Table S.I. List of genes (50 most induced and 50 most repressed) uniquely regulated in undifferentiated HESCs upon treatment with H_2O_2.

Induced genes			Repressed genes		
Gene Symbol	**Gene Name**	**fold change**	**Gene Symbol**	**Gene Name**	**fold change**
RRAD	Ras-related associated with diabetes	10.5	TRPC6	Transient receptor potential cation channel, subfamily C, member 6	-5.0
EPC1	Enhancer of polycomb homolog 1 (Drosophila)	5.9	ASPM	Asp (abnormal spindle)-like, microcephaly associated (Drosophila)	-5.0
ATF3	Activating transcription factor 3	5.2	PLEKHK1	Pleckstrin homology domain containing family K member 1	-4.7
KITLG	KIT ligand	4.5	RUNX1T1	Runt-related transcription factor 1; translocated to, 1 (cyclin D-related)	-4.1
TNFRSF 10A	Tumor necrosis factor receptor superfamily, member 10a	4.4	ROBO2	Roundabout, axon guidance receptor, homolog 2 (Drosophila)	-4.1
E2F7	E2F transcription factor 7	4.3	STK6	Serine/threonine kinase 6	-3.9
ABL2	v-abl Abelson murine leukaemia viral oncogene homolog 2 (arg, Abelson-related gene)	4.3	RBMS3	RNA binding motif, single stranded interacting protein	-3.9
SESN1	Sestrin 1	4.2	PDE5A	Phosphodiesterase 5A, cGMP-specific	-3.9
C21orf91	Chromosome 21 open reading frame 91	4.0	C6orf32	Chromosome 6 open reading frame 32	-3.8
NPTX2	Neuronal pentraxin II	4.0	ST6GAL2	ST6 beta-galactosamide alpha-2,6-sialyltransferase 2	-3.8
LOC346887	Similar to solute carrier family 16 (monocarboxylic acid transporters), member 14	3.9	CALD1	Caldesmon 1	-3.8
DYRK3	Dual-specificity tyrosine-(Y)-phosphorylation regulated kinase 3	3.8	BNC2	Basonuclin 2	-3.8
AQP3	Aquaporin 3	3.6	TOP2A	Topoisomerase (DNA) II alpha 170kDa	-3.7
ARL8	ADP-ribosylation factor-like 8	3.6	SERTAD4	SERTA domain containing 4	-3.6
HMGA2	High mobility group AT-hook 2; high mobility group AT-hook 2	3.5	VPS13B	Vacuolar protein sorting 13B (yeast)	-3.4
CPM	Carboxypeptidase M	3.4	PRICKLE1	Prickle-like 1 (Drosophila)	-3.4
RSL1D1	Ribosomal L1 domain containing 1	3.4	THBS1	Thrombospondin 1	-3.4
LOC130502	Similar to CG14894-PA	3.4	GNA14	Guanine nucleotide binding protein (G protein), alpha 14	-3.3
PEO1	Progressive external ophthalmoplegia 1	3.4	SPRY1	Sprouty homolog 1, antagonist of FGF signalling (Drosophila)	-3.3
GCLM	glutamate-cysteine ligase, modifier subunit	3.4	ANKRD32	Ankyrin repeat domain 32	-3.3
SERPINB2	Serpin peptidase inhibitor, clade B (ovalbumin), member 2	3.4	MEOX1	Mesenchyme homeo box 1	-3.2
MAFF	v-maf musculoaponeurotic fibrosarcoma oncogene homolog F (avian)	3.3	CCNB1	Cyclin B1	-3.2
BTG2	BTG family, member 2	3.3	SYNPO2	Synaptopodin 2	-3.1
Chromosome 6 open	Chromosome 6 open reading frame 160	3.2	AMSH-LP	Associated molecule with the SH3 domain of STAM (AMSH) like protein	-3.1
LOC285958	Hypothetical protein LOC285958	3.2	SEMA5A	Sema domain, seven thrombospondin repeat (type 1 and type 1-like), transmembrane domain (TM) and short cytoplasmic domain, (semaphorin) 5A	-3.0
HSUP1	Similar to RPE-spondin	3.2	TCF4	Transcription factor 4	-3.0
KLF4	Kruppel-like factor 4 (gut)	3.2	LRRN3	Leucine rich repeat neuronal 3	-3.0
TNFRSF10B	Tumor necrosis factor receptor superfamily, member 10b	3.2	MAML3	Mastermind-like 3 (Drosophila)	-3.0
SPRY2	Sprouty homolog 2 (Drosophila)	3.1	PTCH	Patched homolog (Drosophila)	-3.0
RPL37A	Ribosomal protein L37a	3.1	DLG7	Discs, large homolog 7	-3.0

				(Drosohila)	
SUM	Eukaryotic translation initiation factor 1	3.1	MXRA5	Matrix-remodeling associated 5	-3.0
C1orf55	Chromosome 1 open reading frame 55	3.0	KIF11	Kinesin family member 11	-3.0
SLC3A2	Solute carrier family 3 (activators of dibasic and neutral amino acid transport), member 2	3.0	DOCK4	Dedicator of cytokinesis 4	-3.0
RPS28	Ribosomal protein S28	3.0	NR2F1	Nuclear receptor subfamily 2, group F, member 1	-3.0
TNFAIP6	Tumor necrosis factor, alpha-induced protein 6	2.9	TNFRSF19	Tumor necrosis factor receptor superfamily, member 19	-3.0
TFAM	Transcription facto A, mitochondrial	2.9	DOC1	Downregulated in ovarian cancer	-3.0
RNU47	RNA, U47 small nuclear	2.9	FLJ23514	Hypothetical protein FLJ23514	-2.9
HSPB8	Heat shock 22kDa protein 8	2.9	FOXO1A	Forkhead box O1A (rhabdomyosarcoma)	-2.9
CCRN4L	CCR4 carbon catabolite repression 4-like (S. cerevisiae)	2.9	KIF23	Kinesin family member 23	-2.9
KIAA1718	KIAA1718 protein	2.8	TCF7L2	Transcription factor 7-like 2 (T-cell specific, HMG-box)	-2.9
ZNF654	Zinc finger protein 654	2.8	NHLRC2	NHL repeat containing 2	-2.9
TEX10	Testis expressed sequence 10	2.8	PGRMC2	Progesterone receptor membrane componenet 2	-2.9
FBXO32	F-box protein 32	2.8	SLC16A7	Solute carrier family 16 (monocarboxylic acid transporters), member 7	-2.9
RNU47; GAS5	RNA, U47 small nuclear; growth arrest-specific 5	2.8	FLJ30707	Hypothetical protein FLJ30707	-2.9
NKX3-1	NK3 transcription factor related, locus 1 (Drosophila)	2.8	LOC90624	Hypothetical protein LOC90624	-2.8
PHLDA3	Pleckstrin homology-like domain, family A, member 3	2.8	HOXA11	Homeo box A11	-2.8
FBXW7	F-box and WD-40 domain protein 7 (archipelago homolog, Drosophila)	2.8	ITPR2	Inositol 1,4,5-triphosphate receptor, type 2	-2.8
MAK3	Mak3 homolog (S.cerevisiae)	2.8	NUDT12	Nudix (nucleoside diphosphate linked moiety X)-type motif 12	-2.8
TOB1	Transcucer of ERBB2. 1	2.8	ARHGAP18	Rho GTPase activating protein 18	-2.8
SFRS1	Splicing factor, arginine/serine-rich 1 (splicing factor 2, alternate splicing factor)	2.8	IGFBP7	Insulin-like growth factor binding protein 7	-2.8

Table S.II. List of genes (50 most induced and 50 most repressed) uniquely regulated in decidualized HESCs upon treatment with H_2O_2.

Induced genes			Repressed genes		
Gene Symbol	**Gene Name**	**fold change**	**Gene Symbol**	**Gene Name**	**fold change**
BRE	Brain and reproductive organ-expressed (TNFRSF1A modulator)	6.8	PLCL1	Phospholipase C-like 1	-4.0
NR4A2	Nuclear receptor subfamily 4, group A, member 2	6.6	CCDC8	Coiled-coil domain containing 8	-3.7
AKR1C1	Aldo-keto reductase family 1, member C1 (dihydrodiol dehydrogenase 1; 20-alpha (3-alpha)-hydroxysteroid dehydrogenase)	5.2	C18orf1	Chromosome 18 open reading frame 1	-3.7
AKR1C2	Aldo-keto reductase family 1, member C2 (dihydrodiol dehydrogenase 2; bile acid binding protein; 3-alpha hydroxysteroid dehydrogenase, type III)	4.8	RGS2	Regulator of G-protein signalling 2, 24kDa	-3.4
CMKOR1	Chemokine orphan receptor 1	4.7	NDP	Norrie disease (pseudoglioma)	-3.3
ZNF267	Zinc finger protein 267	4.5	LRRC16	Leucine rich repeat containing 16	-3.2
LMCD1	LIM and cysteine-rich domains 1	4.4	CDC42EP3	CDC42 effector protein (Rho GTPase binding) 3	-3.1
AHR	Aryl hydrocarbon receptor	4.3	ITPR1	Inositol 1,4,5-triphosphate receptor, type 1	-3.0
DUSP6	Dual specificity phosphatase 6	4.3	NRXN1	Neurexin 1	-2.8
IQCG	IQ motif containing G	4.1	AOX1	Adehyde oxidase 1	-2.8
FRMD6	FERM domain containing 6	4.1	SERPINB9	Serpin peptidase inhibitor, clade B (ovalbumin), member 9	-2.7
KLHL24	Kelch-like 24 (Drosophila)	4.0	EEF2K	Eukaryotic elongation factor-2 kinase	-2.7
GADD45G	Growth arrest and DNA-damage-inducible, gamma	3.9	ADAMTS9	ADAM metallopeptidase with thrombospondin type 1 motif, 9	-2.7
GJA7	Gap junction protein, alpha 7, 45kDa (connexion 45)	3.8	DOK6	Docking protein 6	-2.7
BACH1	BTB and CNC homology 1, basic leucine zipper transcription factor 1	3.8	KIAA0367	KIAA0367	-2.7
YOD1	YOD1 OUT deubiquinating enzyme 1 homolog (yeast)	3.7	EBF	Early B-cell factor	-2.6
PCDH9	Protocadherin 9	3.6	LOC286025	Hypothetical protein LOC28602	-2.6
SOD2	Superoxide dismutase 2, mitochondrial	3.6	KIAA0182	KIAA0182 protein	-2.6
C6orf166	Chromosome 6 open reading frame 166	3.5	ZBTB20	Zinc finger and BTB domain containing 20	-2.6
PRDM1	PR domain containing 1, with ZNF domain	3.4	KIAA1377	KIAA1377 protein	-2.6
PDE4B	Phosphodiesterase 4B, cAMP-specific (phosphodiesterase E4 dunce homolog, Drosophila)	3.4	KALRN	Kalirin, RhoGEF kinase	-2.5
AMPD3	Adenosine monophosphate deaminase (isoform E)	3.4	RORB	RAR-related orphan receptor B	-2.5
KLF6	Kruppel-like factor 6	3.4	VSP13D	Vacuolar protein sorting 13D (yeast)	-2.5
CDKN2B	Cyclin-dependent kinase inhibitor 2B (p15, inhibits CDK4)	3.4	KLHDC1	Kelch domain containing 1	-2.5
YPEL2	Yippee-like 2 (Drosophila)	3.3	BBX	Bobby sox homlog (Drosophila)	-2.5
CD44	CD44 antigen (homing function and Indian blood group system)	3.3	GREB1	GREB1 protein	-2.5
FGF7; FLJ30435	Fibroblast growth factor 7 (keratinocyte growth factor); hypothetical protein FLJ30435	3.3	ZNF18	Zinc finger protein 18 (KOX 11)	-2.4
FGF2	Fibroblast growth factor 2 (basic)	3.3	PDLIM5	PDZ and LIM domain 5	-2.4
PPP1R14C	Protein phosphatae 1, regulatoy (inhibitor) subunit 14C	3.3	NEXN	Nexilin (F actin binding protein)	-2.4
LRRC8C	Leucine rich repeat containing	3.2	EMX2	Empty spiracles homolog 2	-2.4

	8 family, member C			(Drosophila)	
HIST1H2AE	Histone 1, H2ae	3.2	COL4A6	Collagen, type IV, alpha 6	-2.4
ARRDC3	Arrestin domain containing 3	3.2	AUTS2	Autism susceptibility cancidate 2	-2.3
DUSP10	Dual specificity phosphatase 10	3.1	MBNL2	Muxclebind-like 2 (Drosophila)	-2.3
RBBP6	Retinoblastoma binding protein 6	3.1	HMGCR	3-hydroxy-3-methylgutaryl-Coenzyme A reductae	-2.3
KIAA0590	WD and tetratricopeptide repeats 2	3.1	STAU2	Staufen, RNA binding protein, homolog 2 (Drosophila)	-2.3
HIST1H3D	Histone 1, H3d	3.1	KCNE3	Potassium voltage-gated channel, Isk-related family, member 3	-2.3
RORA	RAR-related orphan receptor A	3.1	CDC42BPA	CDC42 binding protein kinase alpha (DMPK-like)	-2.3
MGC29814	Hypothetical protein MGC29814	3.1	CDKN1C	Cyclin-dependent kinase inhibitor 1C (p57, Kip2)	-2.3
IL6R	Interleukin 6 receptor	3.1	KAL1	Kallmann syndrome 1 sequence	-2.3
CPEB2	Cytoplasmic polyadenylation element binding protein 2	3.0	CTGF	Connective tissue growth factor	-2.2
HLX1	H2.0-like homeo box 1 (Drosophila)	3.0	PANK1	Pantothenate kinase 1	-2.2
HIST2H2AA	Histone 2, H2aa	2.9	MGC2474	Hypothetical protein MGC2474	-2.2
ZNF297B	Zinc finger protein 297B	2.9	HDAC4	Histone deacetylase 4	-2.2
LOC91614	Novel 58.3 KDA protein	2.8	ACACB	Acetyl-Coenzyme A carboxylase beta	-2.2
AK3L1	Adeylate kinase 3-like 1	2.8	MBNL2	Musclebind-like 2 (Drosophila)	-2.2
LOC162073	Hypothetical protein LOC162073	2.8	LOC220929	Hypothetical protein LOC220929	-2.2
C20orf82	Chromosome 20 open reading frame 82	2.8	THAP8	THAP domain containing 8	-2.2
RUNX2	Runt-related transcription factor	2.8	LAMA2	Laminin, alpha 2 (merosin, congenital muscular dystrophy)	-2.2
SQSTM1	Sequestosome 1	2.8	SORCS1	Sortilin-related VPS10 domain containing receptor 1	-2.2
LARP2	La ribonucleoprotein domain family, member 2	2.7	SFRS3	Splicing factor, arginine/serine-rich 3	-2.2

Table S.III. List of genes (50 most induced and the 43 repressed) regulated in both undifferentiated and decidualized HESCs upon treatment with H_2O_2.

Induced genes			Repressed genes		
Gene Symbol	**Gene Name**	**fold change**	**Gene Symbol**	**Gene Name**	**fold change**
HMOX1	Heme oxygenase (decycling) 1	24.2/23.1	13CDNA73	Hypothetical protein CG003	-6.8/-5.3
GDF15	Growth differentiation factor 15	12.5/10.6	RBMS3	RNA binding motif, single stranded interacting protein	-3.3/-3.2
IL8	Interleukin 8	4.4/7.2	MYH10	Myosin, heavy polypeptide 10, non-muscle	-3.9/-3.1
KLHL21	Kelch-like 21 (drosophila)	7.4/6.8	CALD1	Caldesmon 1	-3.3/-3.0
GEM	GTP binding protein overexpressed in skeletal muscle	5.1/6.4	COL1A1	Collagen, type I, alpha 1	-2.1/-3.0
ATF3	Activating transcription factor 3	6.3/6.3	COL12A1	Collagen, type XII, alpha 1	-3.0/-3.0
MGC5370	Hypothetical protein MGC5370	6.8/6.2	VPS13B	Vacuolar protein sorting 13B (yeast)	-3.0/-2.9
CDKN1A	Cyclin-dependent kinase inhibitor 1A (p21, Cip1)	2.3/5.7	TCF7L2	Transcription factor 7-like 2 (T-cell specific, HMG-box)	-3.0/-2.9
PPP1R15A	Protein phosphatase 1, regulatory (inhibitor) subunit 15A	4.5/5.7	ZBTB20	Zinc finger and BTB domain containing 20	-2.6/-2.9
TRIB1	Tribbles homolog 1 (Drosophila)	2.3/5.4	ARHGAP18	Rho GTPase activating protein 18	-2.6/-2.8
DUSP5	Dual specificity phosphatase 5	4.1/5.2	MEIS1	Meis1, myeloid ecotropic viral integration site 1 homolog (mouse)	-2.5/-2.8
MAFF	v-maf musculoaponeurotic fibrosarcoma oncogene homolog F (avian)	2.4/5.0	LPP	LIM domain containing preferred translocation partner in lipoma	-2.9/-2.8
FOSL1	FOS-like antigen 1	4.8/4.9	PPM1H	Protein phosphatase 1H (PP2C domatin containing)	-2.7/-2.7
KIAA1754	KIAA1754	4.1/4.7	TXNIP	Thioredoxin interacting protein	-2.6/-2.7
BMP2	Bone morphogenetic protein 2	2.4/4.5	FZD2	Frizzled homolog 2 (Drosophila)	-2.7/-2.7
PMAIP1	Phorbol-12-myristate-13-acetate-induced protein 1	3.2/4.5	COL3A1	Collagen, type III, alpha 1 (Ehlers-Danios syndrome type IV, autosomal dominant)	-3.0/-2.7
HIST1H2BG	Histone 1, H2bg	3.6/4.5	KCND2	Potassium voltage-gated channel, Shai-related subfamily, member 2	-3.0/-2.6
JMY	Junction-mediating and regulatory protein	3.3/4.4	AGPS	Alkylglycerone phosphate synthase	-2.6/-2.6
DKFZP564I0422	THAP domain containing, apoptosis associated protein 2	3.1/4.4	NLGN4X	Neuroligin 4, X-linked	-2.8/-2.6
TNFRSF10D	Tumor necrosis factor receptor superfamily, member 10d, decoy with truncated death domain	5.2/4.3	ESR1	Estrogen receptor 1	-3.2/-2.6
PPF	Peptidylprolyl isomerase F (cyclophilin F)	6.1/4.3	KIAA1043	KIAA1043 protein	-2.9/-2.6
GADD45A	Growth arrest and DNA-damage inducible, alpha	3.7/4.3	DIAPH2	Diaphanous homolog 2 (Drosophila)	-2.5/-2.5
PLK2	Polo-like kinase 2 (Drosophila)	3.7/4.2	LRBA	LPS-responsive vesicle trafficking, beach and anchor containing	-2.6/-2.5
RPM1D	Protein phosphatase 1D magnesium-dependent, delta isoform	5.8/4.2	UTRN	Utrophin (homologous to dystrophin)	-2.4/-2.5
LOC284801	Hypothetical protein LOC284801	5.3/3.9	FBN1	Fibrilin 1 (Marfan syndrome)	-2.4/-2.5
TNFALP6	Tumor necrosis factor, alpha-induced protein 6	3.1/3.8	NBEA	Neurobeachin	-2.6/-2.5
IRAK2	Interleukin-1 receptor-associated kinase 2	3.2/3.8	CSPG2	Chondroitin sulphate proteoglycan 2 (versican)	-2.5/-2.4
TM4SF1	Transmembrane 4 L six family member 1	3.3/3.7	LMOD1	Leiomodin 1 (smooth muscle)	-2.0/-2.4
SRXN1	Sulfredoxin 1 homolog (S.	4.6/3.7	TWIST2	Twist homolog 2	-2.4/-2.3

	cervisiae)			(Drosophila)	
SLC30A1	Solute carrier family 30 (zinc transporter), member 1	4.9/3.6	GM632	KIAA1196 protein	-2.3/-2.3
FRMD4A	FERM domain contaning 4A	3.4/3.6	CSPG2	Chondroitin sulphate proteoglycan 2 (versican)	-2.5/-2.3
SESN2	Sestrin2	4.6/3.6	DHTKD1	Dehydrogenase E1 and transketolase domain containing 1	-2.4/-2.3
AKR1C1	Aldo-keto reductase family 1, member C1 (dihydorodiol dehydrogenase 1; 20-alpha (3-alpha)-hydroxysteroid dehydrogenase)	3.1/3.5	HNRPA3P1; HNRPA3; LOC387933	Heterogeneous nuclear ribonucleoprotein A3 pseudogene 1; heterogeneous nuclear ribonuclease protein A3; similar to heterogeneous nuclear ribonucleoprotein A3	-2.1/-2.3
ABL2	V-abl Abelson murine leukaemia viral oncogene homolog 2 (arg, Abelson-related gene)	3.3/3.4	ITSN1	Intersectin 1 (SH3 domain protein)	-3.4/-2.2
MT1E	Metallothionein 1E (functional)	3.6/3.4	AP1GBP1	AP1 gamma subunit binding protein 1	-2.3/-2.2
ERN1	Endoplasmic reticulum to nucleus signalling 1	2.5/3.4	Sep-11	Septin 11	-2.3/-2.2
ISG20L1	Interferon stimulated exonuclease gene 20kDa-like 1	3.1/3.4	ID4	Inhibitor of DNA binding 4, dominant negative helix-loop-helix protein	-2.1/-2.2
BICD1	Bicaudal D homolog 1 (Drosophila)	2.3/3.4	HOXA11	Homeo box A1	-2.2/-2.1
RGS20	Regulator of G-protein signalling 20	2.8/3.4	LDLR	Low densitiy lipoprotein receptor (familial hypercholesterolemia)	-2.1/-2.1
KCNK1	Potassium channel, subfamily K, member 1	3.6/3.3	ATR	Ataxia telangiectasia and Rad3 related	-2.1/-2.1
FGF2	Fibroblast growth factor 2 (basic)	2.4/3.2	LNPEP	Leucyl/cystinyl aminopeptidase	-2.2/-2.1
KLHL24	Kelch-like 24 (Drosophila)	2.0/3.2	BBX	Bobby sox homolog (Drosophila)	-2.2/-2.1
MT1H	Metallothionein 1H	3.1/3.2	LGR7	Leucine-rich repeat-containing G protein-coupled receptor 7	-2.1/-2.1
ZNF468	Zinc finger protein ZNF468	2.5/3.1			
HIST1H2BD	Histone 1, H2bd	2.7/3.1			
POLH	Polymerase (DNA directed), eta	3.4/3.1			
MT1K	Metallothionein 1M	3.0/3.1			
NLK	Nemo like kinase	2.7/3.1			
ARL7	ADP-ribosylation factor-like 7	2.5/3.0			
ETS1	v-ets erythroblastosis virus E26 oncogene homolog 1 (avian)	3.0/3.0			

Fig S1A undifferentiated vs decidualized

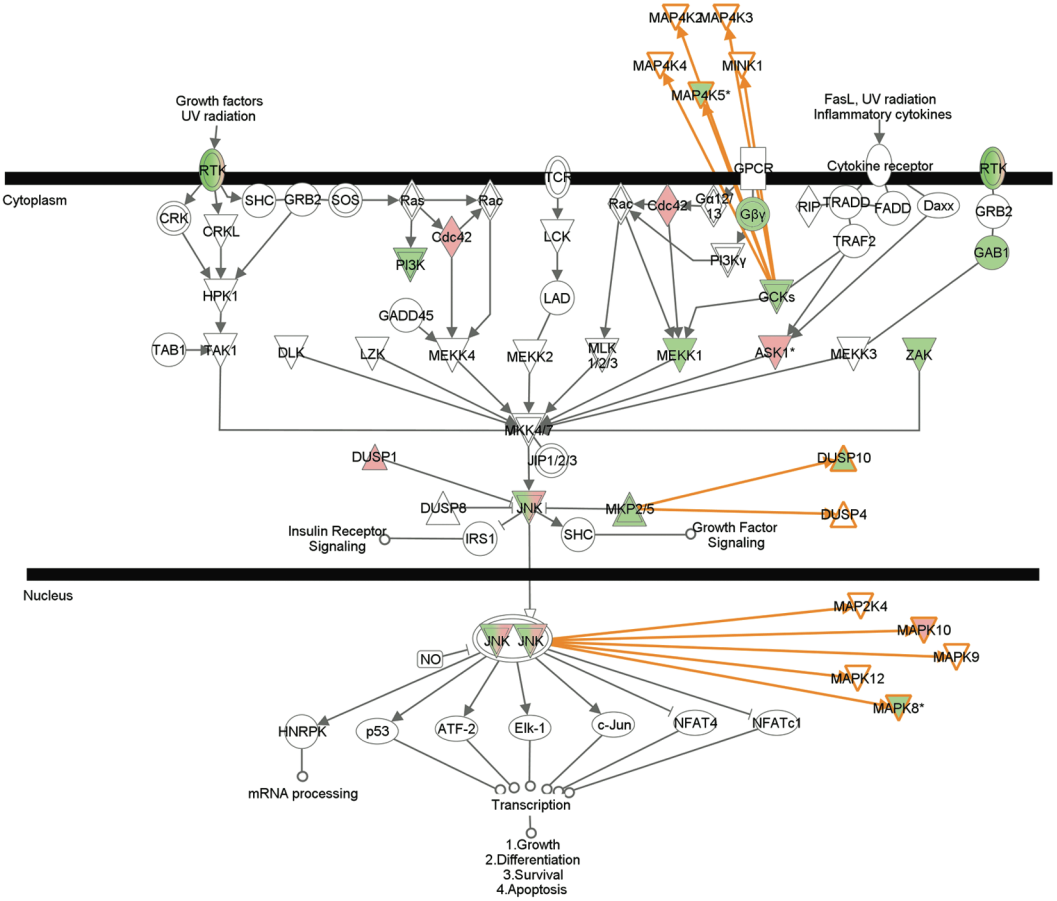

Fig S1B undifferentiated vs undifferentiated + H_2O_2

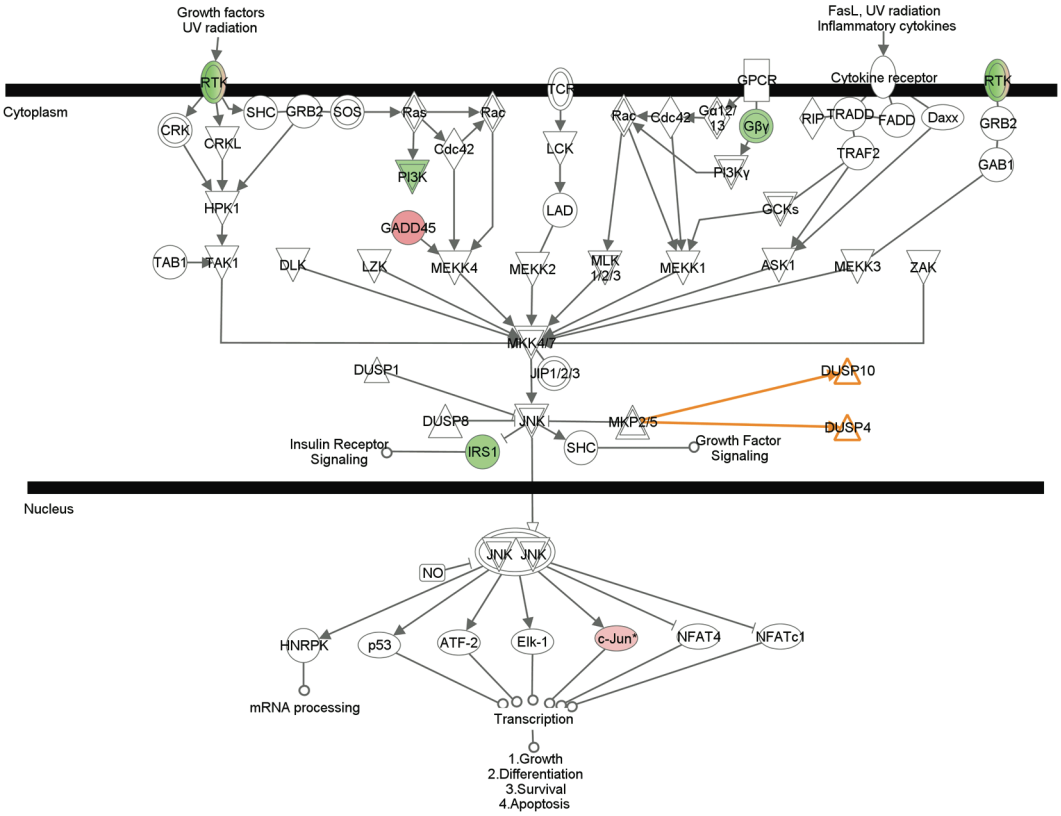

Fig S1C decidualized vs decidualized + H_2O_2

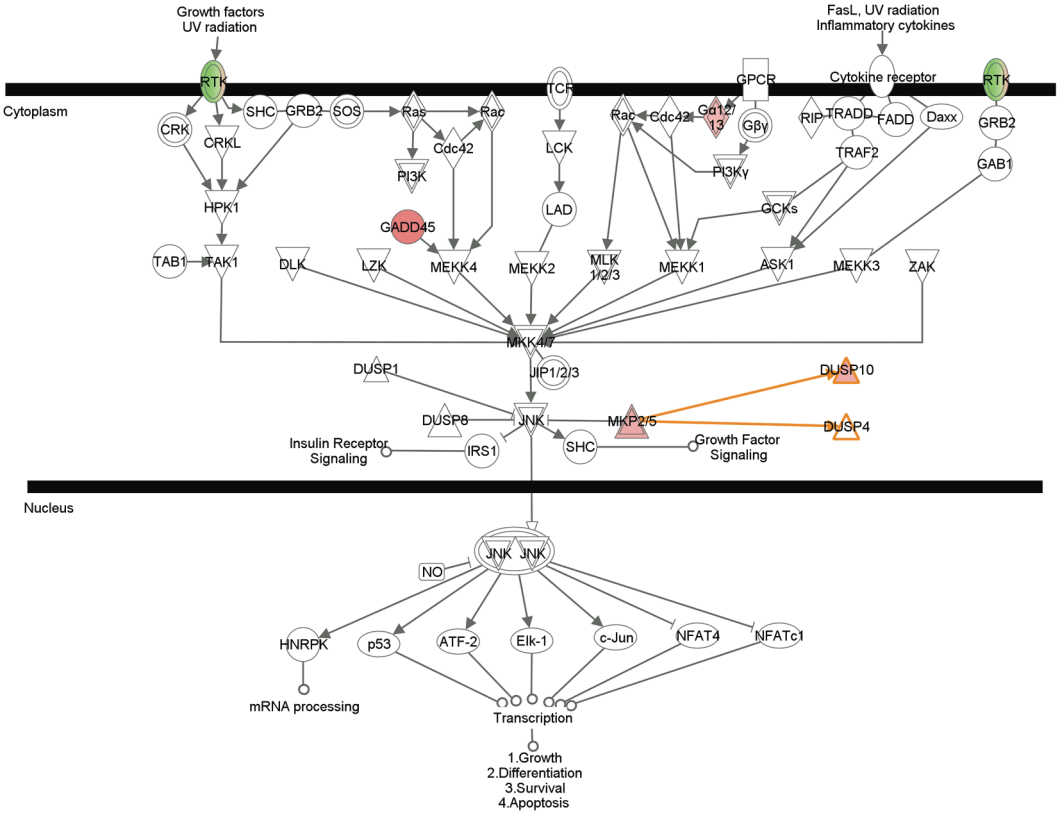

Figure S1. Ingenuity Pathway Analysis for the microarray data focusing on the JNK signaling pathway. The diagrams depict genes upregulated (red) or downregulated (green) upon decidualization (A), treatment of undifferentiated HESCs with H_2O_2 (B), and treatment of decidualized HESCs with H_2O_2 (C). ∇ represents genes encoding kinases and Δ represents genes encoding phosphatases while a double contour line signifies a gene family.