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Supplementary Materials for

UVB Irradiation–Induced Pain Is Mediated by CXCL5

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Fig. S1. Validation of up-regulated transcripts (as measured by PCR array cards) with qPCR.
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Fig. S4. UVB-induced changes in female rats.
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Supplementary Material

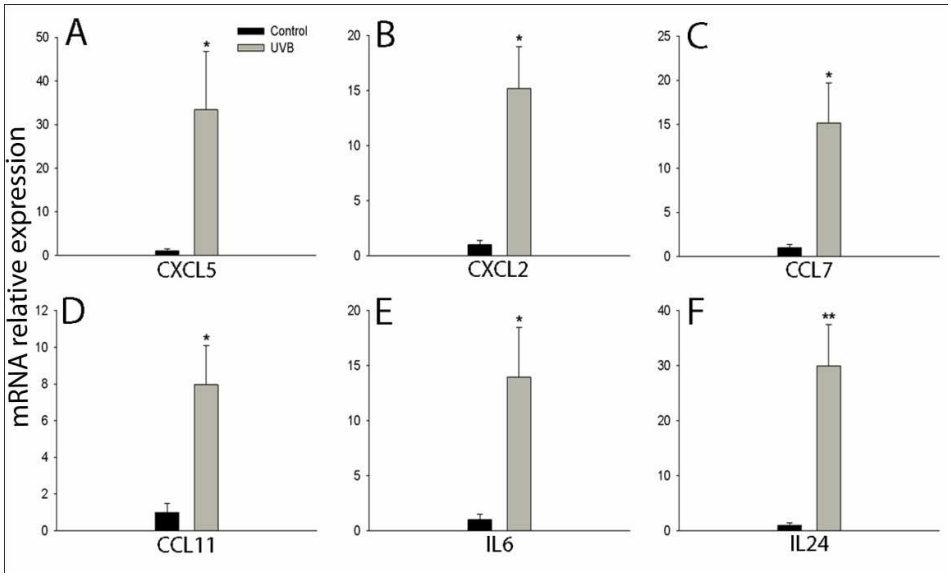

Fig. S1. **Validation of up-regulated transcripts (as measured by PCR array cards) with qPCR**. A significant increase in transcript levels was measured for CXCL5, CXCL2, CCL7, CCL11, IL6 and IL24 in UVB treated versus non-irradiated contralateral rat skin (A-F, respectively). Wilcoxon signed rank test (A), paired t-test (B-F), n=7. Mean ± SEM, *p<0.05 **p<0.01.

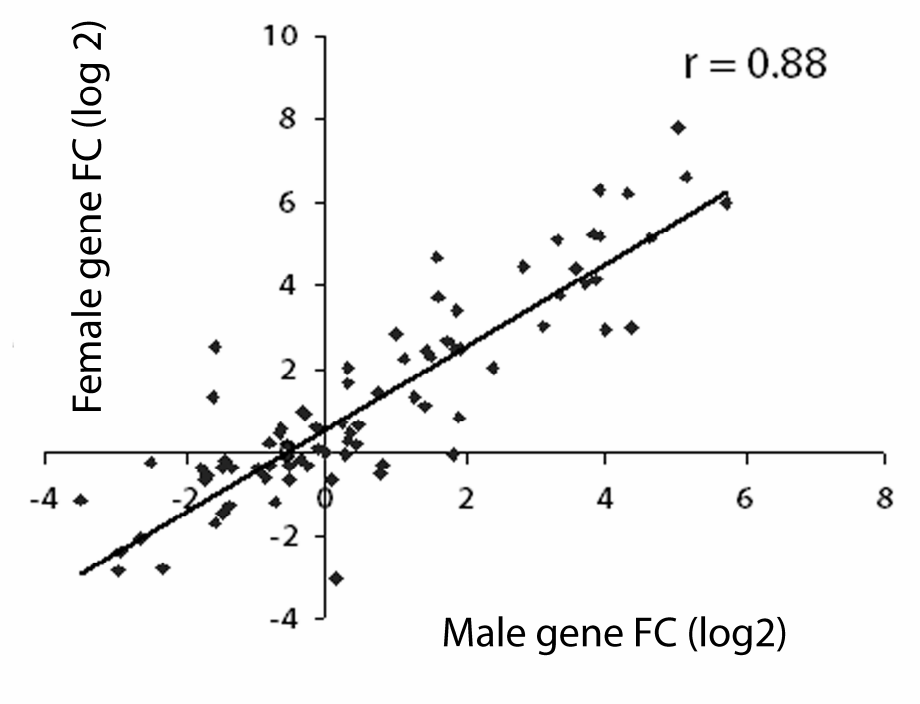

Fig. S2. **Correlation of PCR array data between male and female volunteers**. Gene expression after UVB irradiation for male human subjects was plotted against the data from females. The Pearson's correlation coefficient, r = 0.88, showed that there is a strong positive relationship between the two data sets. This relationship is also significant with $p<0.001$. (Males n=5, Female n=3, genes n=92).

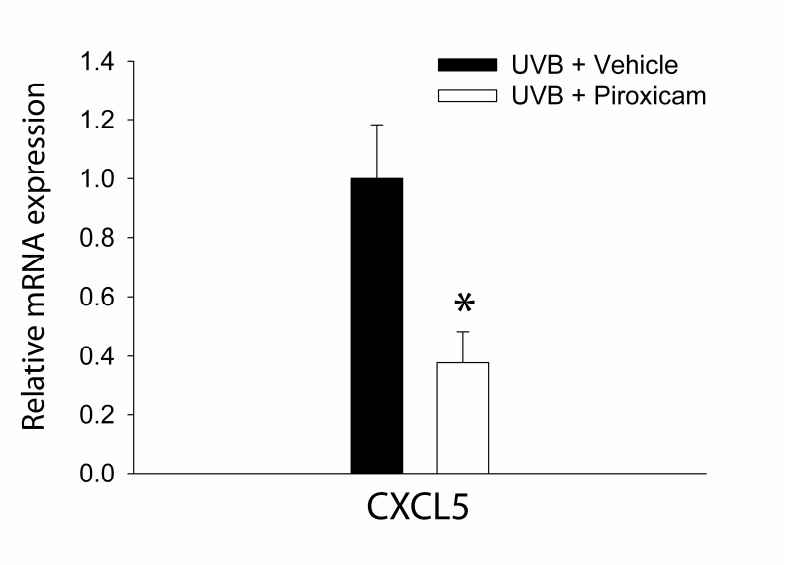

Fig. S3. **The increased expression of CXCL5 mRNA is attenuated in the UVB model by piroxicam treatment**. Just prior to irradiation and at 12, 24, 36 and 46 hours after UVB treatment, rats received an i.p. injection of either Piroxicam (Sigma, 10mg/kg) or vehicle (20% DMSO). Rats treated with Piroxicam had significantly reduced CXCL5 expression in UVB treated skin compared those in the vehicle group.(*$p<0.05$, t-test, n=4). Data are presented as mean±SEM.

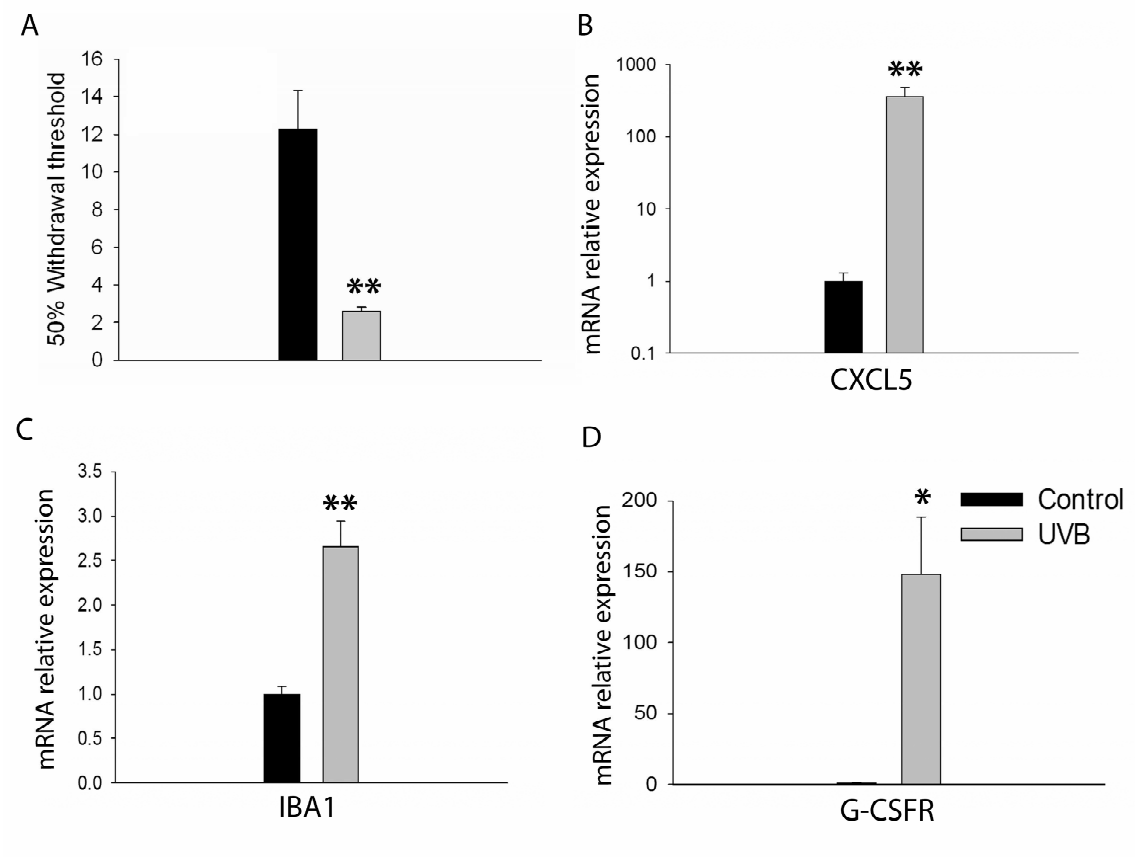

Fig. S4. UVB-induced changes in female rats. (A) Female rats developed a significant mechanical pain-related hypersenitivity 48 hours after UVB treatment. UVB treatment also significantly increased the mRNA expression of CXCL5 (B), IBA1 (C) and GCSFR (D). Paired t-test, *p<0.05, **p<0.01, paired t-test n=6. All data are presented as the mean±SEM.

Table S1. Rat PCR array data.

Applied Biosystem primer code; Rat	Name	FC FINAL	adjPVal
Alox15-Rn00696151_m1	Arachidonate 15-Lipoxygenase	6.88504	0.121519
Alox5-Rn00563172_m1	Arachidonate 5-lipoxygenase	2.117766	8.37E-05
Areg-Rn00567471_m1	Amphiregulin	0.90579	0.948159
Artn-Rn01761472_g1	Artemin	1.686631	0.035249
Bdnf-Rn01484928_m1	Brain-derived neurotrophic factor	2.47553	0.325985
Btc-Rn00673281_m1	Betacellulin	0.369867	0.338399
C3-Rn00566466_m1	Complement component 3	4.971303	0.000131
C5-Rn01436156_m1	Complement component 5	1.93606	0.443386
Ccl1-Rn01752376_m1	Chemokine (C-C motif) ligand 1	0.354474	0.017597
Ccl11-Rn00569995_m1	Chemokine (C-C motif) ligand 11	11.58508	4.51E-05
Ccl17-Rn00589290_m1	Chemokine (C-C motif) ligand 17	1.142472	0.586833
Ccl19-Rn01439563_m1	Chemokine (C-C motif) ligand 19	2.755498	0.016383
Ccl2-Rn00580555_m1	Chemokine (C-C motif) ligand 2	14.66058	0.000221
Ccl20-Rn00570287_m1	Chemokine (C-C motif) ligand 20	0.353528	0.058643
Ccl21b-Rn01764651_g1	Chemokine (C-C motif) ligand 21b	0.755235	0.291932
Ccl22-Rn01536591_m1	Chemokine (C-C motif) ligand 22	0.137293	1.14E-05
Ccl24-Rn01481451_m1	Chemokine (C-C motif) ligand 24	1.344512	0.187421
Ccl25-Rn01403351_m1	Chemokine (C-C motif) ligand 25	0.57458	0.44041

Ccl26-Rn01481484_m1	Chemokine (C-C motif) ligand 26	NA	NA
Ccl27-Rn01437037_m1	Chemokine (C-C motif) ligand 27	NA	NA
Ccl28-Rn00586715_m1	Chemokine (C-C motif) ligand 28	NA	NA
Ccl3-Rn00564660_m1	Chemokine (C-C motif) ligand 3	5.997417	0.007584
Ccl4-Rn00587826_m1	Chemokine (C-C motif) ligand 4	15.35799	0.000137
Ccl5-Rn00579590_m1	Chemokine (C-C motif) ligand 5	2.664209	0.099169
Ccl6-Rn01456402_g1	Chemokine (C-C motif) ligand 6	2.455923	0.004211
Ccl7-Rn01467286_m1	Chemokine (C-C motif) ligand 7	14.232	0.000131
Ccl9-Rn01471276_m1	Chemokine (C-C motif) ligand 9	6.526384	0.000137
Csf1-Rn00576849_m1	Colony stimulating factor 1 (macrophage)	4.542358	1.14E-05
Csf2-Rn01456851_m1	Colony stimulating factor 2 (granulocyte-macrophage)	0.87465	0.918736
Csf3-Rn00567344_m1	Colony stimulating factor 3 (granulocyte)	7.089967	0.092509
Cx3cl1-Rn00593186_m1	Chemokine (C-X3-C motif) ligand 1	0.472526	0.001883
Cxcl1-Rn00578225_m1	Chemokine (C-X-C motif) ligand 1	5.410761	0.006414
Cxcl10-Rn00594648_m1	Chemokine (C-X-C motif) ligand 10	2.225852	0.271036
Cxcl11-Rn00788262_g1	Chemokine (C-X-C motif) ligand 11	3.133687	0.19442
Cxcl12-Rn00573260_m1	Chemokine (C-X-C motif) ligand 12	1.576372	0.03271
Cxcl13-Rn01450028_m1	Chemokine (C-X-C motif) ligand 13	3.053277	0.012622
Cxcl14-Rn01441840_m1	Chemokine (C-X-C motif) ligand 14	1.885975	0.003849
Cxcl16-Rn01496393_m1	Chemokine (C-X-C motif) ligand 16	1.221816	0.34029
Cxcl17-Rn01764053_m1	Chemokine (C-X-C motif) ligand 17	0.95014	0.958139
Cxcl2-Rn00586403_m1	Chemokine (C-X-C motif) ligand 2	24.6661	0.009162
Cxcl3-Rn00593435_m1	Chemokine (C-X-C motif) ligand 3	2.05144	0.294366
Cxcl5-Rn00573587_g1	Chemokine (C-X-C motif) ligand 5	51.28608	0.000171
Cxcl9-Rn00595504_m1	Chemokine (C-X-C motif) ligand 9	1.0446	0.897726
Ebi3-Rn01527778_m1	Epstein-Barr virus induced gene 3	4.03549	0.000469
Edn1-Rn00561129_m1	Endothelin 1	1.07337	0.897726
Ereg-Rn00572454_m1	Epiregulin	0.89458	0.918963
Fgf7-Rn00573319_m1	Fibroblast growth factor 7 (keratinocyte growth factor)	5.80183	0.000183
Hbegf-Rn00564075_m1	Heparin-binding EGF-like growth factor	4.28442	0.009229
Ifng-Rn00594078_m1	Interferon, gamma	0.58442	0.437389
Il10-Rn01644839_m1	Interleukin 10	10.6731	0.00088
Il11-Rn00591721_m1	Interleukin 11	0.66565	0.106098
Il12a-Rn00584538_m1	Interleukin 12a	0.536757	0.002136
Il12b-Rn00575112_m1	Interleukin 12b	0.277929	0.037099

Il13-Rn00587615_m1	Interleukin 13	1.01954	0.96705
Il15-Rn00689964_m1	Interleukin 15	1.03152	0.946766
Il16-Rn01477722_m1	Interleukin 16	0.80001	0.293906
Il18-Rn01422083_m1	Interleukin 18	0.63103	0.184776
Il19-Rn01490483_m1	Interleukin 19	6.17235	0.002319
Il1a-Rn00566700_m1	Interleukin 1 alpha	0.2102	0.000155
Il1b-Rn00580432_m1	Interleukin 1 beta	4.9379	0.026934
Il2-Rn99999181_m1	Interleukin 2	NA	NA
Il20-Rn01483978_m1	Interleukin 20	0.05706	1.72E-05
Il21-Rn01755623_m1	Interleukin 21	1.36465	0.506481
Il23a-Rn00590334_g1	Interleukin 23a	1.48595	0.26231
Il24-Rn00591159_m1	Interleukin 24	32.69474	0.000417
Il27-Rn01510484_m1	Interleukin 27	1.075036	0.928099
Il3-Rn00580435_m1	Interleukin 3	8.93579	0.001386
Il33-Rn01759837_m1	Interleukin 33	2.398043	0.000198
Il4-Rn01456866_m1	Interleukin 4	NA	NA
Il5-Rn01459975_m1	Interleukin 5	NA	NA
Il6-Rn00561420_m1	Interleukin 6	14.80302	0.001406
Il7-Rn00681900_m1	Interleukin 7	1.297176	0.291932
Il9-Rn01448718_m1	Interleukin 9	NA	NA
Lif-Rn00573491_g1	Leukemia inhibitory factor	21.35104	0.019041
LOC301289-Rn01757168_m1	Similar to Interleukin-17 precursor (IL-17) (Cytotoxic T lymphocyte-associated antigen 8) (CTLA-8)	NA	NA
LOC682457-Rn01516136_m1	Taxilin alpha (interleukin 14)	0.866346	0.410661
Lta4h-Rn01503878_m1	Leukotriene A4 hydrolase	0.980934	0.928099
Mif-Rn00821234_g1	Macrophage migration inhibitory factor	1.125275	0.291932
Ngf-Rn01533872_m1	Nerve growth factor (beta polypeptide)	1.41969	0.198758
Nos2-Rn00561646_m1	Nitric oxide synthase 2, inducible	34.29193	0.010603
Pf4-Rn01768298_g1	Platelet factor 4 (CXCL4)	5.986383	1.72E-05
Ppbp-Rn00596603_g1	Pro-platelet basic protein (chemokine (C-X-C motif) ligand 7)	14.02202	0.007272
Ptges-Rn00572047_m1	Prostaglandin E synthase	1.057634	0.918736
Ptgis-Rn00580687_m1	Prostaglandin I2 (prostacyclin) synthase	4.254087	0.000198
Ptgs2-Rn01483828_m1	Prostaglandin-endoperoxide synthase 2 (cyclooxgenase-2)	4.60403	0.00309
Tgfb1-Rn00572010_m1	Transforming growth factor, beta 1	1.792186	0.014843

Tnf-Rn99999017_m1	Tumor necrosis factor	1.52635	0.191037
Xcl1-Rn00592605_m1	Chemokine (C motif) ligand 1	1.255277	0.827178

Table S2. Human PCR array data.

Applied Biosystem primer code; Human	Name	FC FINAL	adjPVal
ARTN.Hs00365083_m1	Artemin	2.6461	0.353896
BDNF.Hs00538277_m1	Brain-derived neurotrophic factor	NA	NA
CCL1.Hs00171072_m1	Chemokine (C-C motif) ligand 1	0.9809	0.985747
CCL11.Hs00237013_m1	Chemokine (C-C motif) ligand 11	4.238	0.050675
CCL13.Hs00234646_m1	Chemokine (C-C motif) ligand 12	1.060357	0.869089
CCL14.CCL15.Hs00263137_m1	Chemokine (C-C motif) ligand 14	0.3859	0.279173
CCL16.Hs00171123_m1	Chemokine (C-C motif) ligand 16	NA	NA
CCL17.Hs00171074_m1	Chemokine (C-C motif) ligand 17	0.482628	0.143367
CCL18.Hs00268113_m1	Chemokine (C-C motif) ligand 18	6.602753	6.12E-05
CCL19.Hs00171149_m1	Chemokine (C-C motif) ligand 19	3.581412	2.29E-05
CCL2.Hs00234140_m1	Chemokine (C-C motif) ligand 2	5.134987	1.27E-06
CCL20.Hs00171125_m1	Chemokine (C-C motif) ligand 20	23.54027	0.000138
CCL21.Hs00171076_m1	Chemokine (C-C motif) ligand 21	2.986324	9.96E-06
CCL22.Hs01574247_m1	Chemokine (C-C motif) ligand 22	0.794794	0.374059
CCL23.Hs00270756_m1	Chemokine (C-C motif) ligand 23	1.454472	0.504555
CCL24.Hs00171082_m1	Chemokine (C-C motif) ligand 24	0.955848	0.987641
CCL25.Hs00171144_m1	Chemokine (C-C motif) ligand 25	NA	NA
CCL26.Hs00171146_m1	Chemokine (C-C motif) ligand 26	1.169531	0.595442
CCL27.Hs00171157_m1	Chemokine (C-C motif) ligand 27	0.16084	0.000134
CCL28.Hs00219797_m1	Chemokine (C-C motif) ligand 28	0.474908	0.029053
CCL3.Hs00234142_m1	Chemokine (C-C motif) ligand 3	16.61471	0.000406
CCL4.Hs99999148_m1	Chemokine (C-C motif) ligand 4	2.477342	0.027524
CCL5.Hs00982282_m1	Chemokine (C-C motif) ligand 5	1.342267	0.330106
CCL7.Hs00171147_m1	Chemokine (C-C motif) ligand 7	13.7573	0.000604

CCL8.Hs00271615_m1	Chemokine (C-C motif) ligand 8	18.3125	0.000312
CSF1.Hs00174164_m1	Colony stimulating factor 1 (macrophage)	0.713	0.000466
CSF2.Hs00929873_m1	Colony stimulating factor 2 (granulocyte-macrophage)	0.8536	0.893814
CSF3.Hs99999083_m1	Colony stimulating factor 3 (granulocyte)	25.0016	1.34E-05
CX3CL1.Hs00171086_m1	Chemokine (C-X3-C motif) ligand 1	0.930983	0.859033
CXCL1.Hs00236937_m1	Chemokine (C-X-C motif) ligand 1	18.93007	9.96E-06
CXCL10.Hs00171042_m1	Chemokine (C-X-C motif) ligand 10	6.408928	0.005326
CXCL11.Hs00171138_m1	Chemokine (C-X-C motif) ligand 11	17.9134	0.004117
CXCL12.Hs00930455_m1	Chemokine (C-X-C motif) ligand 12	0.914819	0.708647
CXCL13.Hs00171152_m1	Chemokine (C-X-C motif) ligand 13	NA	NA
CXCL14.Hs00171135_m1	Chemokine (C-X-C motif) ligand 14	0.183163	1.03E-05
CXCL16.Hs00222859_m1	Chemokine (C-X-C motif) ligand 16	1.605064	6.21E-05
CXCL17.Hs01650998_m1	Chemokine (C-X-C motif) ligand 17	8.841316	3.31E-05
CXCL2.Hs00601975_m1	Chemokine (C-X-C motif) ligand 2	11.97302	2.66E-06
CXCL3.Hs00171061_m1	Chemokine (C-X-C motif) ligand 3	13.25804	9.96E-06
CXCL5.Hs00171085_m1	Chemokine (C-X-C motif) ligand 5	82.5431	2.42E-05
CXCL6.Hs00237017_m1	Chemokine (C-X-C motif) ligand 6	5.1695	0.000751
CXCL9.Hs00171065_m1	Chemokine (C-X-C motif) ligand 9	2.997007	0.089332
EBI3.Hs00194957_m1	Epstein-Barr virus induced gene 3	1.634374	0.331126
EDN1.Hs00174961_m1	Endothelin 1	1.544138	0.046452
FGF7.Hs00384281_m1	Fibroblast growth factor 7 or Keratinocyte growth factor	4.295042	3.26E-05
IL10.Hs00961619_m1	Interleukin 10	8.004645	0.000227
IL11.Hs00174148_m1	Interleukin 11	1.602822	0.534722
IL12A.Hs00168405_m1	Interleukin 12 subunit alpha	0.922416	0.26542
IL12B.Hs01011519_m1	Interleukin 12 subunit beta	0.612841	0.670373
IL13.Hs00174379_m1	Interleukin 13	NA	NA
IL15.Hs00174106_m1	Interleukin 15	NA	NA
IL16.Hs00189606_m1	Interleukin 16	0.508381	0.000173
IL17A.Hs00174383_m1	Interleukin 17	NA	NA
IL18.Hs00155517_m1	Interleukin 18	0.226523	0.000277
IL19.Hs00203540_m1	Interleukin 19	NA	NA
IL1A.Hs99999028_m1	Interleukin 1 alpha	5.758932	0.000405
IL1B.Hs99999029_m1	Interleukin 1 beta	10.25314	2.24E-05
IL2.Hs00174114_m1	Interleukin 2	NA	NA
IL20.Hs00218888_m1	Interleukin 20	30.30539	0.00031

IL21.Hs00222327_m1	Interleukin 21	NA	NA
IL22.Hs00220924_m1	Interleukin 22	NA	NA
IL23A.Hs00372324_m1	Interleukin 23 subunit alpha	2.598294	0.048746
IL24.Hs00169533_m1	Interleukin 24	63.731	1.58E-05
IL25.Hs00224471_m1	Interleukin 25	0.2843	0.039623
IL26.Hs00218189_m1	Interleukin 26	NA	NA
IL27.Hs00377366_m1	Interleukin 27	NA	NA
IL28A.Hs00820125_g1	Interleukin 28A	NA	NA
IL29.Hs00601677_g1	Interleukin 29	NA	NA
IL3.Hs00174117_m1	Interleukin 3	NA	NA
IL31.Hs01098710_m1	Interleukin 31	NA	NA
IL32.Hs00170403_m1	Interleukin 32	1.00266	0.988908
IL33.Hs00369211_m1	Interleukin 33	1.177459	0.527756
IL34.Hs00380956_m1	Interleukin 34	0.215375	4.75E-07
IL4.Hs00929862_m1	Interleukin 4	NA	NA
IL5.Hs00174200_m1	Interleukin 5	NA	NA
IL6.Hs00985641_m1	Interleukin 6	54.7143	1.03E-05
IL7.Hs00174202_m1	Interleukin 7	0.44248	0.019158
IL8.Hs99999034_m1	Interleukin 8	71.07711	9.96E-06
IL9.Hs00174125_m1	Interleukin 9	NA	NA
MIF.Hs00236988_g1	Macrophage migration inhibitory factor	1.009424	0.972349
NGF.Hs00171458_m1	Nerve growth factor (beta polypeptide)	1.724755	0.0503
NOS2.Hs00167248_m1	Nitric oxide synthase 2, inducible	0.899343	0.938789
PF4.Hs00236998_m1	Platelet factor 4 (chemokine(C-X-C motif) ligand 4)	2.132868	0.204972
PPBP.Hs00234077_m1	Pro-platelet basic protein (chemokine (C-X-C motif) ligand 7)	3.955725	0.08414
PTGES.Hs00610420_m1	Prostaglandin E synthase	2.452527	0.000123
PTGS2.Hs00153133_m1	Prostaglandin-endoperoxide synthase 2 (cyclooxgenase-2)	5.346755	0.000227
TNF.Hs00174128_m1	Tumor necrosis factor	1.334291	0.112972
TXLNA.Hs00233304_m1	Taxilin alpha	0.830072	0.270347
XCL1.XCL2.Hs00237019_m1	Chemokine (C motif) ligand 1	1.034097	0.972349