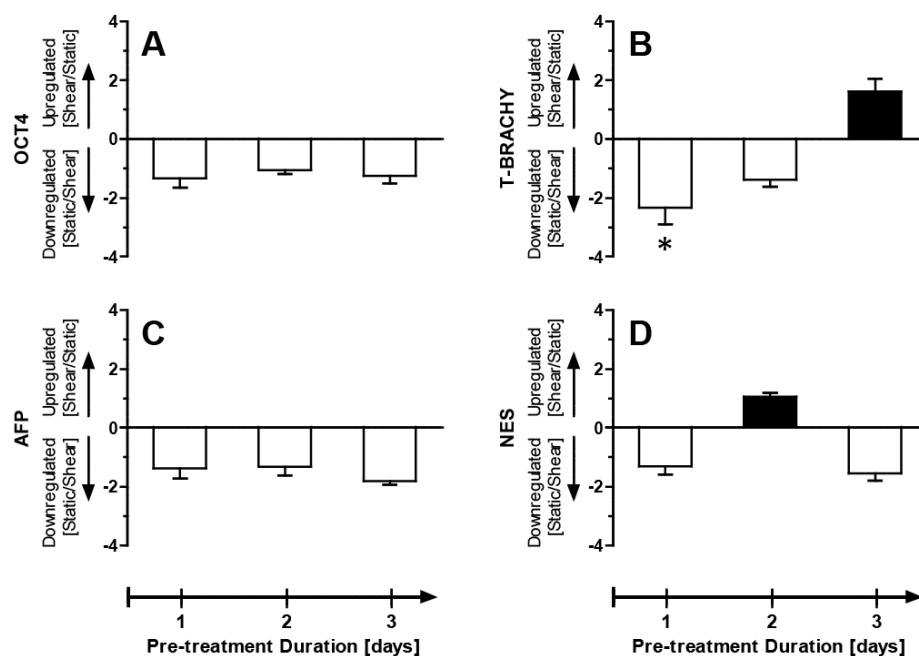


**Supplemental Table 1.** List of PCR primers used to amplify genes that represent pluripotency and differentiation.

Symbol	Gene Name	Marker of	Forward Sequence (5' to 3')	Reverse Sequence (5' to 3')	Genebank Accession Number
<b>OCT4</b>	POU5F1	Pluripotency	CCGTGTGAGGTGGAGTCTGGAG	GCGATGTGAGTGATCTGCTGTAGG	NM_013633.1
<b>NES</b>	Nestin	Ectoderm	GGAGAAGCAGGGTCTACAG	AGCCACTTCCAGACTAAGG	NM_016701
<b>T-BRACHY</b>	T, Brachyury	Mesoderm	CACACCACTGACGCACAC	GAGGCTATGAGGAGGCTTTG	NM_009309
<b>AFP</b>	Alpha-fetoprotein	Endoderm	CACACCCGCTTCCCTCATCC	TTCTTCTCCGTCACGCACTGG	NM_007423
<b>MEOX1</b>	Mesenchyme homeobox 1	Mesoderm	GGCAGACGTGAAGCCTAGACA	ACAAACACGTGGCCAGGAA	NM_010791.3
<b>PDGFR<math>\alpha</math></b>	Platelet-derived growth factor receptor, alpha polypeptide	Mesoderm	GGCCGGCCTCATCTC	TCATTCTCGTTGGGAGGATAGA	NM_011058.2

Supplemental Table 2. List of genes included in the PCR arrays used to assess signalling pathways.

Symbol	Gene Name	Description	GenBank Accession Number
<b>SIGNAL TRANSDUCTION GENES</b>			
Atf2	Atf-2, CRE-BP, Creb2, D130078H02Rik, D18875, MGC105211, MGC105222, Tg(Gzma-Kfra1)7Wum, mxBP	Activating transcription factor 2	NM_009715
Bax		Bcl2-associated X protein	NM_007527
Bcl2	AW986256, Bcl-2, C430015F12Rik, D630044D05Rik, D830018M01Rik	B-cell leukemia/lymphoma 2	NM_009741
Bcl2l1	Bcl(XL), Bcl-XL, Bcl-Xs, Bcl2l, BclX, MGC113803, MGC99998, bcl-x	Bcl2-like 1	NM_009743
Naip1	AV364616, Bircl1a, D13Lsd1, Naip, Naip-rs1	NLR family, apoptosis inhibitory protein 1	NM_008670
Birc2	AW146227, Api1, Api2, Birc3, HIAP1, HIAP2, IAP1, IAP2, MIAP1, MIAP2, MIHB, MIHC, RNF48, cIAP1, cIAP2, mclAP1	Baculoviral IAP repeat-containing 2	NM_007465
Birc3	AW107670, Api1, Api2, Birc2, HIAP2, IAP1, IAP2, MIAP1, MIAP2, MIHB, MIHC, RNF49, cIAP-1, cIAP-2, cIAP1, cIAP2	Baculoviral IAP repeat-containing 3	NM_007464
Birc5	AAC-11, Api4, TIAP, survivin40	Baculoviral IAP repeat-containing 5	NM_009689
Bmp2	AI467020, Bmp2a	Bone morphogenetic protein 2	NM_007553
Bmp4	Bmp-4, Bmp2b, Bmp2b-1, Bmp2b1	Bone morphogenetic protein 4	NM_007554
Brcr1		Breast cancer 1	NM_009764
Ccl2	A1235594, HC11, JE, MCAF, MCP-1, MCP1, SMC-CF, Scya2, Sigle	Chemokine (C-C motif) ligand 2	NM_011333
Ccl20	CKb4, LARC, MIP-3A, MIP-3[a], MIP3A, ST38, Scya20, exodus-1	Chemokine (C-C motif) ligand 20	NM_016960
Ccnd1	A1327039, Cyl-1, PRAD1, bcl-1, cD1	Cyclin D1	NM_007631
Cd5	Ly-1, Ly-12, Ly-A, Lyt-1	CD5 antigen	NM_007650
Cdh1	AA960649, Ecad, L-CAM, MGC107495, UVO, Um	Cadherin 1	NM_009864
Cdk2	A630093N05Rik	Cyclin-dependent kinase 2	NM_016756
Cdkn1a	CAP20, CDK1, CIP1, Cdkn1, P21, SDI1, Waf1, mda6, p21Cip1, p21WAF	Cyclin-dependent kinase inhibitor 1A (P21)	NM_007669
Cdkn1b	AA408329, AI843786, Kip1, p27, p27Kip1	Cyclin-dependent kinase inhibitor 1B	NM_009875
Cdkn2a	ARF-INK4a, Arf, INK4a-ARF, Ink4a, Arf, MTS1, Pctr1, p16, p16(INK4a), p16INK4a, p19, p19ARF	Cyclin-dependent kinase inhibitor 2A	NM_009877
Cdkn2b	AV083695, INK4b, MTS2, p15, p15(INK4b), p15INK4b	Cyclin-dependent kinase inhibitor 2B (p15, inhibits CDK4)	NM_007670
Cebpb	C, EBPbeta, CRP2, IL-6DBP, LAP, NF-IL6, NF-M, NF16	CCAAT/enhancer binding protein (C/EBP), beta	NM_009883
Csf2	Csfgm, Gm-Csf, MGC151255, MGC151257, MGI-IGM	Colony stimulating factor 2 (granulocyte-macrophage)	NM_009969
Cxcl1	Fsp, Gro1, KC, Mgsa, NS1, Scyb1, gro	Chemokine (C-X-C motif) ligand 1	NM_008176
Cxcl9	BB139920, CMK, Mig, Scyb9, crg-10	Chemokine (C-X-C motif) ligand 9	NM_008599
Cyp19a1	Ar, ARKO, Cyp19, Int-5, Int5, MGC124251, MGC124252, p450arom	Cytochrome P450, family 19, subfamily a, polypeptide 1	NM_007810
Egr1	A530045N19Rik, ETR103, Egr-1, Krox-1, Krox-24, Krox24, NGF1-A, NGF1-A, NGF1A, TIS8, Zenk, Zfp-6, Zif268, egr	Early growth response 1	NM_007913
Ei24	AA536736, AI115355, PIG8	Etoposide induced 2.4 mRNA	NM_007915
En1	En-1, Mo-en-1	Engrailed 1	NM_010133
Fas	AI196731, APO-1, APT1, CD95, TNFR6, Tnfrsf6, lpr	Fas (TNF receptor superfamily member 6)	NM_007987
FasL	APT1L1G1, CD178, CD95L, Fas-L, Fas-Ligand, Faslg, Tnfsf6, gld	Fas ligand (TNF superfamily, member 6)	NM_010177
Fasn	A630082H08Rik, FAS	Fatty acid synthase	NM_007988
Fgf4	Fgf-4, Fgfr, Hstf-1, K3, MGC129266, MGC129267, hst, hst-1, KFGF	Fibroblast growth factor 4	NM_010202
Fn1	E330027I09, Fn, Fn-1, MGC117493	Fibronectin 1	NM_010233
Fos	D12Rfj1, c-fos	FBJ osteosarcoma oncogene	NM_010234
Foxa2	HNF3-beta, HNF3beta, Hnf-3b, Hnf3b, Tcf-3b, Tcf3b	Forkhead box A2	NM_010446
Gadd45a	AA545191, Ddtt1, GADD45	Growth arrest and DNA-damage-inducible 45 alpha	NM_007836
Greb1	5730583K22Rik, 9130004E13, AF180470, AU023194, mKIAA0575	Gene regulated by estrogen in breast cancer protein	NM_015764
Gys1	Gys3, MGS	Glycogen synthase 1, muscle	NM_030678
Hhip	Hhip1	Hedgehog-interacting protein	NM_020259
Hk2	AI642394, HKII	Hexokinase 2	NM_013820
Hoxa1	ERA1, Hox-1.6	Homeo box A1	NM_010449
Hsf1	AA960185	Heat shock factor 1	NM_008296
Hspb1	27Kda, Hsp25	Heat shock protein 1	NM_013560
Icam1	CD54, Icam-1, Ly-47, MALA-2, MGC6195	Intercellular adhesion molecule 1	NM_010493
Igfbp3	AI649005, IGFBP-3, IGFBP3	Insulin-like growth factor binding protein 3	NM_008343
Igfbp4	AI875747, Deb2, IGFBP-4	Insulin-like growth factor binding protein 4	NM_010517
Ikkb	AI132552, IKK-2, IKK-beta, IKK2, IKK[b], IKKbeta	Inhibitor of kappaB kinase beta	NM_010546
Il1a	il-1a	Interleukin 1 alpha	NM_010554
Il2	il-2	Interleukin 2	NM_008366
Il2ra	CD25, Il2r, Ly-43, MGC130561	Interleukin 2 receptor, alpha chain	NM_008367
Il4ra	CD124, Il4r, MGC118473	Interleukin 4 receptor, alpha	NM_001008700
Irf1	AU020929, irf-1	Interferon regulatory factor 1	NM_008390
Jun	AP-1, Junc, c-jun	Jun oncogene	NM_010591
Lef1	3000002B05, AI451430, Lef-1	Lymphoid enhancer binding factor 1	NM_010703
Lep	ob, obese	Leptin	NM_008493
Lta	LT, LT-[a], LT-alpha, LT[a], LTalpha, Ltx, MGC117668, TNF-beta, TNFSF1, Trnb, Tnfsf1b, hlb382	Lymphotoxin A	NM_010735
Mdm2	170000715Rik, AA415488, Mdm-2	Transformed mouse 3T3 cell double minute 2	NM_010786
Mmp10	AV377895	Matrix metalloproteinase 10	NM_019471
Mmp7	MAT	Matrix metalloproteinase 7	NM_010810
Myc	AU016757, Myc2, Nard, Nird, bHLHe39, c-myc	Myelocytomatosis oncogene	NM_010849
Nab2	AI451907	Nrg1-A binding protein 2	NM_008668
Nfkb1	AI462015, Nfkb1	Nuclear factor of kappa light polypeptide gene enhancer in B-cells inhibitor, alpha	NM_010907
Nos2	NOS-II, Nos-2, Nos2a, i-NOS, INOS	Nitric oxide synthase 2, inducible	NM_010927
Nrip1	6030458L20Rik, 8430438I05Rik, 9630050P12, AA959574, AW456757, RIP140	Nuclear receptor interacting protein 1	NM_173440
Odc1	MGC103389, ODC	Ornithine decarboxylase, structural 1	NM_013614
Pparg	Nr1c3, PPAR-gamma, PPAR-gamma2, PPARgamma, PPARgamma2	Peroxisome proliferator activated receptor gamma	NM_011146
Ptch1	A230106A15Rik, Ptc, Ptc1, Ptc, mes	Patched homolog 1	NM_008957
Ptgs2	COX2, Cox-2, PGHS-2, PHS-2, Pghs2, TIS10	Prostaglandin-endoperoxide synthase 2	NM_011198
Rbp1	CRBP1, Crbp, Rbp-1	Retinol binding protein 1, cellular	NM_011254
Sele	CD62E, E-selectin, Elam	Selectin, endothelial cell	NM_011345
Selp	CD62P, Gmp, MGC129336, MGC129337, P-selectin, PADGEM	Selectin, platelet	NM_011347
Tank	C86182, E430026L09Rik, I-TRAF	TRAF family member-associated NF-kappa B activator	NM_011529
Tcf7	AI465550, TCF-1, Tcf1	Transcription factor 7, T-cell specific	NM_009331
Tert	EST2, MGC150124, TCS1, TP2, TR, TRT	Telomerase reverse transcriptase	NM_009354
Tfrc	2610028K12Rik, AI195355, AI426448, AU015758, CD71, E430033M20Rik, Mtvr-1, Mtvr1, TFR, TFR1, Trfr, p90	Transferrin receptor	NM_011638
Pmepa1	2210418I02Rik, AW455466, Erg1.2, N4wbpd, Stag1, Tmepa1	Prostate transmembrane protein, androgen induced 1	NM_022995
Tnf	DIF, MGC151434, TNF-alpha, TNFSF2, TNFalpha, Tnfa, Tnfsf1a	Tumor necrosis factor	NM_013693
Trp53	bb1, bfy, bhy, p53	Transformation related protein 53	NM_011640
Vcam1	CD106, Vcam-1	Vascular cell adhesion molecule 1	NM_011693
Vegfa	Vegf, Vegf-a, Vegf120, Vegf164, Vegf188, Vp	Vascular endothelial growth factor A	NM_009505
Wsp1	AW146261, Elm1	WNT1 inducible signaling pathway protein 1	NM_018865
Wnt1	Int-1, Wnt-1, sw, wnting	Wingless-related MMTV integration site 1	NM_021279
Wnt2	2610510E18Rik, Int11, Irp, Mirp, Wnt-2, Wnt2a, m-irp	Wingless-related MMTV integration site 2	NM_023653
<b>HOUSEKEEPING GENES &amp; INTERNAL CONTROLS</b>			
Gusb	A1747421, Gur, Gus, Gus-r, Gus-s, Gus-t, Gus-u, Gut, asd, g	Glucuronidase, beta	NM_010368
Hprt1	C81579, HPGRT, Hprt, MGC103149	Hypoxanthine guanine phosphoribosyl transferase 1	NM_013556
Hsp90ab1	90Kda, AL022974, C81438, Hsp84, Hsp84-1, Hsp90, Hspcb, MGC115780	Heat shock protein 90 alpha (cytosolic), class B member 1	NM_008302
Gapdh	Gapd, MGC102544, MGC102546, MGC103190, MGC103191, MGC105239	Glyceraldehyde-3-phosphate dehydrogenase	NM_008084
Actb	Actb, E430023M04Rik, beta-actin	Actin, beta	NM_007393
MGDC	MIGX1B	Mouse Genomic DNA Contamination	SA_00106
RTC	RTC	Reverse Transcription Control	SA_00104
RTC	RTC	Reverse Transcription Control	SA_00104
RTC	RTC	Reverse Transcription Control	SA_00104
PPC	PPC	Positive PCR Control	SA_00103
PPC	PPC	Positive PCR Control	SA_00103
PPC	PPC	Positive PCR Control	SA_00103



**Supplemental Fig. 1** Effect of pre-treatment duration. Cells were pre-treated with static culture for 1, 2, or 3 days. All experimental samples were then exposed to 15 dyne/cm<sup>2</sup> of shear stress for one day and assessed for gene expression (M / M GAPDH) of OCT4 (A), T-BRACHY (B), AFP (C), and NES (D). Data is presented as relative fold regulation between experimental and matched static controls, where upregulation (Shear/Static>1) is represented by black bars and downregulation (Static/Shear>1) is represented by white bars. A ratio of 1 represents no change between groups. Data presented are averages (mean  $\pm$  SEM; n = total of 9-12 replicates from 3 or 4 independent trials) where asterisks indicate a significant p<0.05) difference between experimental and control groups.