cap$ established DNA repair	3	HLTF SMC6 SUMO3
BER $\cap$ HR $\cap$ established DNA repair	2	RECQL RECQL5
BER $\cap$ established DNA repair	1	BLM
HR $\cap$ established DNA repair	5	ESCO2 HIST3H2A CHAF1A CHAF1B ASF1A
NER $\cap$ DNA repair	5	NGLY1 CETN1 CREBBP ISY1-RAB43 POLR3B
HR $\cap$ DNA repair	28	HIST1H2AA TTF2 HIST1H2AM HIST1H2AJ HIST1H2AE HIST1H2AD SKIV2L2 ASF1B ANKRD28 ESCO1 ANKRD44 HIST1H2AC SPC25 HIST2H2AA3 ANKRD52 HIST1H2AH CDK5 BOLA3 KAT8 HIST2H2AB HIST1H2AG HIST1H2AI YY2 POLA2 KAT7 HIST2H2AC BOLA2B SPAST
DNA repair	51	HORMAD2 SMARCD3 DNA repair CSNK1A1L HMGB3 PAPD5 ACTL6B SMARCD1 YEATS4 UBA1 CRY2 RFWD2 NOL12 MACROD1 RBM17 SMARCD2 NAE1 SERPINI1 MND1 GPAT4 SERPINB4 UBA6 SERPINB1 ASIC2 SMC1B RRM2 EIF3M SRPRB DUT GNB1L TMEM189-UBE2V1 CRY1 MPC1 DET1 BOLA2 UBE2D4 ASIC1 CYB5D2 CSNK2A2 CDC20 SERPINB3 EPC1 MCMBP OTUB2 CSNK1A1 SMARCA1 GPAT3 SMARCA1 UBE2D1 NAP1L1 RNGETT
Established DNA repair	492	-not presented-

Table S4. *Arabidopsis thaliana* genes that stemmed from the present analysis (i.e. contents of the Venn diagram shown in Figure 9 in the main text).

Names	#	Elements
BER $\cap$ DNA repair $\cap$ HR $\cap$ established DNA repair	1	RECQL4B
BER $\cap$ DNA repair $\cap$ established DNA repair	1	RPA1E
NER $\cap$ DNA repair $\cap$ established DNA repair	3	PRP19B ATCSA-1 AT1G49980
HR $\cap$ DNA repair $\cap$ established DNA repair	3	MCM9 RAD51D EXO1
BER $\cap$ HR $\cap$ established DNA repair	1	MED34

Table S4. Cont.

BER $\cap$ NHEJ $\cap$ established DNA repair	1	PARP1
BER $\cap$ HR $\cap$ DNA repair	2	RECQL1 RECQL3
NER $\cap$ HR $\cap$ DNA repair	3	SUMO1 SUMO2 SUMO8
BER $\cap$ established DNA repair	17	PCNA2 CHR8 AT1G49250 RPA1D RPA1A RFC1 RPA1C LIG1 RPA2B RPA1B RECQL4A PCNA PARP2 ZDP POLD3 XRCC1 RPA2A
NER $\cap$ established DNA repair	4	PRP19A SNM1 DDB2 CUL4
HR $\cap$ established DNA repair	15	HAM1 TOP3A DMC1 GEN1 HAM2 AT2G30350 AT4G17760 RAD17 AT5G43530 BOLA2 AT1G18090 RAD51C UBC35 INO80 RAD9
NHEJ $\cap$ established DNA repair	1	XRCC4
BER $\cap$ DNA repair	13	RFC2 RFC3 PARG2 POLD2 SRT1 PARG1 STI PRMT6 emb2411 RFC4 RFC5 POLD4 F14L17.24
NER $\cap$ DNA repair	47	HAC5 RBX1A NRPB2 AT2G45700 CSN3 EMB2765 CDKD-1 AT3G02860 RBX1B CYCH1-1 NRPB3 CSN4 CDKD-3 NRPB10 CSN5A NRPB10L AT3G18790 NRPD7 HAC12 AT1G27420/F17L21.21 HAC04 HAC2 UBP13 NRPB12 UBP12 MTPC4 HAC1 AT2G44980 NRPC2 NRPD3B CSN2 NRPB8B CSN6A NRPD2B CSN6B CSN7 NRPB4 AT3G61800 NRPD2 AT5G28740 NRPB7 CDKD-2 NRPB8A CML20 CSN5B CSN8 AT1G19750
MMR $\cap$ DNA repair	1	EFS
HR $\cap$ DNA repair	61	RPN11 ATIM HTA2 AT3G45930 AT4G06634 UBQ8 UBQ14 AT5G05130 UBQ4 UVR8 UBQ10 HIS4 HTA6 PPX2 DSS1(I) AT4G31210 ANK1 LDL3 AT1G48360 UBQ11 PPX1 AT5G42470 HTA10 HTA5 LRS1 AT5G39770 AT1G07660 HTA3 AT1G07820 HTA12 MRG1 CDKA-1 TEB AT2G45500 MEI1 AT1G20750 UBQ13 AT5G59690 HTA13 AT1G08390 AT5G17070 AT3G07200 AT3G46320 RUB2 AT1G20720 ATM AT5G63690 RAT5 AT1G79950 RPS27AC ISE2 HEN2 AT5G59970 AT3G53730 UBC36 RPS27AB AT1G02670 RPL40B UBQ3 RPS27AA AT3G02820
NHEJ $\cap$ DNA repair	6	AT4G26630 AT2G32760 AT3G48710 AT5G63550 AT5G55660 AT3G03420
DNA repair	101	ATEYA UBC30 NPL41 CDC48E ckl5 AT5G25560 HMGB3 AT1G55040 AXL EMB2454 FZR2 AT1G28120 UBA1 AT5G01290 AT3G62970 CHIP AT2G25240 ADK1 AT3G16220 AT1G11800 CDC20-4 AT3G16230 CDC20-2 CHR11 AT5G18650 AT5G28210 FZR3 AT4G36080 AT4G38495 CKL13 AT3G27640 ARP6 AT1G47710 MIA40 AT1G74770 AT5G22920 AT4G24710 CKL2 AT3G45220 ckl10 ckl8 AT1G62170 UBC8 AT2G03270 AT1G27752 BSH AT1G16690 UBA2 AT2G40600 AT2G17930 UBP24 CK1 CKL6 CHR17 AT2G44510 AT1G55460 AT5G52800 UPL4 UBC29 AT2G23070 UBC9 AT5G03450 CDC48D AT5G27570 AT1G18910 AT5G53770 CDC20-1 ckl12 AT5G35970 UBC11 AT1G35530 AT5G60370 AT2G26390 AT3G01890 UEV1D CKA2 CKA1 AT2G47970 AT5G61190 AT1G34770 CDC20.3 PAPP5 UBC37 ckl7 ARP9 AT3G02200 CHR18 FY UBC10 AT2G18770 CKI1 AT1G79020 SYN4 HMGB2 TAF14 CDC48A UPL3 AT1G24290 HMGB1 FZR1 RIN1
established DNA repair	231	-not presented-

The analytical results of the gene orthology analysis are presented below. Genes shown in **bold** represent the initial genes, while genes that are not in bold represent the new genes arisen from this analysis. HGNC stands for HUGO Gene Nomenclature Committee (<http://www.genenames.org>) and TAIR stands for The Arabidopsis Information Resource (<https://www.arabidopsis.org/index.jsp>).

Table S5. DNA repair genes in human and *Arabidopsis thaliana*, grouped according to orthology.

<i>Homo Sapiens</i>		<i>Arabidopsis thaliana</i>		OrthoMCL Group
Ensembl Gene	HGNC Symbol	TAIR Gene	Gene Name	
ENSG00000065413 ENSG00000139645 ENSG00000206560	ANKRD44 ANKRD52 ANKRD28	AT2G03430 AT5G02620	AT2G03430 ANK1	OG5_126538
ENSG00000164508 ENSG00000180573 ENSG00000181218 ENSG00000184260 ENSG00000184270 ENSG00000188486 ENSG00000196747 ENSG00000196787 ENSG00000196866 ENSG00000203812 ENSG00000274997 ENSG00000276368 ENSG00000277075 ENSG00000278677	HIST1H2AA HIST1H2AC HIST3H2A HIST2H2AC HIST2H2AB H2AFX HIST1H2AI HIST1H2AG HIST1H2AD HIST2H2AA3 HIST1H2AH HIST1H2AJ HIST1H2AE HIST1H2AM	AT1G08880 AT1G51060 AT1G54690 AT3G20670 AT4G27230 AT5G02560 AT5G54640 AT5G59870	HTA5 HTA10 HTA3 HTA13 HTA2 HTA12 RAT5 HTA6	OG5_126570
ENSG00000197061 ENSG00000197238 ENSG00000197837 ENSG00000278705	HIST1H4C HIST1H4J HIST4H4 HIST1H4B	AT1G07660 AT1G07820 AT2G28740 AT3G45930 AT3G46320 AT3G53730 AT5G59690 AT5G59970	AT1G07660 AT1G07820 HIS4 AT3G45930 AT3G46320 AT3G53730 AT5G59690 AT5G59970	OG5_126573
ENSG00000004700 ENSG00000108469 ENSG00000165392 ENSG00000197299	RECQL RECQL5 WRN BLM	AT1G10930 AT1G31360 AT1G60930 AT3G05740 AT4G35740	RECQL4A MED34 RECQL4B RECQL1 RECQL3	OG5_126644
ENSG00000021355 ENSG00000057149 ENSG00000163536 ENSG00000206073	SERPINB1 SERPINB3 SERPINI1 SERPINB4	AT1G47710 AT1G62170 AT1G64030 AT2G14540 AT2G25240 AT2G26390 AT3G45220	AT1G47710 AT1G62170 ATSRP3 ATSRP2 AT2G25240 AT2G26390 AT3G45220	OG5_126693
ENSG00000013503 ENSG00000047315	POLR3B POLR2B	AT3G18090 AT3G23780 AT4G21710 AT5G45140	NRPD2B NRPD2 NRPB2 NRPC2	OG5_126694
ENSG00000150991 ENSG00000170315	UBC UBB	AT1G65350 AT2G35635 AT3G09790 AT4G02890 AT4G05050 AT4G05320	UBQ13 RUB2 UBQ8 UBQ14 UBQ11 UBQ10	OG5_126703

Table S5. Cont.

		AT5G03240 AT5G20620	UBQ3 UBQ4	
ENSG00000123374 ENSG00000164885	CDK2 CDK5	AT3G48750	CDKA-1	OG5_126712
ENSG00000103510 ENSG00000136504 ENSG00000172977	KAT8 KAT7 KAT5	AT5G09740 AT5G64610	HAM2 HAM1	OG5_126735
ENSG00000177302	TOP3A	AT4G31210 AT5G63920	AT4G31210 TOP3A	OG5_126736
ENSG00000029993 ENSG00000164104	HMGB3 HMGB2	AT1G20693 AT1G20696 AT3G51880	HMGB2 HMGB3 HMGB1	OG5_126740
ENSG00000105325 ENSG00000117399	FZR1 CDC20	AT4G11920 AT4G22910 AT4G33260 AT4G33270 AT5G13840 AT5G26900 AT5G27080 AT5G27570	FZR1 FZR2 CDC20-2 CDC20-1 FZR3 CDC20-4 CDC20.3 AT5G27570	OG5_126765
ENSG00000169188	APEX2	AT2G41460 AT3G48425 AT4G36050	ARP APE1L APE2	OG5_126768
ENSG00000113712 ENSG00000141551 ENSG00000180138 ENSG00000213923	CSNK1A1 CSNK1D CSNK1A1L CSNK1E	AT1G03930 AT1G04440 AT1G72710 AT2G19470 AT3G23340 AT4G14340 AT4G26100 AT4G28540 AT5G43320 AT5G44100 AT5G57015	ADK1 CKL13 CKL2 ckl5 ckl10 CKI1 CK1 CKL6 ckl8 ckl7 ckl12	OG5_126780
ENSG00000149273	RPS3	AT2G31610 AT3G53870 AT5G35530	RPS3A RPS3B RPS3C	OG5_126820
ENSG00000048392 ENSG00000171848	RRM2B RRM2	AT3G23580 AT3G27060	RNR2A TSO2	OG5_126823
ENSG00000051180 ENSG00000100206	RAD51 DMC1	AT3G22880 AT5G20850	DMC1 RAD51	OG5_126834
ENSG00000072401 ENSG00000078967 ENSG00000109332 ENSG00000131508	UBE2D1 UBE2D4 UBE2D3 UBE2D2	AT1G64230 AT2G16740 AT3G08690 AT4G27960 AT5G41700 AT5G53300 AT5G56150	UBC28 UBC29 UBC11 UBC9 UBC8 UBC10 UBC30	OG5_126877

Table S5. Cont.

ENSG00000116062	MSH6	AT3G24495 AT4G02070	MSH7 MSH6	OG5_126895
ENSG00000070770	CSNK2A2	AT2G23070 AT2G23080 AT3G50000 AT5G67380	AT2G23070 AT2G23080 CKA2 CKA1	OG5_126901
ENSG00000104889	RNASEH2A	AT2G25100	AT2G25100	OG5_126908
ENSG00000065057	NTHL1	AT1G05900 AT2G31450	NTH2 NTH1	OG5_126913
ENSG00000165280	VCP	AT3G09840 AT3G53230 AT5G03340	CDC48A CDC48D CDC48E	OG5_126926
ENSG00000128951	DUT	AT3G46940	DUT	OG5_126992
ENSG00000111445	RFC5	AT1G14460 AT1G77470 AT2G02480	F14L17.24 RFC5 STI	OG5_127045
ENSG00000116030 ENSG00000184900 ENSG00000188612	SUMO1 SUMO3 SUMO2	AT4G26840 AT5G55160 AT5G55856	SUMO1 SUMO2 SUMO8	OG5_127053
ENSG00000133315 ENSG00000138496	MACROD1 PARP9	AT2G40600	AT2G40600	OG5_127054
ENSG00000021574 ENSG00000132436	SPAST FIGNL1	AT2G45500 AT3G27120	AT2G45500 AT3G27120	OG5_127068
ENSG00000066117 ENSG00000082014 ENSG00000108604 ENSG00000108684 ENSG00000110881	SMARCD1 SMARCD3 SMARCD2 ASIC2 ASIC1	AT3G01890 AT5G14170	AT3G01890 CHC1	OG5_127069
ENSG00000033178 ENSG00000130985 ENSG00000182179	UBA6 UBA1 UBA7	AT2G30110 AT5G06460	UBA1 UBA2	OG5_127070
ENSG00000085999 ENSG00000197275	RAD54L RAD54B	AT3G19210	CHR25	OG5_127098
ENSG00000102038 ENSG00000153147	SMARCA1 SMARCA5	AT3G06400 AT5G18620	CHR11 CHR17	OG5_127117
ENSG00000071794 ENSG00000116830	HLTF TTF2	AT1G02670 AT5G05130 AT5G22750 AT5G43530	AT1G02670 AT5G05130 RAD5 AT5G43530	OG5_127144
ENSG00000077721 ENSG00000119048	UBE2A UBE2B	AT1G14400 AT2G02760 AT5G62540	UBC1 UBC2 UBC3	OG5_127153
ENSG00000008405 ENSG00000121671	CRY1 CRY2	AT1G04400 AT3G15620 AT4G08920	CRY2 UVR3 CRY1	OG5_127186
ENSG00000076242	MLH1	AT4G09140	MLH1	OG5_127201
ENSG00000163161	ERCC3	AT5G41360 AT5G41370	XPB2 XPB1	OG5_127208
ENSG00000198793	MTOR	AT1G50030	TOR	OG5_127212

Table S5. Cont.

ENSG00000143947	RPS27A	AT1G23410 AT2G47110 AT3G62250	RPS27AA RPS27AB RPS27AC	OG5_127221
ENSG00000039123	SKIV2L2	AT1G59760 AT1G70070 AT2G06990	AT1G59760 ISE2 HEN2	OG5_127259
ENSG00000136492 ENSG00000258366	BRIP1 RTEL1	AT1G20720 AT1G20750 AT1G79950	AT1G20720 AT1G20750 AT1G79950	OG5_127294
ENSG00000187109	NAP1L1	AT2G19480 AT4G26110 AT5G56950	NAP1;2 NAP1;1 NAP1;3	OG5_127308
ENSG00000119318 ENSG00000179262	RAD23B RAD23A	AT1G16190 AT1G79650 AT3G02540 AT5G38470	RAD23A RAD23B RAD23C RAD23D	OG5_127320
ENSG00000132646	PCNA	AT1G07370 AT2G29570	PCNA PCNA2	OG5_127352
ENSG00000105486	LIG1	AT1G08130 AT1G49250	LIG1 AT1G49250	OG5_127375
ENSG00000149136	SSRP1	AT3G28730	SSRP1	OG5_127386
ENSG00000122008	POLK	AT1G49980	AT1G49980	OG5_127393
ENSG00000112941 ENSG00000121274	PAPD7 PAPD5	AT5G53770	AT5G53770	OG5_127416
ENSG00000076248	UNG	AT3G18630	ATUNG	OG5_127417
ENSG00000163170 ENSG00000169627 ENSG00000183336	BOLA3 BOLA2B BOLA2	AT5G09830	BOLA2	OG5_127446
ENSG00000072501 ENSG00000077935	SMC1A SMC1B	AT3G54670	TTN8	OG5_127449
ENSG00000035928	RFC1	AT5G22010	RFC1	OG5_127465
ENSG00000168496	FEN1	AT5G26680	FEN1	OG5_127472
ENSG00000105011 ENSG00000111875	ASF1B ASF1A	AT1G66740 AT5G38110	ASF1A ASF1B	OG5_127499
ENSG00000174371	EXO1	AT1G18090 AT1G29630	AT1G18090 EXO1	OG5_127511
ENSG00000095002	MSH2	AT3G18524	MSH2	OG5_127538
ENSG00000132383	RPA1	AT2G06510 AT4G19130 AT5G08020 AT5G45400 AT5G61000	RPA1A RPA1E RPA1B RPA1C RPA1D	OG5_127539
ENSG00000104884	ERCC2	AT1G03190	UVH6	OG5_127585
ENSG00000163312	HELQ	AT4G32700	TEB	OG5_127591
ENSG00000049541	RFC2	AT1G63160	RFC2	OG5_127600
ENSG00000102978	POLR2C	AT2G15400 AT2G15430	NRPD3B NRPB3	OG5_127622
ENSG00000149923	PPP4C	AT4G26720 AT5G55260	PPX1 PPX2	OG5_127639

Table S5. Cont.

ENSG00000177700	POLR2L	AT1G11475 AT1G61700	NRPB10 NRPB10L	OG5_127691
ENSG00000177889	UBE2N	AT1G16890 AT1G78870	UBC36 UBC35	OG5_127739
ENSG00000163029	SMC6	AT5G07660 AT5G61460	SMC6A SMC6B	OG5_127751
ENSG00000115233	PSMD14	AT5G23540	RPN11	OG5_127757
ENSG00000133119	RFC3	AT5G27740	RFC3	OG5_127765
ENSG00000124208 ENSG00000244687	TMEM189 -UBE2V1 UBE2V1	AT1G23260 AT1G70660 AT2G36060 AT3G52560	UEV1A UEV1B UEV1C UEV1D	OG5_127771
ENSG00000187555	USP7	AT3G11910 AT5G06600	UBP13 UBP12	OG5_127773
ENSG00000108055	SMC3	AT2G27170	SMC3	OG5_127789
ENSG00000145736 ENSG00000183474	GTF2H2 GTF2H2C	AT1G05055	ATGTF2H2	OG5_127799
ENSG00000106628	POLD2	AT2G42120	POLD2	OG5_127874
ENSG00000121211	MND1	AT4G29170	MND1	OG5_127882
ENSG00000163882	POLR2H	AT1G54250 AT3G59600	NRPB8A NRPB8B	OG5_127936
ENSG00000175792	RUVBL1	AT5G22330	RIN1	OG5_127944
ENSG0000020922	MRE11A	AT5G54260	MRE11	OG5_127969
ENSG00000175595	ERCC4	AT5G41150	UVH1	OG5_127977
ENSG00000168002	POLR2G	AT3G22900 AT5G59180	NRPD7 NRPB7	OG5_127981
ENSG00000100387	RBX1	AT3G42830 AT5G20570	RBX1B RBX1A	OG5_127986
ENSG00000114026	OGG1	AT1G21710	OGG1	OG5_127994
ENSG00000096401	CDC5L	AT1G09770	CDC5	OG5_128000
ENSG00000122512	PMS2	AT4G02460	PMS1	OG5_128001
ENSG00000111880	RNGTT	AT3G09100 AT5G01290 AT5G28210	AT3G09100 AT5G01290 AT5G28210	OG5_128005
ENSG00000163918	RFC4	AT1G21690	RFC4	OG5_128040
ENSG00000136709	WDR33	AT5G13480	FY	OG5_128052
ENSG00000092201	SUPT16H	AT4G10710	SPT16	OG5_128055
ENSG00000124535	WRNIP1	AT1G24290	AT1G24290	OG5_128067
ENSG00000132781	MUTYH	AT4G12740	MYH	OG5_128159
ENSG00000110107	PRPF19	AT1G04510 AT2G33340	PRP19A PRP19B	OG5_128187
ENSG00000105258	POLR2I	AT3G16980 AT4G16265	NRPB9A NRPB9B	OG5_128243
ENSG00000011485	PPP5C	AT2G42810	PAPP5	OG5_128254
ENSG00000221983	UBA52	AT2G36170 AT3G52590	RPL40B RPL40B	OG5_128257
ENSG00000100479	POLE2	AT5G22110	ATDPB2	OG5_128285
ENSG00000121988 ENSG00000138375	ZRANB3 SMARCA1	AT1G48310	CHR18	OG5_128295

Table S5. Cont.

ENSG00000077080 ENSG00000136518	ACTL6B ACTL6A	AT1G18450	ARP4	OG5_128301
ENSG00000039650	PNKP	AT3G14890	ZDP	OG5_128311
ENSG00000128731	HERC2	AT5G63860	UVR8	OG5_128314
ENSG00000163743	RCHY1	AT1G18910 AT1G74770 AT3G18290 AT3G62970 AT5G18650 AT5G22920 AT5G25560	AT1G18910 AT1G74770 EMB2454 AT3G62970 AT5G18650 AT5G22920 AT5G25560	OG5_128327
ENSG00000240682 ENSG00000261796	ISY1 ISY1-RAB43	AT3G18790	AT3G18790	OG5_128335
ENSG00000144867	SRPRB	AT2G18770 AT5G05670	AT2G18770 AT5G05670	OG5_128347
ENSG00000076924	XAB2	AT5G28740	AT5G28740	OG5_128360
ENSG00000060762	MPC1	AT5G20090	MPC1	OG5_128371
ENSG00000175054	ATR	AT5G40820	ATR	OG5_128386
ENSG00000159259	CHAF1B	AT5G64630	FAS2	OG5_128392
ENSG00000159593	NAE1	AT1G05180 AT2G32410	AXR1 AXL	OG5_128412
ENSG00000129484 ENSG00000143799	PARP2 PARP1	AT2G31320 AT4G02390	PARP1 PARP2	OG5_128423
ENSG00000121022	COPS5	AT1G22920 AT1G71230	CSN5B CSN5A	OG5_128438
ENSG00000153827	TRIP12	AT4G38600 AT5G02880	UPL3 UPL4	OG5_128439
ENSG00000132740	IGHMBP2	AT2G03270 AT5G35970	AT2G03270 AT5G35970	OG5_128468
ENSG00000131153	GIN52	AT3G12530	GIN52	OG5_128484
ENSG00000127337	YEATS4	AT2G18000 AT5G45600	TAF14 TAF14B	OG5_128501
ENSG00000170734	POLH	AT5G44740	POLH	OG5_128521
ENSG00000154767	XPC	AT5G16630	ATRAD4	OG5_128561
ENSG00000182446	NPLOC4	AT2G47970 AT3G63000	AT2G47970 NPL41	OG5_128565
ENSG00000120616 ENSG00000135999	EPC1 EPC2	AT1G16690 AT1G79020	AT1G16690 AT1G79020	OG5_128576
ENSG00000151657	KIN	AT1G55460	AT1G55460	OG5_128587
ENSG00000144231	POLR2D	AT5G09920	NRPB4	OG5_128606
ENSG00000198887	SMC5	AT5G15920	SMC5	OG5_128615
ENSG00000135945	REV1	AT5G44750	REV1	OG5_128628
ENSG00000187790	FANCM	AT1G35530	AT1G35530	OG5_128649
ENSG00000009413	REV3L	AT1G55040 AT1G67500	AT1G55040 REV3	OG5_128651
ENSG00000176635	HORMAD2	AT1G67370	ASY1	OG5_128667
ENSG00000134899	ERCC5	AT3G28030	UVH3	OG5_128675
ENSG00000166200	COPS2	AT2G26990	CSN2	OG5_128688
ENSG0000012061	ERCC1	AT3G05210	ERCC1	OG5_128697

Table S5. Cont.

ENSG00000132207 ENSG00000181625	SLX1A SLX1B	AT2G30350	AT2G30350	OG5_128732
ENSG00000225830	ERCC6	AT2G18760	CHR8	OG5_128748
ENSG00000227345	PARG	AT2G31865 AT2G31870	PARG2 PARG1	OG5_128766
ENSG00000117748	RPA2	AT2G24490 AT3G02920	RPA2A RPA2B	OG5_128774
ENSG0000014138	POLA2	AT1G67630	POLA2	OG5_128793
ENSG00000181555	SETD2	AT1G77300	EFS	OG5_128830
ENSG00000147400 ENSG00000177143	CETN2 CETN1	AT3G50360	CML20	OG5_128884
ENSG00000213780 ENSG00000221974 ENSG00000226384 ENSG00000233149 ENSG00000234370 ENSG00000236895	GTF2H4 GTF2H4 GTF2H4 GTF2H4 GTF2H4 GTF2H4	AT4G17020	AT4G17020	OG5_128887
ENSG00000147536	GIN54	AT5G49010	SLD5	OG5_128888
ENSG00000196367	TRRAP	AT2G17930 AT4G36080	AT2G17930 AT4G36080	OG5_128900
ENSG00000185787	MORF4L1	AT4G37280	MGR1	OG5_128923
ENSG00000139842 ENSG00000158290	CUL4A CUL4B	AT5G46210	CUL4	OG5_128927
ENSG00000163781	TOPBP1	AT1G77320	MEI1	OG5_128953
ENSG00000149311	ATM	AT3G48190	ATM	OG5_128955
ENSG00000166896	XRCC6BP1	AT3G03420	AT3G03420	OG5_128965
ENSG00000089723 ENSG00000167770	OTUB2 OTUB1	AT1G28120	AT1G28120	OG5_128982
ENSG00000178028	DMAP1	AT2G47210	SWC4	OG5_128988
ENSG00000071539	TRIP13	AT4G24710	AT4G24710	OG5_128995
ENSG00000107949	BCCIP	AT2G44510	AT2G44510	OG5_129004
ENSG00000111652 ENSG00000144524	COPS7A COPS7B	AT1G02090	CSN7	OG5_129008
ENSG00000125885	MCM8	AT3G09660	MCM8	OG5_129017
ENSG00000042088	TDP1	AT5G15170	TDP1	OG5_129037
ENSG00000107672	NSMCE4A	AT1G51130 AT3G20760	NSE4A NSE4B	OG5_129062
ENSG00000196419	XRCC6	AT1G16970	KU70	OG5_129086
ENSG00000198924	DCLRE1A	AT2G45700 AT3G26680	AT2G45700 SNM1	OG5_129094
ENSG00000111358	GTF2H3	AT1G18340	AT1G18340	OG5_129096
ENSG00000141446 ENSG00000171320	ESCO1 ESCO2	AT4G31400	CTF7	OG5_129141
ENSG00000172732	MUS81	AT4G30870 AT5G39770	MUS81 AT5G39770	OG5_129162
ENSG00000005339 ENSG00000100393	CREBBP EP300	AT1G16710 AT1G55970 AT1G67220 AT1G79000 AT3G12980	HAC12 HAC04 HAC2 HAC1 HAC5	OG5_129174

Table S5. Cont.

ENSG00000134058	CDK7	AT1G18040 AT1G66750 AT1G73690	CDKD-3 CDKD-2 CDKD-1	OG5_129224
ENSG00000149100	EIF3M	AT3G02200 AT5G15610	AT3G02200 AT5G15610	OG5_129237
ENSG00000134480	CCNH	AT5G27620	CYCH1-1	OG5_129254
ENSG00000103194	USP10	AT4G30890	UBP24	OG5_129274
ENSG00000163104	SMARCAD1	AT2G02090	ETL1	OG5_129286
ENSG00000093009	CDC45	AT3G25100	CDC45	OG5_129331
ENSG00000137074	APTX	AT5G01310	BHLH140	OG5_129343
ENSG00000079246	XRCC5	AT1G48050	KU80	OG5_129372
ENSG00000227314 ENSG00000230293 ENSG00000235222 ENSG00000235569	MSH5 MSH5 MSH5 MSH5	AT3G20475	MSH5	OG5_129379
ENSG00000152942	RAD17	AT5G66130	RAD17	OG5_129387
ENSG00000021776	AQR	AT2G38770	EMB2765	OG5_129398
ENSG00000085224	ATRX	AT1G08600	ATRX	OG5_129416
ENSG00000134453	RBM17	AT1G30480	DRT111	OG5_129437
ENSG00000138678 ENSG00000158669	GPAT3 GPAT4	AT5G60620	GPAT9	OG5_129480
ENSG00000164754	RAD21	AT5G16270	SYN4	OG5_129513
ENSG00000100601	ALKBH1	AT1G11780	AT1G11780	OG5_129589
ENSG00000151092	NGLY1	AT5G49570	PNG1	OG5_129623
ENSG00000138346	DNA2	AT1G08840	emb2411	OG5_129631
ENSG00000163528	CHCHD4	AT5G23395	MIA40	OG5_129637
ENSG00000138663	COPS4	AT5G42970	CSN4	OG5_129642
ENSG00000167986	DDB1	AT4G05420 AT4G21100	DDB1A DDB1B	OG5_129644
ENSG00000169189	NSMCE1	AT5G21140	emb1379	OG5_129651
ENSG00000075089	ACTR6	AT3G33520	ARP6	OG5_129661
ENSG00000104313 ENSG00000112319	EYA1 EYA4	AT2G35320	ATEYA	OG5_129664
ENSG00000141030	COPS3	AT5G14250	CSN3	OG5_129714
ENSG00000114742	WDR48	AT3G05090	LRS1	OG5_129752
ENSG00000167670	CHAF1A	AT1G65470	FAS1	OG5_129755
ENSG00000068878	PSME4	AT3G13330	PA200	OG5_129781
ENSG00000103266	STUB1	AT3G07370	CHIP	OG5_129825
ENSG00000099956	SMARCB1	AT3G17590	BSH	OG5_129866
ENSG00000151164 ENSG00000172613	RAD9B RAD9A	AT3G05480	RAD9	OG5_129960
ENSG00000110768	GTF2H1	AT1G55750 AT3G61420	TFB1-1 TFB1-3	OG5_129968
ENSG00000273899	NOL12	AT1G11240	AT1G11240	OG5_129994
ENSG00000111877	MCM9	AT2G14050	MCM9	OG5_130040
ENSG00000057468	MSH4	AT4G17380	MSH4	OG5_130077
ENSG00000077463	SIRT6	AT5G55760	SRT1	OG5_130121
ENSG00000147669	POLR2K	AT5G41010	NRPB12	OG5_130124
ENSG00000174405	LIG4	AT5G57160	LIG4	OG5_130132
ENSG00000103152	MPG	AT3G12040	MAG	OG5_130143

Table S5. Cont.

ENSG00000127922	SHFM1	AT1G64750 AT5G45010	DSS1(I) ATDSS1(V)	OG5_130158
ENSG00000197771	MCMBP	AT2G40550	ETG1	OG5_130164
ENSG00000168090	COPS6	AT4G26430 AT5G56280	CSN6B CSN6A	OG5_130197
ENSG00000153391	INO80C	AT4G38495	AT4G38495	OG5_130230
ENSG00000101442	ACTR5	AT3G12380	ARP5	OG5_130234
ENSG00000075131	TIPIN	AT3G02820	AT3G02820	OG5_130239
ENSG00000128908	INO80	AT3G57300	INO80	OG5_130269
ENSG00000113318	MSH3	AT4G25540	MSH3	OG5_130351
ENSG00000198690	FAN1	AT1G48360	AT1G48360	OG5_130379
ENSG00000113456	RAD1	AT4G17760	AT4G17760	OG5_130438
ENSG00000004487	KDM1A	AT4G16310	LDL3	OG5_130448
ENSG00000113812	ACTR8	AT5G43500	ARP9	OG5_130536
ENSG00000119684	MLH3	AT4G35520	MLH3	OG5_130552
ENSG00000077514	POLD3	AT1G78650	POLD3	OG5_130668
ENSG00000143476	DTL	AT3G27640	AT3G27640	OG5_130781
ENSG00000124795	DEK	AT3G48710 AT4G26630 AT5G55660 AT5G63550	AT3G48710 AT4G26630 AT5G55660 AT5G63550	OG5_130851
ENSG00000138303	ASCC1	AT3G16220 AT3G16230	AT3G16220 AT3G16230	OG5_130866
ENSG00000049167	ERCC8	AT1G19750 AT1G27840	AT1G19750 ATCSA-1	OG5_130892
ENSG00000139579 ENSG00000173559	NABP2 NABP1	AT5G63690	AT5G63690	OG5_130959
ENSG00000126215	XRCC3	AT5G57450	XRCC3	OG5_131019
ENSG00000108384	RAD51C	AT2G45280	RAD51C	OG5_131246
ENSG00000185838	GNB1L	AT4G29860	DSE1	OG5_131248
ENSG00000156831	NSMCE2	AT3G15150	MMS21	OG5_131427
ENSG00000014824	SLC30A9	AT1G51610	MTPC4	OG5_131446
ENSG00000116670	MAD2L2	AT1G16590	REV7	OG5_131503
ENSG00000168411	RFWD3	AT5G03450	AT5G03450	OG5_131611
ENSG00000164002	EXO5	AT5G60370	AT5G60370	OG5_131645
ENSG00000198382	UVRAG	AT2G32760	AT2G32760	OG5_131718
ENSG00000198783	ZNF830	AT3G02860	AT3G02860	OG5_131737
ENSG00000111802	TDP2	AT1G11800	AT1G11800	OG5_131766
ENSG00000111602	TIMELESS	AT5G52910	ATIM	OG5_131860
ENSG00000139618	BRCA2	AT4G00020 AT5G01630	BRCA2A BRCA2B	OG5_131863
ENSG00000164306	PRIMPOL	AT5G52800	AT5G52800	OG5_131904
ENSG00000140525	FANCI	AT5G49110	AT5G49110	OG5_131962
ENSG00000166169	POLL	AT1G10520	AT1G10520	OG5_132021
ENSG00000198612	COPS8	AT4G14110	CSN8	OG5_132111
ENSG00000143207	RFWD2	AT2G32950	COP1	OG5_132181
ENSG00000163605	PPP4R2	AT5G17070	AT5G17070	OG5_132213
ENSG00000115392	FANCL	AT5G65740	AT5G65740	OG5_132368
ENSG00000140543	DET1	AT4G10180	DET1	OG5_132401
ENSG00000167740	CYB5D2	AT4G14965	MAPR4	OG5_132425

Table S5. Cont.

ENSG00000100325	ASCC2	AT1G27752	AT1G27752	OG5_132432
ENSG00000182150	ERCC6L2	AT1G03750	SWI2	OG5_132588
ENSG00000175482	POLD4	AT1G09815	POLD4	OG5_132598
ENSG00000144554	FANCD2	AT4G14970	AT4G14970	OG5_132711
ENSG00000073050	XRCC1	AT1G80420	XRCC1	OG5_132817
ENSG00000100811	YY1	AT4G06634	AT4G06634	OG5_132824
ENSG00000230797	YY2			
ENSG00000185379	RAD51D	AT1G07745	RAD51D	OG5_132909
ENSG00000152253	SPC25	AT3G48210	AT3G48210	OG5_132949
ENSG00000104320	NBN	AT3G02680	NBS1	OG5_133106
ENSG00000077152	UBE2T	AT3G24515	UBC37	OG5_133146
ENSG00000196584	XRCC2	AT5G64520	XRCC2	OG5_133234
ENSG00000079616	KIF22	AT5G02370	AT5G02370	OG5_133348
ENSG00000214941	ZSWIM7	AT4G33925	AT4G33925	OG5_133488
ENSG00000163945	UVSSA	AT3G61800	AT3G61800	OG5_133565
ENSG00000185115	NDNL2	AT1G34770	AT1G34770	OG5_133962
ENSG00000178295	GEN1	AT1G01880	GEN1	OG5_134343
ENSG00000166783	KIAA0430	AT5G61190	AT5G61190	OG5_134363
ENSG00000198890	PRMT6	AT3G20020	PRMT6	OG5_134380
ENSG00000166199	ALKBH3	AT2G22260	ALKBH2	OG5_134523
ENSG00000063978	RNF4	AT3G07200	AT3G07200	OG5_134631
ENSG00000118655	DCLRE1B	AT1G27410	AT1G27420/ F17L21.21	OG5_135047
ENSG00000131778	CHD1L	AT2G44980	AT2G44980	OG5_135107
ENSG00000152422	XRCC4	AT3G23100	XRCC4	OG5_135131
ENSG00000182185	RAD51B	AT2G28560	RAD51B	OG5_135350
ENSG00000158019	BRE	AT5G42470	AT5G42470	OG5_135444
ENSG00000134574	DDB2	AT5G58760	DDB2	OG5_136585
ENSG00000175643	RMI2	AT1G08390	AT1G08390	OG5_139541
ENSG00000154328	NEIL2	AT1G52500	FPG1	OG5_147326

Table S6. BER genes in human and *Arabidopsis thaliana*, grouped according to orthology.

<i>Homo sapiens</i>		<i>Arabidopsis thaliana</i>		OrthoMCL Group
Ensembl Gene	HGNC Symbol	TAIR Gene	Gene Name	
ENSG00000004700	RECQL	AT1G10930	RECQL4A	OG5_126644
ENSG00000108469	RECQL5	AT1G31360	MED34	
ENSG00000165392	WRN	AT1G60930	RECQL4B	
ENSG00000197299	BLM	AT3G05740	RECQL1	
		AT4G35740	RECQL3	
ENSG00000169188	APEX2	AT2G41460	ARP	OG5_126768
		AT3G48425	APE1L	
		AT4G36050	APE2	
ENSG00000065057	NTHL1	AT1G05900	NTH2	OG5_126913
		AT2G31450	NTH1	
ENSG00000111445	RFC5	AT1G14460	F14L17.24	OG5_127045
		AT1G77470	RFC5	
		AT2G02480	STI	

Table S6. Cont.

ENSG00000132646	PCNA	AT1G07370 AT2G29570	PCNA PCNA2	OG5_127352
ENSG00000105486	LIG1	AT1G08130 AT1G49250	LIG1 AT1G49250	OG5_127375
ENSG00000076248	UNG	AT3G18630	ATUNG	OG5_127417
ENSG00000035928	RFC1	AT5G22010	RFC1	OG5_127465
ENSG00000168496	FEN1	AT5G26680	FEN1	OG5_127472
ENSG00000132383	RPA1	AT2G06510 AT4G19130 AT5G08020 AT5G45400 AT5G61000	RPA1A RPA1E RPA1B RPA1C RPA1D	OG5_127539
ENSG00000049541	RFC2	AT1G63160	RFC2	OG5_127600
ENSG00000133119	RFC3	AT5G27740	RFC3	OG5_127765
ENSG00000106628	POLD2	AT2G42120	POLD2	OG5_127874
ENSG00000020922	MRE11A	AT5G54260	MRE11	OG5_127969
ENSG00000114026	OGG1	AT1G21710	OGG1	OG5_127994
ENSG00000163918	RFC4	AT1G21690	RFC4	OG5_128040
ENSG00000132781	MUTYH	AT4G12740	MYH	OG5_128159
ENSG00000039650	PNKP	AT3G14890	ZDP	OG5_128311
ENSG00000129484	PARP2	AT2G31320	PARP1	OG5_128423
ENSG00000143799	PARP1	AT4G02390	PARP2	
ENSG00000225830	ERCC6	AT2G18760	CHR8	OG5_128748
ENSG00000227345	PARG	AT2G31865 AT2G31870	PARG2 PARG1	OG5_128766
ENSG00000117748	RPA2	AT2G24490 AT3G02920	RPA2A RPA2B	OG5_128774
ENSG00000138346	DNA2	AT1G08840	emb2411	OG5_129631
ENSG00000077463	SIRT6	AT5G55760	SRT1	OG5_130121
ENSG00000103152	MPG	AT3G12040	MAG	OG5_130143
ENSG00000077514	POLD3	AT1G78650	POLD3	OG5_130668
ENSG00000175482	POLD4	AT1G09815	POLD4	OG5_132598
ENSG00000073050	XRCC1	AT1G80420	XRCC1	OG5_132817
ENSG00000198890	PRMT6	AT3G20020	PRMT6	OG5_134380
ENSG00000154328	NEIL2	AT1G52500	FPG1	OG5_147326

Table S7. NER genes in human and *Arabidopsis thaliana*, grouped according to orthology.

<i>Homo sapiens</i>		<i>Arabidopsis thaliana</i>		OrthoMCL Group
EnsEMBL Gene	HGNC Symbol	TAIR Gene	Gene Name	
ENSG00000013503 ENSG00000047315	POLR3B POLR2B	AT3G18090 AT3G23780 AT4G21710 AT5G45140	NRPD2B NRPD2 NRPB2 NRPC2	OG5_126694
ENSG00000116030 ENSG00000184900 ENSG00000188612	SUMO1 SUMO3 SUMO2	AT4G26840 AT5G55160 AT5G55856	SUMO1 SUMO2 SUMO8	OG5_127053
ENSG00000163161	ERCC3	AT5G41360 AT5G41370	XPB2 XPB1	OG5_127208

Table S7. Cont.

ENSG00000119318 ENSG00000179262	RAD23B RAD23A	AT1G16190 AT1G79650 AT3G02540 AT5G38470	RAD23A RAD23B RAD23C RAD23D	OG5_127320
ENSG00000122008	POLK	AT1G49980	AT1G49980	OG5_127393
ENSG00000104884	ERCC2	AT1G03190	UVH6	OG5_127585
ENSG00000102978	POLR2C	AT2G15400 AT2G15430	NRPD3B NRPB3	OG5_127622
ENSG00000177700	POLR2L	AT1G11475 AT1G61700	NRPB10 NRPB10L	OG5_127691
ENSG00000187555	USP7	AT3G11910 AT5G06600	UBP13 UBP12	OG5_127773
ENSG00000145736 ENSG00000183474	GTF2H2 GTF2H2C	AT1G05055	ATGTF2H2	OG5_127799
ENSG00000163882	POLR2H	AT1G54250 AT3G59600	NRPB8A NRPB8B	OG5_127936
ENSG00000168002	POLR2G	AT3G22900 AT5G59180	NRPD7 NRPB7	OG5_127981
ENSG00000100387	RBX1	AT3G42830 AT5G20570	RBX1B RBX1A	OG5_127986
ENSG00000110107	PRPF19	AT1G04510 AT2G33340	PRP19A PRP19B	OG5_128187
ENSG00000105258	POLR2I	AT3G16980 AT4G16265	NRPB9A NRPB9B	OG5_128243
ENSG00000240682 ENSG00000261796	ISY1 ISY1-RAB43	AT3G18790	AT3G18790	OG5_128335
ENSG00000076924	XAB2	AT5G28740	AT5G28740	OG5_128360
ENSG00000121022	COPS5	AT1G22920 AT1G71230	CSN5B CSN5A	OG5_128438
ENSG00000154767	XPC	AT5G16630	ATRAD4	OG5_128561
ENSG00000144231	POLR2D	AT5G09920	NRPB4	OG5_128606
ENSG00000134899	ERCC5	AT3G28030	UVH3	OG5_128675
ENSG00000166200	COPS2	AT2G26990	CSN2	OG5_128688
ENSG00000147400 ENSG00000177143	CETN2 CETN1	AT3G50360	CML20	OG5_128884
ENSG00000213780 ENSG00000221974 ENSG00000226384 ENSG00000233149 ENSG00000234370 ENSG00000236895	GTF2H4 GTF2H4 GTF2H4 GTF2H4 GTF2H4 GTF2H4	AT4G17020	AT4G17020	OG5_128887
ENSG00000139842 ENSG00000158290	CUL4A CUL4B	AT5G46210	CUL4	OG5_128927
ENSG00000111652 ENSG00000144524	COPS7A COPS7B	AT1G02090	CSN7	OG5_129008
ENSG00000198924	DCLRE1A	AT2G45700 AT3G26680	AT2G45700 SNM1	OG5_129094
ENSG00000111358	GTF2H3	AT1G18340	AT1G18340	OG5_129096

Table S7. Cont.

ENSG00000005339 ENSG00000100393	CREBBP EP300	AT1G16710 AT1G55970 AT1G67220 AT1G79000 AT3G12980	HAC12 HAC04 HAC2 HAC1 HAC5	OG5_129174
ENSG00000134058	CDK7	AT1G18040 AT1G66750 AT1G73690	CDKD-3 CDKD-2 CDKD-1	OG5_129224
ENSG00000134480	CCNH	AT5G27620	CYCH1-1	OG5_129254
ENSG00000021776	AQR	AT2G38770	EMB2765	OG5_129398
ENSG00000151092	NGLY1	AT5G49570	PNG1	OG5_129623
ENSG00000138663	COPS4	AT5G42970	CSN4	OG5_129642
ENSG00000167986	DDB1	AT4G05420 AT4G21100	DDB1A DDB1B	OG5_129644
ENSG00000141030	COPS3	AT5G14250	CSN3	OG5_129714
ENSG00000110768	GTF2H1	AT1G55750 AT3G61420	TFB1-1 TFB1-3	OG5_129968
ENSG00000147669	POLR2K	AT5G41010	NRPB12	OG5_130124
ENSG00000174405	LIG4	AT5G57160	LIG4	OG5_130132
ENSG00000168090	COPS6	AT4G26430 AT5G56280	CSN6B CSN6A	OG5_130197
ENSG00000049167	ERCC8	AT1G19750 AT1G27840	AT1G19750 ATCSA-1	OG5_130892
ENSG00000014824	SLC30A9	AT1G51610	MTPC4	OG5_131446
ENSG00000198783	ZNF830	AT3G02860	AT3G02860	OG5_131737
ENSG00000166169	POLL	AT1G10520	AT1G10520	OG5_132021
ENSG00000198612	COPS8	AT4G14110	CSN8	OG5_132111
ENSG00000163945	UVSSA	AT3G61800	AT3G61800	OG5_133565
ENSG00000118655	DCLRE1B	AT1G27410	AT1G27420/ F17L21.21	OG5_135047
ENSG00000131778	CHD1L	AT2G44980	AT2G44980	OG5_135107
ENSG00000134574	DDB2	AT5G58760	DDB2	OG5_136585

Table S8. MMR genes in human and *Arabidopsis thaliana*, grouped according to orthology.

<i>Homo sapiens</i>		<i>Arabidopsis thaliana</i>		OrthoMCL Group
Ensembl Gene	HGNC Symbol	TAIR Gene	Gene Name	
ENSG00000116062	MSH6	AT3G24495 AT4G02070	MSH7 MSH6	OG5_126895
ENSG00000104889	RNASEH2A	AT2G25100	AT2G25100	OG5_126908
ENSG00000076242	MLH1	AT4G09140	MLH1	OG5_127201
ENSG00000132646	PCNA	AT1G07370 AT2G29570	PCNA PCNA2	OG5_127352
ENSG00000095002	MSH2	AT3G18524	MSH2	OG5_127538
ENSG00000122512	PMS2	AT4G02460	PMS1	OG5_128001
ENSG00000181555	SETD2	AT1G77300	EFS	OG5_128830
ENSG00000227314 ENSG00000230293 ENSG00000235222 ENSG00000235569	MSH5 MSH5 MSH5 MSH5	AT3G20475	MSH5	OG5_129379
ENSG00000057468	MSH4	AT4G17380	MSH4	OG5_130077
ENSG00000113318	MSH3	AT4G25540	MSH3	OG5_130351
ENSG00000119684	MLH3	AT4G35520	MLH3	OG5_130552

Table S9. HR genes in human and *Arabidopsis thaliana*, grouped according to orthology.

<i>Homo sapiens</i>		<i>Arabidopsis thaliana</i>		OrthoMCL Group
Ensembl Gene	HGNC Symbol	TAIR Gene	Gene Name	
ENSG000000065413	ANKRD44	AT2G03430	AT2G03430	OG5_126538
ENSG00000139645	ANKRD52	AT5G02620	ANK1	
ENSG00000206560	ANKRD28			
ENSG00000164508	HIST1H2AA	AT1G08880	HTA5	OG5_126570
ENSG00000180573	HIST1H2AC	AT1G51060	HTA10	
ENSG00000181218	HIST3H2A	AT1G54690	HTA3	
ENSG00000184260	HIST2H2AC	AT3G20670	HTA13	
ENSG00000184270	HIST2H2AB	AT4G27230	HTA2	
ENSG00000188486	H2AFX	AT5G02560	HTA12	
ENSG00000196747	HIST1H2AI	AT5G54640	RAT5	
ENSG00000196787	HIST1H2AG	AT5G59870	HTA6	
ENSG00000196866	HIST1H2AD			
ENSG00000203812	HIST2H2AA3			
ENSG00000274997	HIST1H2AH			
ENSG00000276368	HIST1H2AJ			
ENSG00000277075	HIST1H2AE			
ENSG00000278677	HIST1H2AM			
ENSG00000197061	HIST1H4C	AT1G07660	AT1G07660	OG5_126573
ENSG00000197238	HIST1H4J	AT1G07820	AT1G07820	
ENSG00000197837	HIST4H4	AT2G28740	HIS4	
ENSG00000278705	HIST1H4B	AT3G45930	AT3G45930	
		AT3G46320	AT3G46320	
		AT3G53730	AT3G53730	
		AT5G59690	AT5G59690	
		AT5G59970	AT5G59970	
ENSG00000004700	RECQL	AT1G10930	RECQL4A	OG5_126644
ENSG00000108469	RECQL5	AT1G31360	MED34	
ENSG00000165392	WRN	AT1G60930	RECQL4B	
ENSG00000197299	BLM	AT3G05740	RECQL1	
		AT4G35740	RECQL3	
ENSG00000150991	UBC	AT1G65350	UBQ13	OG5_126703
ENSG00000170315	UBB	AT2G35635	RUB2	
		AT3G09790	UBQ8	
		AT4G02890	UBQ14	
		AT4G05050	UBQ11	
		AT4G05320	UBQ10	
		AT5G03240	UBQ3	
		AT5G20620	UBQ4	

Table S9. Cont.

ENSG00000123374 ENSG00000164885	CDK2 CDK5	AT3G48750	CDKA-1	OG5_126712
ENSG00000103510 ENSG00000136504 ENSG00000172977	KAT8 KAT7 KAT5	AT5G09740 AT5G64610	HAM2 HAM1	OG5_126735
ENSG00000177302	TOP3A	AT4G31210 AT5G63920	AT4G31210 TOP3A	OG5_126736
ENSG00000051180 ENSG00000100206	RAD51 DMC1	AT3G22880 AT5G20850	DMC1 RAD51	OG5_126834
ENSG00000116030 ENSG00000184900 ENSG00000188612	SUMO1 SUMO3 SUMO2	AT4G26840 AT5G55160 AT5G55856	SUMO1 SUMO2 SUMO8	OG5_127053
ENSG00000021574 ENSG00000132436	SPAST FIGNL1	AT2G45500 AT3G27120	AT2G45500 AT3G27120	OG5_127068
ENSG00000085999 ENSG00000197275	RAD54L RAD54B	AT3G19210	CHR25	OG5_127098
ENSG00000071794 ENSG00000116830	HLTF TTF2	AT1G02670 AT5G05130 AT5G22750 AT5G43530	AT1G02670 AT5G05130 RAD5 AT5G43530	OG5_127144
ENSG00000198793	MTOR	AT1G50030	TOR	OG5_127212
ENSG00000143947	RPS27A	AT1G23410 AT2G47110 AT3G62250	RPS27AA RPS27AB RPS27AC	OG5_127221
ENSG00000039123	SKIV2L2	AT1G59760 AT1G70070 AT2G06990	AT1G59760 ISE2 HEN2	OG5_127259
ENSG00000136492 ENSG00000258366	BRIP1 RTEL1	AT1G20720 AT1G20750 AT1G79950	AT1G20720 AT1G20750 AT1G79950	OG5_127294
ENSG00000163170 ENSG00000169627 ENSG00000183336	BOLA3 BOLA2B BOLA2	AT5G09830	BOLA2	OG5_127446
ENSG00000105011 ENSG00000111875	ASF1B ASF1A	AT1G66740 AT5G38110	ASF1A ASF1B	OG5_127499
ENSG00000174371	EXO1	AT1G18090 AT1G29630	AT1G18090 EXO1	OG5_127511
ENSG00000163312	HELQ	AT4G32700	TEB	OG5_127591
ENSG00000149923	PPP4C	AT4G26720 AT5G55260	PPX1 PPX2	OG5_127639
ENSG00000177889	UBE2N	AT1G16890 AT1G78870	UBC36 UBC35	OG5_127739
ENSG00000163029	SMC6	AT5G07660 AT5G61460	SMC6A SMC6B	OG5_127751
ENSG00000115233	PSMD14	AT5G23540	RPN11	OG5_127757
ENSG00000175595	ERCC4	AT5G41150	UVH1	OG5_127977
ENSG00000221983	UBA52	AT2G36170 AT3G52590	RPL40B RPL40B	OG5_128257
ENSG00000128731	HERC2	AT5G63860	UVR8	OG5_128314
ENSG00000175054	ATR	AT5G40820	ATR	OG5_128386

Table S9. Cont.

ENSG00000159259	CHAF1B	AT5G64630	FAS2	OG5_128392
ENSG00000131153	GIN52	AT3G12530	GIN52	OG5_128484
ENSG00000198887	SMC5	AT5G15920	SMC5	OG5_128615
ENSG0000012061	ERCC1	AT3G05210	ERCC1	OG5_128697
ENSG00000132207	SLX1A	AT2G30350	AT2G30350	OG5_128732
ENSG00000181625	SLX1B			
ENSG0000014138	POLA2	AT1G67630	POLA2	OG5_128793
ENSG00000147536	GIN54	AT5G49010	SLD5	OG5_128888
ENSG00000185787	MORF4L1	AT4G37280	MRG1	OG5_128923
ENSG00000163781	TOPBP1	AT1G77320	MEI1	OG5_128953
ENSG00000149311	ATM	AT3G48190	ATM	OG5_128955
ENSG00000125885	MCM8	AT3G09660	MCM8	OG5_129017
ENSG00000141446	ESCO1	AT4G31400	CTF7	OG5_129141
ENSG00000171320	ESCO2			
ENSG00000172732	MUS81	AT4G30870 AT5G39770	MUS81 AT5G39770	OG5_129162
ENSG00000093009	CDC45	AT3G25100	CDC45	OG5_129331
ENSG00000152942	RAD17	AT5G66130	RAD17	OG5_129387
ENSG00000169189	NSMCE1	AT5G21140	emb1379	OG5_129651
ENSG00000114742	WDR48	AT3G05090	LRS1	OG5_129752
ENSG00000167670	CHAF1A	AT1G65470	FAS1	OG5_129755
ENSG00000151164	RAD9B	AT3G05480	RAD9	OG5_129960
ENSG00000172613	RAD9A			
ENSG00000111877	MCM9	AT2G14050	MCM9	OG5_130040
ENSG00000127922	SHFM1	AT1G64750 AT5G45010	DSS1(I) ATDSS1(V)	OG5_130158
ENSG00000075131	TIPIN	AT3G02820	AT3G02820	OG5_130239
ENSG00000128908	INO80	AT3G57300	INO80	OG5_130269
ENSG00000198690	FAN1	AT1G48360	AT1G48360	OG5_130379
ENSG00000113456	RAD1	AT4G17760	AT4G17760	OG5_130438
ENSG00000004487	KDM1A	AT4G16310	LDL3	OG5_130448
ENSG00000077514	POLD3	AT1G78650	POLD3	OG5_130668
ENSG00000139579	NABP2	AT5G63690	AT5G63690	OG5_130959
ENSG00000173559	NABP1			
ENSG00000126215	XRCC3	AT5G57450	XRCC3	OG5_131019
ENSG00000108384	RAD51C	AT2G45280	RAD51C	OG5_131246
ENSG00000156831	NSMCE2	AT3G15150	MMS21	OG5_131427
ENSG00000111602	TIMELESS	AT5G52910	ATIM	OG5_131860
ENSG00000139618	BRCA2	AT4G00020 AT5G01630	BRCA2A BRCA2B	OG5_131863
ENSG00000163605	PPP4R2	AT5G17070	AT5G17070	OG5_132213
ENSG00000100811	YY1	AT4G06634	AT4G06634	OG5_132824
ENSG00000230797	YY2			
ENSG00000185379	RAD51D	AT1G07745	RAD51D	OG5_132909
ENSG00000152253	SPC25	AT3G48210	AT3G48210	OG5_132949
ENSG00000104320	NBN	AT3G02680	NBS1	OG5_133106
ENSG00000196584	XRCC2	AT5G64520	XRCC2	OG5_133234
ENSG00000214941	ZSWIM7	AT4G33925	AT4G33925	OG5_133488
ENSG00000178295	GEN1	AT1G01880	GEN1	OG5_134343
ENSG00000063978	RNF4	AT3G07200	AT3G07200	OG5_134631
ENSG00000182185	RAD51B	AT2G28560	RAD51B	OG5_135350
ENSG00000158019	BRE	AT5G42470	AT5G42470	OG5_135444
ENSG00000175643	RMI2	AT1G08390	AT1G08390	OG5_139541

Table S10. NHEJ genes in human and *Arabidopsis thaliana*, grouped according to orthology.

<i>Homo sapiens</i>		<i>Arabidopsis thaliana</i>		OrthoMCL Group
Ensembl Gene	HGNC Symbol	TAIR Gene	Gene Name	
ENSG00000129484	PARP2	AT2G31320	PARP1	OG5_128423
ENSG00000143799	PARP1	AT4G02390	PARP2	
ENSG00000166896	XRCC6BP1	AT3G03420	AT3G03420	OG5_128965
ENSG00000196419	XRCC6	AT1G16970	KU70	OG5_129086
ENSG00000079246	XRCC5	AT1G48050	KU80	OG5_129372
ENSG00000124795	DEK	AT3G48710 AT4G26630 AT5G55660 AT5G63550	AT3G48710 AT4G26630 AT5G55660 AT5G63550	OG5_130851
ENSG00000198382	UVRAG	AT2G32760	AT2G32760	OG5_131718
ENSG00000073050	XRCC1	AT1G80420	XRCC1	OG5_132817
ENSG00000152422	XRCC4	AT3G23100	XRCC4	OG5_135131