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Supplementary Table S2 - Genes involved in the significantly enriched gene ontology biological processes (GO) and Kyoto Encyclopedia of Genes and Genomes (KEGG) pathways among differentially expressed genes in keratinocytes from psoriasis lesions compared to those from healthy skin (PP vs. H comparison).

Term	Overlap	P-value	Adjusted P-value	Z-score	Genes
DNA-dependent DNA replication (GO:0006261)	40/118	1.56E-15	1.21E-11	-3.19	BLM;FEN1;RNASEH2A;MCM8;MCM10;BRCA1;POLB;BRIP1;CDC45;ORC1;EXO1;CHEK1;RBBP8;REV3L;CLSPN;RFC5;TIPIIN;RFC3;RFC4;RFC1;REV1;CDC7;BAZ1A;CDC6;CDC25C;TICRR;POLA1;POLA2;RAD50;DBF4;NASP;POLE2;CDK1;MCM3;TIMELESS;MCM5;DNA2;MCM6;TOP1;ATR
DNA replication (GO:0006260)	37/125	2.01E-12	3.90E-09	-3.16	BLM;FEN1;RNASEH2A;MCM8;MCM10;BRCA1;BRIP1;CDC45;ORC1;EXO1;CHEK1;RBBP8;CLSPN;KPN2A;RFC5;TIPIN;RFC3;RFC4;REV1;CDC7;CDC6;CDC25C;TICRR;POLA1;POLA2;RAD50;DBF4;NASP;POLE2;CDK1;MCM3;TIMELESS;MCM5;DNA2;MCM6;TOP1;ATR
Double-strand break repair (GO:0006302)	42/164	1.32E-11	2.04E-08	-3.26	BLM;VCP;FEN1;PRKDC;BRCC3;BRCA1;PDS5A;BRCA2;RAD51AP1;POLB;BRIP1;EXO1;CHEK1;RBBP8;RFC5;MBD4;NPM1;PARP4;XRCC4;DTX3L;FANCL;XRCC2;RECQL;FANCA;BAZ1B;SMC1A;GTF2H3;PARP9;TICRR;RNF168;SETX;RAD50;RAD51C;MSH3;FANCD2;POLE2;UBE2T;PSME4;CDK1;TRIP13;RAD18;ATR
G2/M transition of mitotic cell cycle (GO:0000086)	35/130	1.49E-10	1.44E-07	-3.13	CEP57;CUL1;CCP110;HMMR;FOXM1;AURKA;CCNB2;CCNB1;CEP70;CNTRL;NEK2;CEP290;CEP78;PLK4;OFD1;HSP90A1;BORA;PPP1R12A;CEP135;CEP152;PLK1;HAUS6;CDC25C;TUBG1;MASTL;CKAP5;CDC25B;HAUS1;CCNA2;TPX2;MELK;CENPJ;AKAP9;CDK1;FGFR1OP
Viral DNA repair (GO:0046787)	38/160	1.28E-09	8.27E-07	-3.31	BLM;VCP;FEN1;NUP107;PDS5A;NUP160;RAD51AP1;POLB;EXO1;CHEK1;TPR;RBBP8;RCC1;NUP88;RFC5;NDC1;RANBP2;MBD4;NPM1;PARP4;FANCL;XRCC2;RECQL;FANCA;SMC1A;GTF2H3;TICRR;RAD50;RAD51C;MSH3;FANCD2;POLE2;UBE2T;PSME4;CDK1;RAD18;ATR;NUP37
DNA repair (GO:0006281)	54/279	1.70E-09	1.01E-06	-3.99	TOP2A;FEN1;MCM8;SMC5;MCM10;SMC6;BRCA1;POLB;NIPBL;EXO1;CHEK1;ZC3H12A;KPN2A;RFC5;USP47;PARP4;DTX3L;RECQL;BAZ1B;MASTL;SMC1A;RNF168;RAD51C;MSH3;FANCD2;PSME4;TIMELESS;DTL;BLM;VCP;USP16;BOD1L1;PDS5A;RAD51AP1;RBBP8;RBBP6;LYN;MBD4;NPM1;FANCL;XRCC2;FANCA;GTF2H3;USP28;TICRR;SETX;RAD50;APC;POLE2;UBE2T;CDK1;ERCC8;RAD18;ATR
Keratinocyte development (GO:0003334)	16/59	1.29E-05	8.56E-04	-2.32	SPRR2E;CERS3;SPRR2F;MBD4;CSTA;WNT5A;TGM1;KRT16;ADAM9;SPRR2A;SPRR2B;SPRR1B;JVL;S100A7;EPH A2;SPRR2D
Keratinocyte differentiation (GO:0030216)	19/80	1.68E-05	1.03E-03	-2.56	SPRR2E;CERS3;SPRR2F;MBD4;CSTA;HDAC2;HDAC1;WNT5A;TGM1;KRT16;ADAM9;ITGA6;SPRR2A;SPRR2B;SPRR1B;JVL;S100A7;EPHA2;SPRR2D
NIK/NF-kappaB signaling (GO:0038061)	16/64	3.90E-05	2.19E-03	-2.28	PSMD12;PSMD14;CHUK;CUL1;NFKB1;PSMA5;PSMB6;PSMA6;PSMA3;PSMA4;PSMB5;PSMC4;PSMA2;PSME4;PSMD1;PSME2
Type I interferon signaling pathway (GO:0060337)	27/148	5.68E-05	3.00E-03	-2.95	IFITM3;IFITM1;SP100;IFITM2;IFI6;ADAR;IFIT1;SAMHD1;LRP8;IFIT3;OASL;GBP2;RSAD2;STAT1;STAT2;MX1;STAT3;IL36G;IRAK3;FER;IFI27;OAS1;OAS2;IFNE;OAS3;XAF1;MYD88

GO-BP
up-regulated

Term	Overlap	P-value	Adjusted P-value	Z-score	Genes
Limb spinoous cell differentiation (GO:0060890)	18/59	1.88E-12	6.87E-10	-2.66	SPRR4;FLG;CDSN;LCE1E;LCE1F;LCE1C;LOR;LCE2D;LCE1D;LCE1A;LCE2B;SCEL;LCE1B;LCE2C;ACER1;LCE2A;LCE5A;TXNIP
Limb granular cell differentiation (GO:0060891)	18/59	1.88E-12	6.87E-10	-2.65	SPRR4;FLG;CDSN;LCE1E;LCE1F;LCE1C;LOR;LCE2D;LCE1D;LCE1A;LCE2B;SCEL;LCE1B;LCE2C;ACER1;LCE2A;LCE5A;TXNIP
Keratinocyte development (GO:0003334)	18/59	1.88E-12	6.87E-10	-2.63	SPRR4;FLG;CDSN;LCE1E;LCE1F;LCE1C;LOR;LCE2D;LCE1D;LCE1A;LCE2B;SCEL;LCE1B;LCE2C;ACER1;LCE2A;LCE5A;TXNIP
Keratinocyte differentiation (GO:0030216)	20/80	6.78E-12	1.20E-09	-2.80	SPRR4;FLG;CDSN;PDGFA;LCE1E;LCE1F;ASPRV1;LCE1C;LOR;LCE2D;LCE1D;LCE1A;LCE2B;SCEL;LCE1B;LCE2C;ACER1;LCE2A;LCE5A;TXNIP
Skin epidermis development (GO:0098773)	18/94	7.82E-09	1.18E-06	-2.84	FLG;CDSN;KRT2;KLK5;PDGFA;LAMC2;KRT31;ASPRV1;LOR;ALDH3A2;LCE2B;SCEL;CASP14;ACER1;DCT;KRT15;GJB5;TGM5
Epidermis development (GO:0008544)	14/68	1.39E-07	2.05E-05	-2.49	CDSN;KRT2;KLK5;LAMC2;KRT31;ALDH3A2;LCE2B;SCEL;CASP14;ACER1;DCT;KRT15;GJB5;TGM5
Epidermis morphogenesis (GO:0048730)	14/75	5.00E-07	7.18E-05	-2.54	CDSN;KRT2;KLK5;LAMC2;KRT31;ALDH3A2;LCE2B;SCEL;CASP14;ACER1;DCT;KRT15;GJB5;TGM5
Epidermal cell differentiation (GO:0009913)	17/124	2.91E-06	4.08E-04	-2.98	CDSN;KRT2;KLK5;LAMC2;KRT31;ALDH3A2;LCE2B;SCEL;ACER1;LGALS3;CASP14;UPK1A;DCT;KRT15;GJB5;ALDO;TGM5
Peptide cross-linking (GO:0018149)	17/128	4.52E-06	6.19E-04	-3.22	SPRR4;FLG;KRT2;FN1;LCE1E;LCE1F;LCE1C;LOR;LCE2D;LCE1D;LCE1A;LCE2B;LCE1B;LCE2C;LCE2A;LCE5A;TGM5
Fat cell differentiation (GO:0045444)	9/44	2.57E-05	3.36E-03	-2.64	NR4A2;TFAP2B;NR4A1;EGR2;NR4A3;INHBB;KLF4;ALOXE3;FOXO1

GO-BP
down-regulated

Term	Overlap	P-value	Adjusted P-value	Z-score	Genes
Cell cycle_Homo sapiens_hsa04110	39/124	5.75E-14	1.57E-11	-1.73	RB1;HDAC2;PCNA;PRKDC;YWHAB;HDAC1;CUL1;TTK;SMC3;CDC20;CCNB2;CCNB1;CCND2;CDC45;PTTG1;ORC1;YWHAQ;CHEK1;E2F4;SKP2;BUB1;ANAPC7;PLK1;CDC7;CDC6;CDC25C;SMC1A;CDC25B;CCNA2;RBL1;DBF4;CCNE2;CDK1;MCM3;MCM5;MCM6;ANAPC1;MAD2L1;ATR
Ribosome biogenesis in eukaryotes_Homo sapiens_hsa03008	26/89	5.15E-09	4.72E-07	-1.96	RBM28;POP1;WDR3;HEATR1;FCF1;SPATA5;WDR43;EFTUD1;BMS1;RIOK1;UTP14A;NOP56;WDR36;NOP58;UTP6;RPP40;WDR75;REXO2;GNL2;GTPBP4;GNL3;CIRH1A;DKC1;XRN2;MPHOSPH10;NOP10
DNA replication_Homo sapiens_hsa03030	16/36	5.20E-09	4.72E-07	-1.87	RFC5;RFC3;FEN1;RFC4;RNASEH2A;PCNA;RFC1;PRIM1;POLD3;POLA1;POLA2;POLE2;MCM3;MCM5;MCM6;DNA2
Metabolic pathways_Homo sapiens_hsa01100	143/1239	1.01E-05	5.48E-04	-1.91	PANK2;GDA;TUSC3;ATP5C1;ENO1;COX6A1;EPRS;SAT1;CNBDP2;NSDHL;PNP;PPAT;LIPG;NAMPT;CKMT1B;MCCC2;ALG8;ALG2;ACSL3;PGD;SDHB;ACLY;MTAP;FOLH1;MTHFD1;MTHFD2;SUCLG1;UQCRC2;LAP3;ALDH7A1;DGKH;DNMT1;RPN2;MAOB;AK2;PLA2G3;UAP1;FUT2;ADH7;ACAT2;UQCRL;ACACA;ADH5;PLD2;ATP5B;ALDH3B2;RDH11;ATP5E;PGK1;PNPO;ATP6V1D;COX10;PDHA1;GOT1;IDH1;PMM2;GOT2;ALOX15B;DHFR;EXT1;POLA1;SQLE;COQ3;POLA2;AKR1B10;CYCS;HPSE;COX7B;ALAS1;AMD1;PYGL;ATP5G3;PIGW;PIK3C2A;HK2;AT1C;SPTLC2;ALDH2;KYN;ME1;HYAL4;REV3L;PGM2;MAN1A1;ACADM;DLAT;AASS;HIBCH;IDH3A;CERS3;TP1;PLA2G4D;HMGCS1;UGT1A1;PLA2G4E;PGAM1;CTPS1;QRSL1;PKM;BDH1;PCCA;POLR1B;DPYD;AGPS;PGAM4;TKT;PIGF;GART;AGPAT5;N DUF89;FH;PON2;PRIM1;NDUFB3;ALOX12B;UQCRL10;NT5C2;TYMS;COX5A;PAPSS2;SRM;AGPAT4;POLD3;GCNT4;XDH;NDUFA9;GALNT6;RRM1;RRM2;MDH1;GK;GCH1;GALNT3;NDUFA4;CKMT1A;AGL;NDUFA1;UQCRLH;SUCLA2;CYP24A1;POLE2;NDUFA1;POLR3G
Fanconi anemia pathway_Homo sapiens_hsa03460	15/53	1.37E-05	6.19E-04	-1.58	FANCI;BLM;FANCM;FANCL;REV1;FANCA;BRCA1;FANCB;BRCA2;BRIP1;RAD51C;FANCD2;UBE2T;REV3L;ATR
RNA transport_Homo sapiens_hsa03013	31/172	2.13E-05	8.28E-04	-1.72	E1F4A1;NUP107;POP1;E1F4A3;NUP160;PNN;TGS1;TPR;NUP88;EIF4E;UPF2;NDC1;RANBP2;EIF5B;PRMT5;EIF2B2;NCBP1;ELAC2;RPP40;THOC1;UPF3B;THOC2;EIF2S2;EIF2S1;EIF5;XPOT;EIF3;EIF4G3;EIF3A;KPNB1;NUP37
Proteasome_Homo sapiens_hsa03050	13/44	3.08E-05	1.05E-03	-1.38	PSMD12;PSMD14;PSMA5;PSMB6;PSMA6;PSMA3;PSMA4;PSMB5;PSMA2;PSMC4;PSME4;PSME2;PSMD1
Influenza A_Homo sapiens_hsa05164	27/175	9.36E-04	1.40E-02	-1.53	CXCL8;TMPRSS4;ADAR;IFIH1;TBK1;TNFSF10;CASP1;TRIM25;KPN2A;HSPA8;IL13;RSAD2;DDX58;STAT1;IFNGR1;STAT2;MX1;EIF2AK2;TNFRSF10A;EIF2S1;NFKB1;CXCL10;OAS1;OAS2;OAS3;CYCS;MYD88
Oxidative phosphorylation_Homo sapiens_hsa00190	22/133	1.06E-03	1.45E-02	-1.34	NDUFA9;NDUFB9;COX7B;NDUFA4;NDUFB3;NDUFA1;ATP5C1;UQCRL10;ATP5G3;COX6A1;ATP12A;SDHB;COX5A;UQCRLH;UQCRLH;ATP5B;PPA1;ATP5E;NDUFA1;UQCRC2;ATP6V1D;COX10
TGF-beta signaling pathway_Homo sapiens_hsa04350	7/84	3.46E-02	3.30E-01	-1.18	BMP2;SMURF2;FST;ID4;INHBB;DCN;TGFB2

KEGG
up-regulated

Term	Overlap	P-value	Adjusted P-value	Z-score	Genes
Circadian rhythm_Homo sapiens_hsa04710	8/30	9.05E-06	2.17E-03	-1.97	CRY2;BHLHE41;CRY1;RORC;RORA;NR1D1;NPAS2;ARNTL
Melanogenesis_Homo sapiens_hsa04916	12/100	2.98E-04	3.58E-02	-1.91	DCT;PRKCB;FZD7;WNT7B;KIT;TYRP1;FZD8;MITF;ADCY2;FZD10;TYR;WNT2
Basal cell carcinoma_Homo sapiens_hsa05217	7/55	3.82E-03	1.53E-01	-1.70	BMP2;FZD7;WNT7B;FZD8;FZD10;WNT2;GLI2
MAPK signaling pathway_Homo sapiens_hsa04010	18/255	6.34E-03	2.14E-01	-1.85	DUSP5;NTRK2;JUN;JUND;GADD45B;PRKCB;DUSP1;CACNA2D1;PDGFA;FOS;HSPA2;CACNA1H;TGFB2;NR4A1;DUSP10;DDIT3;FGF22;HSPA1A
AGE-RAGE signaling pathway in diabetic complications_Homo sapiens_hsa04933	9/101	1.19E-02	2.51E-01	-1.78	EGR1;JUN;CCND1;PRKCB;FN1;BCL2;F3;FOXO1;TGFB2
HTLV-I infection_Homo sapiens_hsa05166	17/258	1.48E-02	2.51E-01	-1.67	EGR1;EGR2;HLA-DRB5;JUN;FZD7;WNT7B;FZD8;PDGFA;NFATC2;ADCY2;FZD10;FOS;TGFB2;ZFP36;CCND1;WNT2;ATF3
Wnt signaling pathway_Homo sapiens_hsa04310	11/142	1.57E-02	2.51E-01	-1.52	JUN;CCND1;PRKCB;FZD7;WNT7B;CTNNBIP1;CSNK2A2;FZD8;NFATC2;FZD10;WNT2
Apoptosis_Homo sapiens_hsa04210	10/140	3.37E-02	3.30E-01	-1.40	JUN;GADD45B;DDIT3;BCL2;PMAIP1;CTSH;CTSV;CTSF;FOS;SPTAN1
Tight junction_Homo sapiens_hsa04530	10/139	3.23E-02	3.30E-01	-1.22	RAB38;OCLN;PRKCB;CLDN8;CSNK2A2;CLDN23;MYH14;MYL9;CLDN1;SPTAN1
TGF-beta signaling pathway_Homo sapiens_hsa04350	7/84	3.46E-02	3.30E-01	-1.18	BMP2;SMURF2;FST;ID4;INHBB;DCN;TGFB2

KEGG
down-regulated