

# Protective effects of Jing-Si-herbal-tea in inflammatory cytokines-induced cell injury on normal human lung fibroblast *via* multiomic platform analysis

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### Abstract

Objectives: The protective effects and related mechanisms of Jing-Si herbal tea (JSHT) were investigated in cellular damage mediated by pro-inflammatory cytokines, including interleukin (IL)-1β, IL-6, and tumor necrosis factor-α, on normal human lung fibroblast by multiomic platform analysis. Materials and Methods: The in silico high-throughput target was analyzed using pharmacophore models by BIOVIA Discovery Studio 2022 with ingenuity pathway analysis software. To assess cell viability, the study utilized the MTT assay technique. In addition, the IncuCyte S3 ZOOM System was implemented for the continuous monitoring of cell confluence of JSHT-treated cytokine-injured HEL 299 cells. Cytokine concentrations were determined using a Quantibody Human Inflammation Array. Gene expression and signaling pathways were determined using next-generation sequencing. Results: In silico high-throughput target analysis of JSHT revealed ingenuity in canonical pathways and their networks. Glucocorticoid receptor signaling is a potential signaling of JSHT. The results revealed protective effects against the inflammatory cytokines on JSHT-treated HEL 299 cells. Transcriptome and network analyses revealed that induction of helper T lymphocytes, TNFSF12, NFKB1-mediated relaxin signaling, and G-protein coupled receptor signaling play important roles in immune regulatory on JSHT-treated cytokine-injured HEL 299 cells. Conclusion: The findings from our research indicate that JSHT holds promise as a therapeutic agent, potentially offering advantageous outcomes in treating virus infections through various mechanisms. Furthermore, the primary bioactive components in JSHT justify extended research in antiviral drug development, especially in the context of addressing coronavirus.

KEYWORDS: Coronavirus, Cytokines, Lung injury, Multiomic, Protective effects

## INTRODUCTION

Toward the close of 2019, a newly identified coronavirus, subsequently termed severe acute respiratory syndrome coronavirus 2 (SARS-CoV-2) was first discovered in clusters of pneumonia of unknown cause. This virus led to a global pandemic, recognized as coronavirus disease 2019 (COVID-19). SARS-CoV-2, the novel coronavirus, is classified within the

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Currently, vaccines are the most valuable preventative mechanism against SARS-CoV-2. However, a mutation in the receptor-binding domain of the spike protein of SARS-CoV-2 promotes transmission between different hosts and leads to immune escape [12,13]. Globally, five SARS-CoV-2 variants are designated as variants of concern due to their heightened transmissibility and reduced vaccine efficacy. These include Alpha/B.1.1.7, Beta/B.1.351, Gamma/P. 1, Delta/B.1.617.2, and Omicron/B.1.1.529 [14]. Therefore, adjuvant therapy is required to reduce the replication of SARS-CoV-2 *in vivo* and avoid the occurrence of a cytokine storm [11].

Owing to their widespread historical use for treating a variety of illnesses, exploring the potential therapeutic mechanisms and applications of Chinese herbal medicines forms a strong foundation for clinical research. After the severe acute respiratory syndrome (SARS) outbreak in 2003, many literature reviews and publications on treating SARS using traditional Chinese medicines (TCMs) were published [15,16]. Some studies suggested that combined TCM approaches can reduce mortality and relieve symptoms in SARS patients, although the evidence is lacking due to the low methodological quality of experimental trials [17]. Owing to the structure and gene homology of SARS-CoV and SARS-CoV-2, many compounds have been reported to exert defensive effects against SARS-CoV-2 infection [18].

Jing-Si herbal tea (JSHT) [Figure 1a] is a traditional Chinese medicinal formulation developed by Tzu Chi Hospital in Hualien for combating COVID-19 and regulating immunity. It has received approval from Taiwan's Ministry of Health and Welfare [19,20]. In an early clinical trial, the combination of JSHT with standard therapy enhanced the reverse transcription polymerase chain reaction (RT-PCR) cycle threshold value, reduced C-reactive protein levels, and improved the Brixia score in patients with mild-to-moderate COVID-19. These findings suggest that JSHT may be a promising adjunctive treatment for COVID-19 patients [21]. This research examined the protective impact and associated mechanistic pathways of JSHT in mitigating injury induced by pro-inflammatory cytokines, including tumor necrosis factor (TNF)- $\alpha$ , interleukin (IL)-1 $\beta$ , and IL-6, in normal human pulmonary fibroblast cells (HEL 299). We focused on integrating multiomic results from *in silico* and *in vitro* studies, such as ligand profiler target, ingenuity pathway analysis (IPA), pharmacophore fitting and next-generation sequencing (NGS) analysis. Figure 1b illustrates the design framework and schematic representation of the JSHT study. This paper details the mechanisms and targets of JSHT, which make it a potential protective TCM agent for lung inflammation.

### MATERIALS AND METHODS

### In silico high-throughput target analysis

*In silico* high-throughput target analysis was conducted *in silico* using BIOVIA Discovery Studio 2022 (Dassault Systèmes) through the application of pharmacophore models. These models were evaluated considering the intricacies of the proteins prepared and their respective ligands. Subsequently, PharmaDB's database of 16,035 pharmacophore models served as the screening basis for every JSHT component. Furthermore, network analysis target outcomes were acquired using IPA software [22,23].

### Chemicals and reagents

JSHT contains Anisomeles indica (L.) Kuntze., Artemisia argyi H. Levl. et Vant., Chrysanthemum morifolium Ramat., Houttuynia cordata Thunb., Ophiopogon japonicus (L.f.) Ker Gawl., Perilla frutescens (L.) Britt., Platycodon grandiflorum (Jacq.) A.DC., and Glycyrrhiza uralensis Fisch., which were obtained from Tzu Chi Hospital, Hualien, Taiwan [20]. Acetonitrile, methanol, and phosphoric acid of high-performance liquid chromatography (HPLC) grade were sourced from Sinopharm Chemical Reagent Co., Ltd. For the procurement of ultrapure water, the Milli-Q water purification system, supplied by EMD Millipore, was employed. The purity of all JSHT standards was >98%, as determined by HPLC. MTT, calceolarioside A (SMB00246), and Sigma-Aldrich and Merck KGaA were the sources for chlorogenic acid (CA) (C3878), while glycyrrhetic acid (G735000) was acquired from Toronto Research Chemicals based in Toronto, Canada. Life Technologies provided essential cell culture supplies, including Dulbecco's modified Eagle's medium (DMEM), l-glutamine, penicillin G, trypsin-EDTA and fetal bovine serum (FBS).

# Analysis employing ultra-high capacity trap mass spectrometry

The JSHT extract was formulated with the following composition: *A. argyi* (6 g), *A. indica* (6 g), *Ophiopogon japonicas* (4 g), *Platycodon grandiflorus* (4 g), *H. cordata* (4 g), *P. frutescens* (2 g), *G. uralensis* (2 g), and *C. morifolium* (0.2 g). The mixture underwent a boiling process (100°C) and agitated on a heated plate with 1000 mL of distilled water for 60 min (Corning<sup>®</sup> PC-220 Analog Hot Plate/Stirrers, 6795-220). Subsequently, the mixture was concentrated



Figure 1: (a) Jing-Si herbal tea (JSHT) formula developed by Hualien Tzu Chi Hospital's efforts in addressing coronavirus disease 2019 infection and modulating immune responses. (b) Study design and JSHT schematics. NGS: Next-generation sequencing

to 3.63 g under reduced pressure employing a rotary evaporator (N-1300VF/OSB-2200; EYELA, Japan) [19]. The chromatographic examination was conducted utilizing the ACQUITY UPLC I-Class/Xevo TQ-XS IVD System, a product of Waters Corporation. This system was equipped with a ZORBAX SB-C18 column, dimensions 4.6 mm × 50 mm, sourced from Agilent Technologies, Inc. Mass spectrometry (MS) data were obtained using an Esquire high capacity trap (HCT) ultra-HCT mass spectrometer (Bruker Daltonics, Bremen, Germany) in the electrospray positive mode. The m/z scan range was 50-1400. MS/MS fragmentation of the five most intense precursors was automatically triggered. The nebulizer gas flow was set at 40 psi, and the drying gas flow rate was adjusted to 10 L/min. The drying temperature was maintained at 350°C. Chromatographic separation was conducted on an Atlantis T3 column (2.1 mm  $\times$  150 mm, 3  $\mu$ m) maintained at 35°C using a binary mobile phase composed of 0.1% formic acid in water (solvent A) and 0.1% formic acid in acetonitrile (solvent B) at the flow rate of 0.25 mL/min following a gradient elution procedure: 0-2 min: 0%-2% solvent B; 2-21 min: 2%-99% solvent B; 21-26 min: 99% solvent B; 26-26.5 min: 99%-100% solvent B; 26.5-30 min: 2% solvent B. The volume injected was 5 µL [23,24].

### Cell culture and cell viability

The HEL 299 cell line, a normal human embryonic pulmonary fibroblast variant, was acquired from the Bioresources Collection and Research Center, bearing the catalog number 60117, and was also sourced from the Food Industry Research and Development Institute. The cells were maintained in a 75-T culture flask and cultured in DMEM supplemented with 2 mM L-glutamine, 10% FBS, 100 U/mL penicillin, and 100  $\mu$ g/mL streptomycin. The culture was incubated at 37°C in a humidified

atmosphere with 5% CO<sub>2</sub> [22,23,25]. HEL 299 cells were seeded in 24-well plates at a density of 2.5 × 10<sup>5</sup> cells per milliliter per well. The cells underwent treatment with TNF- $\alpha$  (10 ng/mL), IL-6 (10 ng/mL), IL-1 $\beta$  (10 ng/mL), and JSHT (250, 500, 750, and 1000 µg/mL), calceolarioside A (50–100 µM), CA (50–100 µM), and glycyrrhetic acid (50–100 µM) diluted in 0.1% dimethyl sulfoxide (DMSO) for 12 and/or 24 h. A control treatment was administered to the cells using 0.1% DMSO. Cell viability was assessed using an MTT assay (Sigma) after JSHT treatment for 24 h. The blue MTT formazan crystals were solubilized in DMSO and quantified by measuring absorbance at 570 nm using an enzyme-linked immunosorbent assay reader [24,26].

#### Real-time cell confluence

The cell confluence assay was performed using the IncuCyte S3 ZOOM System from Essen BioScience. HEL 299 cells were plated at a density of  $1 \times 10^4$  cells per 100 µL per well in a 96-well plate and treated with TNF- $\alpha$ , IL-1 $\beta$ , IL-6 (10 ng/mL each, individually), and/or 1000 µg/mL of JSHT for a duration of 0–24 h. Cells were visualized and photographed every 2 h, as previously described [27].

### Inflammatory proteins array detection

The assessment of inflammation-related protein levels was performed using the Quantibody<sup>®</sup> Human Inflammation Array 3 (QAH-INF-3) from RayBiotech, Inc., located in Norcross, GA, USA. For detection purposes, HEL 299 cells were cultured in 24-well plates at a concentration of  $2.5 \times 10^5$  cells per milliliter per well. The cells were subjected to individual treatments with TNF- $\alpha$ /IL-1 $\beta$ /IL-6 at a concentration of 10 ng/mL each, as well as JSHT at a concentration of 1000  $\mu$ g/mL, for 24 h. The cells underwent a control treatment with 0.1% DMSO. Cells were harvested, and total proteins were extracted following the manufacturer's instructions

using RIPA buffer (Thermo Fisher Scientific) supplemented with protease inhibitor cocktail (Roche) and phosphatase inhibitor cocktail (Sigma). The protein concentration was quantified using a protein assay kit from Bio-Rad. Fifty microgram samples from individual cells were utilized for the QAH-INF-3 assay. Protein hybridization was conducted following the manufacturer's instructions provided with the QAH-INF-3 kit. Fluorescent images were scanned using an Innopsys innoscan710 (Innopsys, Carbonne, France), and the data were analyzed using Mapix software (Innopsys) [28].

# Whole-transcriptome sequencing of next-generation sequencing analysis

To assess the potential mechanisms and signaling pathways of JSHT in HEL 299 cells subjected to cytokine injury induced by TNF- $\alpha$ /IL-1 $\beta$ /IL-6, RNA sequencing analysis of JSHT and cytokine-exposed and cytokine-injured control groups was performed. Total RNA was isolated following the manufacturer's guidelines using TRIzol® reagent (Invitrogen, USA). The purified RNA was quantified at an optical density of 260 nm using an ND-1000 spectrophotometer from Nanodrop Technology, USA. In addition, quantification was performed using a Bioanalyzer 2100 from Agilent Technology, USA, with the RNA 6000 LabChip Kit (Agilent Technology, USA). The preparation of all RNA samples was meticulously conducted in strict accordance with the guidelines set forth in Illumina's established protocol. The construction of the library was carried out using the SureSelect XT HS2 mRNA Library Preparation Kit, sourced from Agilent in the United States. This step was succeeded by a purification process, which involved the employment of AMPure XP beads, a product of Beckman Coulter, also based in the United States. Sequencing was accomplished using Illumina sequencing-by-synthesis technology provided by Illumina, USA (300-cycle paired-end read; 150 PE). Data from sequencing, presented in the FASTQ format, were generated through the application of Illumina's base calling software, bcl2fastq version 2.20. The subsequent steps of adaptor removal and enhancement of sequence quality were proficiently performed using the Trimmomatic tool, version 0.36. The alignment of RNA sequences was performed utilizing HISAT2. For the purpose of normalizing expression levels, the calculation of transcripts per million (TPM) mapped reads was employed. Differential expression analysis was conducted utilizing StringTie (StringTie v2.1.4) and DESeq (DESeq v1.39.0). The detection and correction of genome bias were integrated through the utilization of Welgene Biotech's proprietary pipeline. For statistical analysis, the P value computation was based on the hypergeometric distribution, conceptualized as the likelihood of an occurrence in a random selection process [29,30].

# Network analysis was conducted using ingenuity pathway analysis

Network analysis was conducted using IPA. Potential compound targets were selected based on a goodness-of-fit value exceeding 0.6. A comprehensive set of 419 human target genes was aggregated as focal entities. These genes were then analyzed utilizing the core analysis functionality embedded in the IPA software (IPA 2021; Qiagen Sciences, Inc.,). This analysis was employed to generate molecular networks

derived from the identified targets. Enriched networks, along with their associated ontology groups, upstream regulators, canonical pathways, functions, diseases, and network analysis rankings, were determined based on statistical significance by the Fisher's exact *t*-test (P < 0.05). The molecular networks in the QIAGEN knowledge base originated from the focus molecules, with each molecule being interconnected with others in the network. This analysis was performed in duplicate [22,23].

### Statistical analysis

The results are expressed as the mean  $\pm$  standard deviation, and the experiments were conducted independently and in triplicate as indicated. Statistical analysis was carried out using one-way analysis of variance or Tukey's test. Levels of significance were represented with \*\*\*P < 0.001, delineating statistical discrepancies between the control group and the groups treated with TNF- $\alpha$ /IL-1 $\beta$ /IL-6. In contrast, the notation ###P < 0.001 was used to signify statistical distinctions between the TNF- $\alpha$ /IL-1 $\beta$ /IL-6-treated groups and those treated with JSHT [24,31].

### RESULTS

# *In silico* high throughput target analysis of Jing-Si herbal tea

The formulation of JSHT and its constituent herbal elements have been methodically standardized, incorporating a total of eight principal ingredient categories. The key bioactive compounds in JSHT were identified and compiled from the pertinent sections of the 2015 edition of the Chinese Pharmacopoeia [19,20]. The in silico high-throughput target was analyzed using pharmacophore models utilizing BIOVIA Discovery Studio 2022 software, provided by Dassault Systèmes, alongside IPA software, facilitated this analysis. The top 20 ingenuity canonical pathways are shown in Figure 2a included glucocorticoid receptor signaling, estrogen receptor signaling, prostate cancer signaling, coronavirus pathogenesis pathway, cardiac hypertrophy signaling (enhanced), molecular cancer mechanisms, hepatic fibrosis signaling pathway, bladder cancer signaling, colorectal cancer metastasis signaling, PI3K/AKT signaling, pancreatic adenocarcinoma signaling, HIF1 $\alpha$  signaling, telomerase signaling, IL-17 signaling, endocannabinoid cancer inhibition pathway, regulation of epithelial-mesenchymal transition through the growth factor signaling pathway, PTEN signaling, role of IL-17A in arthritis, leukocyte extravasation signaling, and the senescence pathway. The top 20 ingenuity canonical pathways with their associated molecules are listed in Table 1. These identified targets could be associated with downstream cellular functionalities and phenotypic expressions. A network of associations between JSHT and anti-inflammatory cytokines was generated, and cytokine levels are shown in Figure 2b. The top 20 regulated cytokines included TNF, IFNG, IL1B, IL6, IL4, OSM, IL2, CSF2, IL15, IL13, IL1A, SPP1, CSF1, EPO, CXCL12, PRL, TNFSF11, IL17A, IFNB1, and IL3, which were the most highly regulated by JSHT-targeted genes. Finally, viral infection, lung inflammation, and lower respiratory tract disorder networks were constructed using IPA core analysis. Figure 3 illustrates the focal molecules, depicted in grey,

identified as potential targets of JSHT. The results revealed the potential therapeutic effects of JSHT through interference with pathways related to lung inflammation disease [Figure 3a], lower respiratory tract disorder [Figure 3b], and viral infection [Figure 3c] by identifying JSHT target proteins. Detailed information regarding the target genes is presented in Table 2. The five primary cytokines correlating with these target genes include TNF, IL-1 $\beta$ , IFN- $\gamma$ , IL-4, and IL-6.

# Jing-Si herbal tea treatment revealed protective effects against inflammatory cytokines on HEL 299 cells

We prepared and analyzed JSHT extracts by liquid chromatography. As shown in Figure 4, the UPLC-Q-TOF/MS data showed a standard peak for CA and Glycyrrhetinic acid (GA). Our study explored the putative protective influences of JSHT against cytokine-induced cellular damage in normal human pulmonary HEL 299 cells, employing in vitro experimental approaches. Figure 5a demonstrates that cell viability notably diminished in the presence of TNF- $\alpha$ , IL-1 $\beta$ , and IL-6 (10 ng/mL each) in the absence of JSHT extract treatment. In addition, the cellular confluence exhibited a time-dependent alteration, as depicted in Figure 5c. In contrast, groups treated with JSHT showed preserved cellular confluence and protected cell viability. Then, we examined the protective effects of individual phytochemicals, including calceolarioside A, CA, and glycyrrhetic acid. As shown in Figure 5b, cell viability significantly increased after treatment with calceolarioside A or CA (control:  $101.07\% \pm 1.99\%$ ; TNF- $\alpha$ / IL-1 $\beta$ /IL-6: 57.39% ± 1.21%; calceolarioside A [100  $\mu$ M]:  $66.17\% \pm 2.06\%$ ; CA [100 µM]: 72.22% ± 2.22%). These results suggest that JSHT and its major components, calceolarioside A and CA, cytoprotective influences in



Figure 2: (a) Top 20 ingenuity canonical pathways of Jing-Si herbal tea (JSHT) by *in silico* high throughput target screening analysis. (b) Ingenuity pathway core analysis for potential cytokines gene targets of JSHT. JSHT: Jing-Si herbal tea, IL: Interleukin, TNF: Tumor necrosis factor



Figure 3: In silico pathway core analysis for potential targets of Jing-Si herbal tea in (a) lung inflammation genes; (b) lower respiratory tract disorder; (c) the viral infection genes

Ingenuity canonical	P (-log)	Ratio	Molecules
pathways			
Glucocorticoid receptor	12.3	0.0389	AR, EGFR, FBP1, HSP90AA1, HSP90AB1, HSP90B1, HSPA8, MAP2K1, MAP3K7, MAPK1, MAPK10,
signaling			MAPK14, MMP1, MMP8, NOS2, NOS3, PGR, PIK3CG, PLAU, PPARG, PRKACA, PTGS2, TYK2
Estrogen receptor	11.6	0.0465	EGFR, GSK3B, HSP90AA1, HSP90AB1, HSP90B1, MAP2K1, MAPK1, MMP1, MMP10, MMP12,
signaling			MMP8, NOS3, PAK1, PGR, PIK3CG, PRKACA, ROCK1, SETD7, TYK2
Prostate cancer signaling	11.5	0.103	ABL1, AR, CDK2, GSK3B, HDAC8, HSP90AA1, HSP90AB1, HSP90B1, MAP2K1, MAPK1, PDPK1, PIK3CG
Cardiac hypertrophy	11.1	0.0382	ACE, ACVR1, FGF1, FGFR2, GSK3B, HDAC8, ITGAL, MAP2K1, MAP3K7, MAPK1, MAPK10,
signaling (enhanced)			MAPK14, PDE10A, PDE4D, PDE6D, PIK3CG, PRKACA, PTGS2, PTK2, ROCK1, TDP2
Coronavirus pathogenesis	10.9	0.069	ABL1, ACE, AR, CASP3, CDK2, CTSL, HDAC8, MAPK1, MAPK10, MAPK14, OAS1, PTGS2, STDIG1 TM//2
pathway	10.9	0.0410	STINUL, LYKZ
cancer	10.8	0.0419	MAPK1, MAPK10, MAPK14, PAK1, PIK3CG, PRKACA, PTK2, TYK2
Hepatic fibrosis signaling	10.2	0.042	ACVR1, BRD4, CASP3, CSNK1D, CSNK1G3, GSK3B, ITGAL, MAP2K1, MAP3K7, MAPK1,
pathway			MAPK10, MAPK14, MMP1, PIK3CG, PPARG, PRKACA, PTK2, ROCK1
Colorectal cancer	10.2	0.0547	CASP3, EGFR, GSK3B, MAP2K1, MAPK1, MAPK10, MMP1, MMP10, MMP12, MMP8, NOS2,
metastasis signaling			PIK3CG, PRKACA, PTGS2, TYK2
Bladder cancer signaling	10.1	0.0948	ABL1, DAPK1, EGFR, FGF1, HDAC8, MAP2K1, MAPK1, MMP1, MMP10, MMP12, MMP8
PI3K/AKT signaling	9.71	0.0637	GSK3B, GYS1, HSP90AA1, HSP90AB1, HSP90B1, ITGAL, MAP2K1, MAPK1, NOS3, PDPK1, PIK3CG, PTGS2, TYK2
Pancreatic	9.68	0.0859	ABL1, CDK2, CYP2E1, EGFR, HDAC8, MAP2K1, MAPK1, MAPK10, PIK3CG, PTGS2, TYK2
adenocarcinoma signaling			
HIF1 $\alpha$ signaling	9.45	0.0607	HIF1AN, HSP90AA1, HSPA8, Ldha/RGD1562690, MAP2K1, MAPK1, MMP1, MMP10, MMP12, MMP8, NOS2, PIK3CG, VHL
Telomerase signaling	9.2	0.0935	ABL1, EGFR, HDAC8, HSP90AA1, HSP90AB1, HSP90B1, MAP2K1, MAPK1, PDPK1, PIK3CG
IL-17 signaling	8.98	0.0635	GSK3B, HSP90AA1, HSP90AB1, HSP90B1, LCN2, MAP3K7, MAPK1, MAPK10, MAPK14, NOS2, PIK3CG, PTGS2
Endocannabinoid cancer inhibition pathway	8.94	0.0733	CASP3, GSK3B, MAP2K1, MAPK1, MAPK14, NOS2, NOS3, PIK3CG, PRKACA, PTK2, ROCK1
Regulation of the epithelial	8.9	0.0625	EGFR, FGF1, FGFR2, GSK3B, MAP2K1, MAP3K7, MAPK1, MAPK10, MAPK14, MMP1, PIK3CG,
growth factors pathway			11K2
DTEN signaling	0 00	0.0724	CASD2 CONV2A1 EGED ECED2 COV2D ITCAL MAD2V1 MADV1 DDDV1 DIV2CC DTV2
Polo of II 17A in orthritic	0.00 9 77	0.126	MAD2V1 MADV1 MADV10 MADV14 MMD1 NOS2 DIV2CC DTCS2
Loukoauto avtravasation	0.77 9.72	0.130	ADI 1 ITGAL MADV1 MADV10 MADV14 MMD1 MMD10 MMD12 MMD2 DIV2CG DTV2
signaling	0.75	0.0005	ADD 1, 11 OAD, MAI K1, MAFK10, MAFK14, MINIF 1, MINIF 10, MINIF 12, MINIF $\delta$ , PIK3CO, PIK2, ROCK 1
Signalling	9 6 1	0.0464	ACURA CREVA CHEVA CHEVA DED MADAVA MADVA MADVA MADVA DDVA
Senescence pathway	8.01	0.0404	PIK3CG. STING1. VHL

# Table 1: The top 20 ingenuity canonical pathways of Jing-Si-Herbal-Tea by ingenuity pathway analysis

IL: Interleukin

# Table 2: The top 5 inflammatory cytokines regulated gene of Jing-Si-Herbal-Tea by ingenuity pathway analysis analysis

Upstream	Target	P-value of	Target molecule in dataset
regulator	number	overlap	
TNF	42	9.72E-11	ACE, ALB, AR, BACE1, CA2, CASP3, CDK2, CSF1R, CYP2E1, DPP4, EGFR, FDPS, FGFR2, GSK3B, HSD11B1,
			HSP90AB1, HSP90B1, HSPA8, ITGAL, LCN2, MAP3K7, MAPK1, MAPK14, MMP1, MMP10, MMP12, MMP8, NOS2,
			NOS3, OAS1, PARP14, PIK3CG, PIM1, PLAU, PPARG, PTGS2, RIPK2, RRM1, SHBG, TH, TYK2, VDR
IFN-γ	40	1.06E-12	ACE, BACE1, CASP3, CDK2, CGAS, CSF1R, CYP2E1, DAPK1, DPP4, FBP1, FECH, FGF1, FKBP1A, GART,
			HSP90AA1, HSP90AB1, HSPA8, ITGAL, LCN2, Ldha/RGD1562690, MAP2K1, MAPK14, MMP1, MMP10, MMP12,
			NOS2, NOS3, OAS1, PARP14, PIM1, PLA2G7, PLAU, PPARG, PTGS2, RIPK2, RORC, SAMHD1, STING1, TPI1, VDR
IL-1β	29	9.11E-10	ACE, BACE1, CASP3, CYP2E1, DPP4, EGFR, FGFR2, GSK3B, GYS1, HSD11B1, LCN2, Ldha/RGD1562690, MAPK14,
			MMP1, MMP10, MMP12, MMP8, NOS2, NOS3, PAK1, PGR, PIM1, PLAU, PPARG, PTGS2, REN, RIPK2, RORC, VDR
IL-6	26	1.74E-10	ACVR1, ALB, CASP3, CDK2, CHEK1, CSF1R, CYP2E1, DHFR, EGFR, KIF11, LCN2, MAP2K1, MMP1, MMP10,
			MMP12, MMP8, NOS2, NOS3, PIM1, PLAU, PPARG, PTGS2, RORC, STING1, TH, TYK2
IL-4	26	8.05E-07	CA2, CASP3, CDK2, CSF1R, CTSL, CYP2E1, DPP4, GALK2, HSD11B1, ITGAL, MAP2K1, MAPK1, MMP1, MMP10,
			MMP12, NOS2, PGK1, PIM1, PIN1, PLAU, PNP, PPARG, PTGS2, SYK, TPI1, VDR

TNF: Tumor necrosis factor, IL: Interleukin

mitigating cytokine-induced injury within HEL 299 cells. Subsequently, we used a protein microarray (Quantibody®

Human Inflammation Array) to investigate the inflammatory cytokines in HEL 299 cells. The results revealed that



Figure 4: UPLC-Q-TOF/MS analysis data showing standard peaks of chlorogenic acid and glycyrrhetinic acid. JSHT: Jing-Si herbal tea, CA: Chlorogenic acid, GA: Glycyrrhetinic acid



**Figure 5:** Cell viability exhibited a significant concentration-dependent decrease in the absence of Jing-Si herbal tea (JSHT) extract, calceolarioside A, and chlorogenic acid treatments when exposed to tumor necrosis factor (TNF)- $\alpha$ , interleukin (IL)-1 $\beta$ , and IL-6. (a) HEL 299 cells were seeded at a density of 2.5 × 10<sup>5</sup> cells/mL/well and subsequently exposed to individual cytokines (TNF)- $\alpha$ , IL-1 $\beta$ , and IL-6) at a concentration of 10 ng/mL, along with JSHT at concentrations of 250, 500, 750, and 1000 µg/mL, for a duration of 24 h. (b) The HEL 299 cells were treated with TNF- $\alpha$ /IL-1 $\beta$ /IL-6 (10 ng/mL, individual) and calceolarioside A, chlorogenic acid glycyrrhetic acid (50–100 µM) for 24 h. The cells were treated with 0.1% DMSO as control treatment. Cell viability was measured by the MTT assay (*n* = 3). The obtained results were subjected to statistical analysis employing a one-way analysis of variance, followed by Tukey's *post hoc* test. Significance levels were denoted as \*\*\**P* < 0.001 and ###*P* < 0.001. (c) Real-time cellular confluence after TNF- $\alpha$ /IL-1 $\beta$ /IL-6 and JSHT treatments changed in a time-dependent manner. JSHT: Jing-Si herbal tea, IL: Interleukin, TNF: Tumor necrosis factor

JSHT (1000  $\mu$ g/mL) reduced the protein levels of TNF- $\alpha$ , TNF-RI, TNF-RII IL-1 $\alpha$ , IL-1 $\beta$ , and IL-6 in

cytokine-induced injury in HEL 299 cells [Figure 6]. Based on the results, we treated injured HEL 299 cells with 1000



**Figure 6:** The cytokines concentration of Jing-Si-herbal-tea (JSHT) by protein microarray detection analysis. Cultured HEL 299 cells at a concentration of  $2.5 \times 10^5$  cells/mL/well were subjected to treatment with individual cytokines, namely tumor necrosis factor- $\alpha$ , interleukin (IL)-1 $\beta$ , and IL-6, each at a concentration of 10 ng/mL, in combination with JSHT at a concentration of 100 $\mu$ g/mL. The exposure duration for this experimental setup was 24 h. Cytokines concentration was measured by the protein microarray (n = 3). The acquired data were subjected to statistical analysis employing a one-way analysis of variance, followed by *post hoc* testing using Tukey's method. \*\*\*P < 0.001 and ###P < 0.001. JSHT: Jing-Si herbal tea, IL: Interleukin, TNF: Tumor necrosis factor

 $\mu$ g/mL of JSHT to investigate the possible mechanisms and signaling transduction using transcriptome analysis of NGS.

#### Transcriptome and network analysis

RNA sequencing transcriptional profile analysis was conducted to investigate the mechanism of action (MOA) and signal transduction pathways of JSHT in cytokine-injured HEL 299 cells. The postcytokine-injured samples, JSTH-treated samples, JSTH-treated cytokine-injured samples, and the control group were clustered separately and compared. We compared the differences in the transcriptome of cytokine-injured and JSTH-treated cytokine-injured HEL 299 cells. Figure 7a shows the differential expression in the MA plot. Significantly differentially expressed genes were shown as green dots. Figure 7b shows the differential expression using a volcano plot. Red dots represent genes that are significantly upregulated, while blue dots denote genes that are significantly downregulated. In total, 311 genes were upregulated and 109 genes were downregulated. Supplementary Table 1 shows the raw transcriptome sequencing data of JSHT-treated cytokine-injured HEL 299 cells.

To elucidate the physiological functions of these genes and their related activities, the IPA database was utilized. This was done to examine the protective mechanisms and signaling networks of JSHT in counteracting cytokine-induced cellular injuries. The assessment focused on the rich factor, Q-value, and the quantity of genes enriched in these pathways. Two replicates for normalized RNA sequencing data from cytokine-injured and JSTH-treated cytokine-injured HEL 299 cells were clustered separately using Ingenuity Canonical Pathways in Ingenuity's Knowledge Base. Figure 7c illustrates the pathway analysis and the values of the activation Z-score. Following the IPA analysis, a network illustrating the interrelations among various genes was constructed, as depicted in Figure 8a, where induction of helper T lymphocytes, TNFSF12, MYD88, STIRG1, RELA, CREBBP, NFKB1-mediate relaxin signaling, and G-protein coupled receptor signaling played key roles in immune regulatory pathways. The relevant biological pathways of JSTH-treated cytokine-injured HEL 299 cells were analyzed to determine their transcriptional profiles. The predictive target genes and associated pro-inflammatory cytokines in the pulmonary system were analyzed, and the results are shown in Figure 8b. The expression of FGF7, FGF11, FGF17, FGF20, OSM, CD70, LTB, LTA, CD17C, TNFSF11, IL23A, IL23, C8G, and TSLP was decreased and that of AMBP alpha-1-microglobulin/ bikunin precursor (ANBP) was increased. Taken together, JSHT treatment of cytokine-injured HEL 299 cells led to decreased cytokine release and inhibited pro-inflammatory processes.

### DISCUSSION

Over the past 3 years, although COVID-19 has led to relatively high mortality rates in humans worldwide, with the development of vaccines and the discovery of oral anti-SARS-CoV-2 therapy, fatality rates have begun to decrease gradually. At present, the most significant threat of COVID-19 to human beings is severe infection cytokine storm, resulting in multiorgan failure, which strains the capacities of emergency and hospital services. Further research on antiviral agents and vaccines to prevent the cytokine storm and anti-inflammatory response caused by SARS-CoV-2 remains a major focus in drug discovery and development [2,23]. Clinical evidence has demonstrated that Chinese herbal medicines and/or TCMs may be helpful in preventing or treating human coronavirus-related disorders [2,20,22,23,32]. TCMs have been included in the guidelines for COVID-19 therapies in China. In Taiwan, JSHT has received approval from the Ministry of Health and Welfare, bearing the registration number MOHW-PM-060,635. Furthermore, a drug permit for export purposes has been granted by the same ministry under the registration number CM100106063507. In addition, research papers such as the clinical trial titled "enhances the diminution of SARS-CoV-2 viral load in patients with COVID-19" NCT04967755) have demonstrated potential direct effects of JSHT on disease progression [20]. The combination of JSHT with standard treatment resulted in improvements in the RT-PCR cycle threshold value, C-reactive protein level, and Brixia score among patients with mild-to-moderate COVID-19 symptoms, indicating that JSHT is a promising complementary agent for COVID-19 treatment [21]. Our early review article described the anti-SARS-CoV-2 efficacy and MOA of the active ingredients of JSHT [20]. JSHT includes five herbs with antiviral activity, seven herbs with anti-oxidant activity, and seven herbs with anti-inflammatory activity. In addition, two herbs exert a modulatory effect on the immune system; one herb exhibits anti-thrombotic activity, and one herb has been shown to attenuate cell death [20]. In this study, we used a multiomic platform to analyze the molecular mechanisms of JSHT in the context of inflammatory cytokine-induced cellular injury in human pulmonary HEL 299 cells. Our results from in silico [Figures 2 and 3] and in vitro studies [Figures 5-8] may provide a useful basis for further clinical studies on the treatment of JSHT. JSHT has been demonstrated to



Figure 7: Transcriptome analysis of Jing-Si herbal tea (JSHT)-treated cytokine-injured HEL 299 cells was shown. (a) Differential expression of MA and (b) volcano plots. Cytokine: Tumor necrosis factor -α/interleukin (IL)-1β/IL-6 (10 ng/mL, individual); JSHT. (c) Whole-transcriptome sequencing and comparative analysis using the ingenuity pathway analysis software on JSHT-treated cytokine-injured HEL 299 cells. Blue and red coloring indicates the activation of Z-score values. JSHT: Jing-Si herbal tea, IL: Interleukin

exert pleiotropic effects on aging, skin health, or immune function [19]. The direction of JSHT is adding 300cc water to a bag of herbal tea, boil, and then serve. Therefore, it is most appropriate to conduct research using water extraction. CA and Glycyrrhetinic acid are water soluble compounds, so it is most suitable as a quantitative standard when performing LC-MS/MS analysis [33-35]. In this study, we prepared a water extract of JSHT and analyzed it by UPLC-Q-TOF/MS. Figure 4 illustrates that both positive and negative ion modes were detected, including CA and glycyrrhetinic acid (GA) compounds. Several pharmacological studies have reported the anti-inflammatory and antiviral activities of CA [33-36]. Three approved antiviral drugs (nelfinavir, ritonavir, and lopinavir) showed reliable inhibitory effects in *in silico* and *in vitro* studies on 3CL (pro) main protease [37,38].

In our *in silico* study, additionally, we have demonstrated the inhibitory effect on the 3CL (pro) protease of SARS-CoV-2,

though this data is not presented here. Bond interaction analysis showed that CA formed bond interactions with residues CYS145, LEU141, GLY143, HIS41, HIS163, and MET165 of the 3CL (pro) main protease. CA from C. morifolium Ramat., has been reported to inhibit the 3CL (pro) main protease on SARS-CoV-2 [39-41]. The pharmacologic activities of CA include modulation of NF-kB activity, TNF signaling pathway, T cells differentiation, and IL-17 function [42,43]. Glycyrrhizic acid (GA) from G. radix, which is known as licorice, suppressed LPS-induced TNF-a, IL-1β, nitric oxide, and prostaglandin E2 production through nuclear factor κB (NF-κB) pathway [44,45]. Glycyrrhizic acid (GA) was also reported to bind at the spike glycoprotein receptor-binding domain of the SARS-CoV-2 omicron variant (B.1.1.529) and exhibit high binding affinity with ACE2 [45,46]. Other reports also demonstrated that glycyrrhizic acid (GA) showed highly favorable free binding energies with 3CL (pro) main protease



Figure 8: (a) A network depicting associations among various genes was constructed through IPA analysis. Induction of helper T lymphocytes, TNFSF12, MYD88, STIRG1, RELA, CREBBP, NFKB1-mediate relaxin signaling, and G-protein coupled receptor signaling play key roles in immune regulatory pathways. (b) The target genes and associated pro-inflammatory cytokines in the pulmonary system of JSTH-treated cytokine-injured HEL 299 cells were analyzed using IPA software to determine the transcriptional profile. (1: Cytokine (tumor necrosis factor-α/interleukin [IL]-1β/IL-6) treatment; 2: Cytokine with Jing-Si herbal tea treatment. IL: Interleukin, TNF: Tumor necrosis factor

and PLpro [47,48]. Here, bond interaction analysis showed that glycyrrhizic acid (GA) conducted bond interaction with residues CYS145, LEU141, GLY143, HIS41, IS163, and MET165 of 3CL (pro) main protease (data not shown). The binding activity results of glycyrrhizic acid (GA) are similar to those of suggested inhibitors of 3CL (pro) main protease. However, further research on anti-SARS-CoV-2 activity associated with JSHT treatment by *in vitro* and *in vivo* analysis is required.

The advancement of acute pneumonia due to SARS-CoV-2 infection can lead to elevated levels of host lung cell mortality, potentially resulting in diminished lung functionality [3,22]. The inflammatory response, immune system, and various intercellular signaling mechanisms play crucial roles in influencing the progression of COVID-19. Cytokine release syndrome has been associated with poor outcomes of COVID-19, and various conventional and traditional treatment options have been considered to control the cytokine storm [3,22]. Our study focused on the in vitro examination of the protective impact of JSHT extract against injury induced by TNF- $\alpha$ , IL-1 $\beta$ , and IL-6 in normal human lung fibroblast cells. The results demonstrated that treating HEL 299 cells with TNF- $\alpha$ /IL-1 $\beta$ /IL-6 (10 ng/ mL, individual) decreased cell viability to < 60% compared to the control group [Cell viability: control:  $99.73 \pm 0.54\%$ ; TNF- $\alpha$ /IL-1 $\beta$ /IL-6: 56.62 ± 1.62%, Figure 5a] and induced changes in cellular confluence [Figure 5b]. These results are comparable to those of our early studies, showing that TNF- $\alpha$ / IL-1 $\beta$ /IL-6-induced fibroblast cell damage [22]. In contrast, treatment with JSHT maintained cellular morphology and safeguarded cell viability, achieving approximately 40%-50% of the control group's level in the presence of the three inflammatory cytokines, as shown in Figure 5a. Cell viability significantly increased after treatment with calceolarioside A or CA [Figure 5b]. These results suggest that calceolarioside A and CA play critical roles in protection against lung injury. In previous studies, CA was demonstrated to reduce lipopolysaccharide-induced acute lung injury and protect against Klebsiella pneumoniae infection [49,50].

TCM is thought to comprise a wide array of components, each interacting with diverse targets. We used a multiomic platform (such as high-throughput target analysis, pharmacophore fitting, IPA, and NGS analysis) to investigate the underlying molecular mechanisms responsible for the protective effects of JSHT in inflammatory cytokine-induced cell damage in pulmonary fibroblast cells and anti-SARS-CoV-2 activity. Figure 5 demonstrates the protective effects of JSHT. By NGS analysis, a total of 311 genes exhibited upregulation, while 109 genes were found to be downregulated [Figure 7b]. Helper T lymphocyte induction, TNFSF12, MYD88, STIRG1, RELA, CREBBP, NFKB1-mediate relaxin signaling, and G-protein coupled receptor signaling are major signaling pathways in immune regulatory functions [Figure 8a]. Our results suggest that treatment of JSHT with cytokine-injured HEL 299 cells interferes with the expression of cytokines and pro-inflammatory genes. The innate immune system serves as the initial line of defense against pathogenic organisms [51-54]. Cells constituting the innate immune system, such as neutrophils, monocytes, and macrophages, recognize these pathogens via pattern-recognition receptors and produce cytokines to stimulate the activation of cells within the adaptive immune system [53-55]. IL-1, IL-6, and TNF are pivotal pro-inflammatory cytokines involved in the dynamics of cytokine storms. IL-1 binds to the IL-1 receptor (IL-1R) and activates a cascade of NF-κB pro-inflammatory signaling pathways [56,57]. IL-6, another inflammatory cytokine, binds to the membrane-bound IL-6 receptor (IL-6R) and creates a physiological immune balance. Excessive IL-6 binds to the soluble IL-6 receptor and activates the JAK-STAT3 cascade in endothelial cells, resulting in systemic hyper-inflammation [58-60]. Initial research indicates a correlation between elevated levels of pro-inflammatory cytokines and pulmonary inflammation and lung damage in patients with SARS [61], and many studies have reported that excessive IL-6 levels are highly correlated with mortality

in COVID-19 patients [58-62]. The findings of our study revealed that JSHT potentially reduced the protein levels of IL-1 $\alpha$ , IL-1 $\beta$ , IL-6, TNF- $\alpha$ , TNF-RI, and TNF-RII in injury of normal human lung fibroblast cells induced by TNF- $\alpha$ , IL-1 $\beta$ , and IL-6, as illustrated in Figure 6. Based on the results of the in silico study, JSHT influences a range of cytokine genes, such as TNF, IFNG, IL1B, IL6, IL4, OSM, IL2, and CSF2, as detailed in Table 2. Notably, all these cytokine genes have been previously identified in patients with COVID-19 [23]. Our NGS and pathway analysis results demonstrated that the induction of helper T lymphocytes, TNFSF12, MYD88, STIRG1, RELA, CREBBP, NFKB1-mediates relaxin signaling, and G-protein coupled receptor signaling plays important roles in immune regulatory pathways in JSHT-treated cytokine-injured HEL 299 cells [Figure 8a]. In addition, the target genes associated with pro-inflammatory cytokines in the pulmonary system were FGF7, FGF11, FGF17, FGF20, OSM, CD70, LTB, LTA, CD17C, TNFSF11, IL23A, IL23, C8G, TSLP, and AMBP [Figure 8b]. NF-KB plays a critical role as a transcription factor, significantly influencing immune functions and inflammatory responses. NF-kB affects cell survival and cell differentiation of immune cells such as T cells, macrophages, dendritic cells, and neutrophils [63]. Severe COVID-19 cases may be characterized by cytokine storms owing to NF-KB, which mediates macrophage activation and inflammatory cytokines production in the lung, ultimately leading organ failure and the development of ARDS [64-66]. Our results suggested that treatment of JSHT with cytokine-injured HEL 299 cells decreases cytokines release and inhibits pro-inflammatory process mediated NF-kB [Figure 8a]. Ovatodiolides in A. indica (L.) Kuntze exhibited potent anti-inflammatory properties through an inhibition pathway of TNF-α and IL-12 production [67,68]. A. argyi H. Levl. et Vant. and its active compound *dehvdromatricarin* A were observed to exert potent anti-inflammatory effects in a murine model of acute lung injury [69]. Furthermore, in animal studies conducted on asthmatic subjects, they were shown to decrease inflammatory cell counts and lower the levels of IL-4, IL-5, IL-13, and immunoglobulin E [70].

When pro-inflammatory cytokines such as IL-1 and IL-23 activate macrophages and/or neutrophils, IL-17A is synthesized. IL-17A plays a dual role by contributing to the recruitment of neutrophils and other immune cell types to the infection site, as well as facilitating immune cell infiltration. This, in turn, leads to tissue damage and exacerbates the severity of SARS-CoV-2 infection [71]. The immune responses elicited by SARS-CoV-2 infection lead to the activation and differentiation of T cells, resulting in the production of cytokines commonly associated with various Th17 cell subsets. In addition, infected cells release cytokines as part of the immune response [72]. T-cell immune function against SARS-CoV-2 infection may contribute to clinical protection [71]. Inhibition of IL-17 production reduces the production of pro-inflammatory cytokines IL-1β, TNF, and IL-6 [72]. IL-17 inhibitors have been approved as a successful strategy for reducing psoriasis and psoriatic arthritis injuries [72]. Our NGS analysis results demonstrated

that treatment of JSHT with cytokine-injured HEL 299 cells and induction of T help cell signaling play a key role [Figure 8a]. Our high-throughput target analysis results demonstrated that the coronavirus pathogenesis pathway (top 5), IL-17 signaling, and IL-17A signaling are potential targets of JSHT [Figure 2a]. In addition, the top 20 regulated cytokines were regulated most significantly by JSHT-targeted genes [Figure 2b]. Our study indicates that JSHT may serve as a promising multi-target candidate from TCM for the regulation of immune function.

The lungs are vital organs for oxygen and CO<sub>2</sub> exchange. SARS-CoV-2 infects the lungs and causes tissue damage. Severe damage can result in insufficient oxygen exchange and other tissue injuries. Recently, the Warburg effect was shown to exert a significant role in modulating the inflammatory response to COVID-19 [73-75]. SARS-CoV-2-infected pulmonary epithelial cells show increased HIF-1 expression through metabolic reprogramming via the Warburg effect [74]. In addition, these metabolic reprogramming cells increase the consumption of glucose and pro-inflammatory cytokines secretion, including IL-1, IL-6, and TNF- $\alpha$ , and induce monocytes and neutrophils infiltration into the lungs [76,77]. We conducted an in vitro investigation to assess the protective effects of JSHT extract against injury induced by TNF-α, IL-1β, and IL-6 in human lung fibroblast cells. Our findings demonstrated that TNF- $\alpha$ , IL-1 $\beta$ , and IL-6-induced injury in pulmonary fibroblast cells. Conversely, treatment with JSHT maintained cellular morphology and safeguarded cell viability in the presence of the three inflammatory cytokines, as depicted in Figure 5. We also demonstrated that JSHT potentially decreased the protein levels of IL-1 $\alpha$ , IL-1 $\beta$ , IL-6, TNF-α, TNF-RI, and TNF-RII in TNF-α/IL-1β/IL-6-induced fibroblast cell damage [Figure 6]. The results of the in silico analysis showed that a network representing the associations between JSHT and anti-inflammatory cytokines as the Warburg effect pathway included coronavirus pathogenesis pathway, molecular cancer mechanisms, PI3K/AKT signaling, and HIF1 $\alpha$  signaling [Figure 2]. These results suggest that JSHT regulates metabolic reprogramming and decreases inflammatory injury induced by cytokines in human pulmonary fibroblasts.

# CONCLUSION

Our findings have unveiled the therapeutic potential of JSHT as a TCM-based agent, which may offer favorable effects to patients with coronavirus through multiple signaling pathways. Furthermore, the primary bioactive compounds found in JSHT merit consideration as promising candidates for subsequent antiviral drug discovery investigations, particularly in the context of coronavirus management. The current investigation relied on bioinformatics and employed an *in silico* approach, necessitating validation through additional experimental analyses.

### Data availability statement

All data generated or analyzed during this study are included in this published article (and its supplementary information files).

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### **Conflicts of interest**

There are no conflicts of interest.

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# Supplementary Table 1: Data of transcriptome sequencing on Jing-Si-Herbal-Tea (JSHT)-treated HEL 299 cells was performed

Gene ID         Gene name         Log2 ratio         PA         INSG0000025075         ICU10502         C/11-D1           LSSC00000257924         AC 1397:0.2         17.27         2.45E-50         INSG0000027526         AC 10962.1         2.578         3.58E-02           ENSC00000275724         AC 1397:0.2         17.073         2.22E-33         INSG0000027321         AC 0379.1.2         2.515         3.55E-00           ENSC0000027581         AC 0379.8.2         14.205         6.007.0         INSG0000027351         AC 0379.8.2         3.81E-02           ENSC0000027691         AC 13891.2         13.49         9.78E-02         INSC0000027897         AC 03951.1         2.347         3.81E-02           ENSC0000027692         Q27353.1         13.347         2.48E-02         INSC0000027897         AC 03951.1         2.2376         4.26E-04           ENSC0000027693         DYN359         1.136.9.4         4.96E-02         INSC0000027873         AC 14192.0.1         2.08E         2.38E-02           ENSC0000027693         ENSC0000027693         ENSC0000027693         C/141104.3         2.218         8.76E-02           ENSC0000027691         INP115         1.268         3.96E-02         ENSC0000027693         C/141104.3         2.218         2.38E-02 <tr< th=""><th>performed</th><th></th><th></th><th></th><th></th><th></th><th>(Cytokine +</th><th></th></tr<>	performed						(Cytokine +	
Cytokine +         ENSC00000256752         ACI 39760.2         F.7.729         2.45F-50         PNSC00000255732         ACI 01931.1         2.571         3.58H-02           ENSC00000251573         ACO19760.2         17.729         2.45F-50         PNSC00000251573         ACI 01931.1         2.571         3.58H-02           ENSC00000251573         ACO19754.3         16.270         5.10F-50         ENSC0000025137         ACI 01972.1         2.44         8.16F-60           ENSC00000251673         ACO19754.3         16.270         5.01F-50         ENSC0000025973         ACI 112.2         2.475         4.28E-00           ENSC00000251673         ACI 112.2         13.990         7.98F-05         ENSC0000025973         ACI 112.2         2.476         4.28E-00           ENSC0000025070         ZAT 114         2.49E         ENSC0000027972         ACI 112.2         2.09         4.42F-00           ENSC0000025071         ENSC0000025773         ACI 112.2         2.30E-02         ENSC0000025773         CO10161.1         2.46E         2.30E-02         ENSC0000025773         CO10161.1         2.46E         3.30F-02           ENSC0000025775         ENSC0000025777         ACI 11470.1         2.46E         3.30F-02         ENSC0000025773         CO10161.1         2.46E         3.30F-02	Gene ID	Gene name	Log2 ratio	Р			JSHT/Cytokine)	
INSCR0000025792         AC 13976.2         71.72         2.455.50         PNSC0000027372         AC 13976.2         73.584.00           ENSC0000027561         AC 13976.2         17.003         2.225.31         ENSC00000273210         AC 032234.1         2.515         1.554.00           ENSC00000275621         AC 0379.52         14.205         6.016.03         ENSC00000275621         AC 0379.12         2.437         3.814.07           ENSC0000027612         AC 13891.2         1.341         4.966.2         ENSC0000027897         AC 02091.1         2.347         4.246.0           ENSC00000271640         AC 14.811         1.303         1.101-02         ENSC00000271640         2.944         4.666.0           ENSC00000271640         AC 14.930.1         1.2468         1.856.0         ENSC000002717437         CR 0419.3         2.221         3.392.0           ENSC00000271640         SNC199         1.2766         4.306.0         ENSC00000271772         AC 1419.3         2.221         3.392.0           ENSC0000027169         SNC199.7         C.1019.3         2.221         3.392.0           ENSC0000027177         SNC199.7         Z.01419.0         2.233         3.116.0           ENSC0000027174         AL 14930.1         2.266         4.3166.0 <td< th=""><th></th><th></th><th>(Cytokine +</th><th></th><th>ENSG00000285053</th><th>TBCE</th><th>2.604</th><th>6.71E-10</th></td<>			(Cytokine +		ENSG00000285053	TBCE	2.604	6.71E-10
ENSCO0000234792         AC139769.2         17.729         2.455-30         ENSCO0000234732         APO1931.1         2.571         3.588-40           ENSCO0000251537         AC005324.3         16.270         5.101-50         FNSC0000025137         AC005392.1         2.461         8.166-60           ENSCO000025043         AC03719.2         14.205         6.202-0.37         FNSC00000259137         AC005392.1         2.457         3.588-40           ENSC0000027314         AC13811.2         13.909         7.988-40         ENSC000002592.1         2.357         4.288-40           ENSC0000027314         AC13821.1         13.041         3.668-40         ENSC0000016473         C67646         2.202         2.886-20           ENSC0000027144         AR14-AS1         13.001         1.105-62         ENSC0000027474         CA141-AS1         2.202         2.886-20           ENSC0000025071         ENSC0000025152         COLA614         2.203         3.992-60           ENSC0000025073         ENSC0000025152         COLA614         2.203         3.992-60           ENSC0000025174         AC14190.1         1.266         3.942-60         ENSC000002777         AC14109.3         2.203         3.992-60           ENSC0000025057         ZO1976.1         1.266 <t< td=""><td></td><td></td><td>JSHT/Cytokine)</td><td></td><td>ENSG00000205236</td><td>AC105052.1</td><td>2.597</td><td>8.79E-08</td></t<>			JSHT/Cytokine)		ENSG00000205236	AC105052.1	2.597	8.79E-08
ENSCO0000215472         RPLT-C18orH2         17.003         2.22E-33         ENSCO000027401         AC023184.1         2.515         1.556-02           ENSCO000027602         AC037198.2         14.205         6.20F-03         ENSCO0000264327         AC01327.1.1         2.447         3.81E-02           ENSCO000026012         AC13802.4         13.615         3.88E-07         ENSCO000027897         AC02395.1         2.337         4.82E-02           ENSCO000027160         AVELOPP         13.217         2.08E-02         ENSCO000027897         AC02095.1         2.237         2.42E-02           ENSCO000027169         AVELOPP         13.217         2.08E-02         ENSCO000027774         AC01403.2         2.21         2.87E-02           ENSCO000027619         SNS2P12         12.988         3.06E-03         ENSC0000027774         AC014010.3         2.221         3.87E-04           ENSC0000027613         AC15197.1         12.688         1.63E-02         ENSC0000027774         AC014010.3         2.218         8.7E-04           ENSC0000027617         AC01761.1         1.256.2         3.01E-02         ENSC0000027774         AC01401.4         2.099         -0.1E-02           ENSC000002777         AC01761.1         1.256.2         3.01E-02         ENSC000007789	ENSG00000267924	AC139769.2	17.729	2.45E-50	ENSG00000254732	AP001931.1	2.571	3.58E-02
ENSCO000025137         ACOUSTAL3         16.270         S. 10F-50         ENSCO000025132         ACOUSTAL3	ENSG00000215472	RPL17-C18orf32	17.003	2.22E-33	ENSG00000272410	AC022384.1	2.515	1.55E-03
ENSCO0000278421         AC0137198.2         14.205         6.20E-01         FNSCO0000264123         AC013271.1         2.457         4.381E-03           ENSCO000026012         AC13802.4         13.615         3.86E-07         ENSCO000027887         AC020951.1         2.369         5.67E-03           ENSCO000027164         ARE1-AS1         13.341         4.06E-02         ENSCO000027887         AC020951.1         2.20E         2.20E         ENSCO000027920         MIRLET7A.HRG         2.244         4.66E-04           ENSCO000027164         ARE1-AS1         13.303         1.10E-02         ENSCO00002777         C01047437         GNRH         2.261         2.11E-02           ENSCO000027813         AC131930.1         12.688         1.06E-02         ENSC00000275727         AC101400-3         2.21         3.96E-04           ENSC0000027813         AC141930.1         12.668         1.06E-02         ENSC0000027345         AC10140-3         2.207         9.93F-04           ENSC0000027847         AC07071.1         12.562         3.01E-02         ENSC000002797         AC022951.1         2.195         2.39E-02           ENSC000002797         AL691442.2         12.567         2.48E-03         ENSC000002797         AC02295.1         2.107         1.31E-02           <	ENSG00000251537	AC005324.3	16.270	5.10E-50	ENSG00000250132	AC004803.1	2.461	8.16E-05
ENSCO0000224         AC13881.1.2         13.990         7.98E-06         ENSCO000021130         2.375         4.28E-02           ENSCO000021130         AC13802AA         13.615         3.08E-07         ENSCO0000166455         Closef46         2.300         4.28E-02           ENSCO000021160         ZPT3S3.1         13.341         4.96E-102         ENSCO0000164555         Closef46         2.300         4.28E-02           ENSCO000021160         SN12372.1         13.033         1.10E-02         ENSCO0000214711         2.228         3.06E-03           ENSCO000021647         SN12972         12.98B         3.06E-04         ENSCO000021717         AC104109.3         2.221         8.76E-04           ENSCO00002573         ZFP1-(CNTF         12.66         4.39E-02         ENSC00000273253         AC104109.4         2.03         3.1EE-02           ENSC000002577         AC19410.1         12.567         2.48E-03         ENSC0000027364         TERFS         2.195         2.89E-02           ENSC0000021264         FLR517         AC19450         2.187E-02         ENSC0000027697         AC19410.1         2.107         3.1EE-02           ENSC0000021264         FLR517         2.195         2.99E-03         ENSC0000027697         AC192051.1         2.107         2.99E-0	ENSG00000278621	AC037198.2	14.205	6.20E-03	ENSG00000284337	AC013271.1	2.457	3.81E-03
ENSCO00002141         ACI300284         13.615         3.68E-07         ENSCO000027877         AC020951.1         2.369         4.42E-04           ENSCO0000272146         ARF4-ASI         13.33         1.10E-02         ENSCO000016495         CIG-6746         2.300         4.42E-04           ENSCO0000272146         ARF4-ASI         13.304         2.08E-02         ENSC00000147437         GNRH1         2.261         2.11E-02           ENSC00000225131         AL51327.1         13.094         2.08E-02         ENSC000002717         AC10410-33         2.221         8.76E-04           ENSC00000225013         BK17935         12.766         43.0E-02         ENSC000002772         AC10410-93         2.221         8.76E-04           ENSC00000225073         AC01761.1         12.562         3.01E-02         ENSC0000027897         AC01410-94         2.203         9.03E-02           ENSC0000022607         AC00777         AC01761.1         12.562         3.01E-02         ENSC0000022707         AC01419.4         2.203         3.1E-02           ENSC0000023607         AL53514.2         2.127         7.87E-03         ENSC0000022707         AC02951.1         2.107         3.3E-02           ENSC0000023607         AL53514.2         1.2367         2.48E-03         ENSC000	ENSG00000260342	AC138811.2	13.990	7.98E-05	ENSG0000099251	HSD17B7P2	2.375	4.28E-02
ENSCO000023130         P333.1         13.31         4.96F-02         ENSCO000025555         C16cr46         2.30         4.46E-04           ENSCO000023714         ARF4-AS1         13.363         1.10F-02         ENSCO000024995         MIRLET7A1HG         2.294         4.66E-04           ENSCO000027146         ARF4-AS1         13.363         1.10F-02         ENSCO000027405         GOITA.61.4         2.272         2.38F-02           ENSCO000027619         SNT2972         12.988         3.60E-02         ENSCO0000274712         AC015813.1         2.223         3.39F-05           ENSCO000025073         AC11930.1         12.688         1.63F-02         ENSCO000027357         AC10710.1         12.62         3.01E-02         ENSCO000027357         AC10710.1         12.562         3.01E-02         ENSCO000027357         AC10711.1         12.562         1.01E-02         ENSCO000027357         AC005943.1         2.195         2.38F-02           ENSCO000023477         AC005943.1         2.195         2.38F-02         ENSCO000027457         TRENT*1         2.152         1.78F-02           ENSCO000023477         ALS9715.1         12.087         7.39E-03         ENSCO0000234552         TRENT         2.107         1.38F-02           ENSCO000023479         ILPE3A3 <t< td=""><td>ENSG00000260121</td><td>AC138028.4</td><td>13.615</td><td>3.68E-07</td><td>ENSG00000278897</td><td>AC020951.1</td><td>2.369</td><td>5.67E-03</td></t<>	ENSG00000260121	AC138028.4	13.615	3.68E-07	ENSG00000278897	AC020951.1	2.369	5.67E-03
ENSCO000023680         DNALC19P9         13.327         2.08E-02         FNNC000002499         MIRET7A/IIIG         2.294         4.466-04           ENSCO000022513         AL513327.1         13.094         2.08E-02         ENSC00000184206         GOLGA614         2.272         2.38E-02           ENSC0000022513         AL513327.1         13.094         2.08E-02         ENSC00000024717         AC101409.3         2.221         8.76E-04           ENSC00000226613         AC1193.0         12.688         1.63E-02         ENSC00000027325         2.01C14019.4         2.203         9.03E-02           ENSC0000026477         AC010761.1         12.562         3.01E-02         ENSC0000027345         AC10140.9.4         2.203         9.03E-02           ENSC0000025444         CFH41         12.367         2.48E-02         ENSC0000027345         AC10140.9.4         2.203         9.03E-02           ENSC0000025444         CFH41         12.367         2.89E-02         ENSC0000025453         AC0194.1         2.199         3.38E-02           ENSC0000023677         AC39715.1         12.083         2.76E-03         ENSC0000025453         AC0174         2.117         1.146           ENSC0000023677         AL59717         1.986         2.80E-02         ENSC00000023470	ENSG00000231369	Z97353.1	13.341	4.96E-02	ENSG00000166455	C16orf46	2.300	4.42E-04
ENSCO000027164         ARF-ASI         13.03         1.10F-02         ENSCO000014267         GNRH         2.276         2.37E-02           ENSCO000027169         SNX29P2         12.988         3.60E-03         ENSCO000027172         AC104109.3         2.221         8.76E-04           ENSCO000025073         ENP12-011         12.688         1.63E-02         ENSCO0000273252         AC104109.3         2.223         8.76E-04           ENSCO00002513         AC14190.1         12.646         5.34E-04         ENSCO000027355         AC104109.4         2.003         9.01E-02           ENSCO000025177         AC1071.1         12.62         3.01E-02         ENSCO000027365         AC104199.4         2.003         3.11E-02           ENSCO000025477         AC10761.1         12.62         3.01E-02         ENSCO000027369         AC005943.1         2.199         3.38E-02           ENSCO0000234707         TMEM253         12.537         4.78E-03         ENSCO000027639         AC02995.1         2.117         1.31E-02           ENSCO0000234707         TMEM253         12.087         7.79E-03         ENSCO000027697         AC02995.1         2.107         3.38E-02           ENSCO0000234707         TMEM253         12.087         3.79E-03         ENSCO000027879         AC029	ENSG00000258608	DNAJC19P9	13.327	2.08E-02	ENSG00000269929	MIRLET7A1HG	2.294	4.66E-04
ENSCO00002313         ALSI327.1         13.094         2.08E-02         ENSC0000021499         SNX29P2         12.988         3.60E-03         ENSC0000021493         CN1813.1         2.221         8.76E-04           ENSC00000228631         AC141930.1         12.688         1.63F-02         ENSC0000027372         AC104109.3         2.221         8.76E-04           ENSC000002573         ZFP1-CNTF         12.616         5.34E-04         ENSC0000027375         CO10761.1         2.262         3.01E-02         ENSC0000027345         CO10761.1         2.367         2.48E-03         ENSC0000027364         CA19109.4         2.195         2.89E-0           ENSC000002707         TACD1742         CL207         7.48E-02         ENSC00000273631         Z.117         2.105         2.89E-0           ENSC0000023707         TAS39715.1         12.087         7.29E-03         ENSC0000023673         NAPT-11         2.104         1.06E-04           ENSC0000023737         AAS9715.1         12.083         8.75E-03         ENSC0000023791         AL13330.1         2.036         2.107         1.18E-04           ENSC0000023707         TAS39715.1         12.083         8.75E-03         ENSC00000123791         AL13330.1         2.036         2.98E-02         2.102         1.18E-04	ENSG00000272146	ARF4-AS1	13.303	1.10E-02	ENSG00000184206	GOLGA6L4	2.272	2.38E-02
ENSCO000027109         SNX329P2         12.988         3.06P-03         ENSC00000224112         ACD1513.1         2.223         3.32E-05           ENSC00000225613         AC141930.1         12.688         1.63E-02         ENSC00000227325         GOLGA8B         2.209         1.41E-03           ENSC00000255073         ZEPD1-CNTF         12.616         5.34E-04         ENSC0000025735         ZDH1C11         2.203         9.0EE-00           ENSC00000221477         AC014109.4         2.203         9.0EE-00         ENSC0000025737         ZDH1C11         2.203         9.0EE-00           ENSC00000224444         CFHRI         12.527         R.79E-03         ENSC00000226161         R/TNTT1         2.152         1.78E-02           ENSC0000023407         ALS9715.1         12.083         7.76E-03         ENSC0000023103         NPTNTT1         2.164         1.08E-04           ENSC0000023407         ALS9715.1         12.083         8.75E-03         ENSC0000023103         NEATI         2.104         1.08E-04           ENSC0000023407         ALS9715.1         12.083         8.75E-03         ENSC0000023407         AC02295.1         2.107         3.98E-02           ENSC0000023407         ALS9749         UPSA         2.005         7.73E-04         ENSC0000023793 <td>ENSG00000225313</td> <td>AL513327.1</td> <td>13.094</td> <td>2.08E-02</td> <td>ENSG00000147437</td> <td>GNRH1</td> <td>2.261</td> <td>2.11E-02</td>	ENSG00000225313	AL513327.1	13.094	2.08E-02	ENSG00000147437	GNRH1	2.261	2.11E-02
ENSCO0000238613         AC141930.1         12.688         1.63E-02         ENSCO000021522         GOLGARB         2.201         8.76E-4           ENSCO0000228613         AC141930.1         12.688         1.63E-02         ENSCO000021532         GOLGARB         2.203         9.03E-03           ENSCO0000258073         ZPPI-CNTF         12.616         5.34E-04         ENSCO000027345         AC104109.4         2.203         3.11E-02           ENSCO000025464         AL914-12         12.502         1.45E-02         ENSCO000027363         AC05934.1         2.195         2.89E-02           ENSCO0000223070         TMEM253         12.087         7.29E-03         ENSC0000023763         AL359715.1         12.083         8.75E-03         ENSC0000023737         ANACPTIP         12.083         8.75E-03         ENSC0000023737         ANACPTIP         12.083         8.75E-03         ENSC0000023737         AL622         2.102         1.18E-04           ENSC00000227373         ANAPCTIP         12.083         8.75E-03         ENSC0000023737         AL622         2.102         1.18E-04           ENSC0000023767         AL78DAPTI         1.946         4.03E-02         ENSC00000023745         AL6253.2         2.017         3.98E-02           ENSC00000023763         CIA72FA-03	ENSG00000271699	SNX29P2	12.988	3.60E-03	ENSG00000264112	AC015813.1	2.223	3.39E-05
ENSC@0000228613         AC141930.1         12.888         1.63E-02         ENSC@0000215252         COLCARB         2.203         9.03E-03           ENSC@000025737         AC107051.1         12.562         3.01E-02         ENSC@0000273345         AC104109.4         2.203         3.01E-02           ENSC@000025164         AL091442.2         12.562         1.45E-02         ENSC@000023183         ZDIHIC11         2.203         3.31E-02           ENSC@000025164         AL355334.2         12.367         2.48E-03         ENSC@000023183         NPTNT1         2.152         1.78E-02           ENSC@000023673         ALAPC1P1         12.083         2.76E-03         ENSC@0000235153         CEP12         2.104         1.06E-04           ENSC@000023674         ANAPC1P1         12.083         3.75E-03         ENSC@0000235153         CEP12         2.104         1.18E-04           ENSC@0000234709         UPF3AP3         11.933         4.55E-02         ENSC@00002386162         AL162253.2         2.017         3.98E-02           ENSC@0000234709         UPF3AP3         11.934         4.05E-02         ENSC@0000238767         AL162253.2         2.017         3.98E-02           ENSC@0000234709         UPF3AP3         11.924         4.05E-02         ENSC@00001813737	ENSG00000260571	BNIP3P5	12.766	4.30E-02	ENSG00000272772	AC104109.3	2.221	8.76E-04
ENSG0000255073         ZEP91-CNTF         12.616         5.34E-04         ENSG0000273345         AC10109.4         2.203         9.03E-03           ENSG000022477         AC010761.1         12.502         1.45E-02         ENSG000002769         AC005943.1         2.199         3.38E-02           ENSG000022444         CFHRI         12.302         1.45E-02         ENSG000022666         TERPTP5         2.195         2.89E-02           ENSG0000023667         AL359715.1         12.087         7.29E-03         ENSG00000245532         NEAT1         2.104         1.06E-04           ENSG00000236767         ANAPCIPI         12.088         3.06E-02         ENSG00000235155         CEP162         2.107         3.98E-02           ENSG0000023767         ANAPCIPI         12.088         3.06E-02         ENSG0000023479         AC022905.1         2.017         3.98E-02           ENSG0000023676         AL162253.2         2.017         3.98E-02         ENSG0000025470         ATP64102-DN39B         1.996         1.27E-06           ENSG0000026403         CO202563         1.1924         4.03E-02         ENSG0000025477         ATP6412-DD339B         1.996         1.27E-06           ENSG0000026403         CO202563         1.1924         4.05E-02         ENSG0000017837         <	ENSG00000228613	AC141930.1	12.688	1.63E-02	ENSG00000215252	GOLGA8B	2.209	1.41E-03
ENSG0000264577         AC010761.1         12.562         3.01E-02         ENSG0000128818         ZDHIC11         2.03         3.11E-02           ENSG0000261246         AL691442.2         12.502         1.45E-02         ENSG00000281183         PTIN1         2.199         3.38E-02           ENSG0000236441         CHS11         12.367         2.48E-03         ENSG0000023107         TERP175         2.195         2.89E-02           ENSG00000236767         AL35731.2         12.087         7.92E-03         ENSG0000023507         AC022905.1         2.107         1.31E-05           ENSG0000023767         ALAPC1P1         12.083         8.75E-03         ENSG0000023515         CEP162         2.102         1.18E-04           ENSG0000023767         FMD8P1         12.008         3.06E-02         ENSG0000013515         CEP162         2.101         3.98E-02           ENSG0000023670         UP13AP3         11.933         4.55E-02         ENSG0000013879         NPIPA         2.005         7.73E-05           ENSG000002630         CFAP44         11.668         3.66E-07         ENSG0000013797         ATPV1(G2-DDX39B         1.996         5.66F-07           ENSG0000026303         CFAP44         11.643         3.04E-02         ENSG0000017876         XIF11	ENSG00000255073	ZFP91-CNTF	12.616	5.34E-04	ENSG00000273345	AC104109.4	2.203	9.03E-03
ENSG0000251246         AL691442.2         12.502         1.45E-02         ENSG000002669         CO0934.1         2.199         3.38E-02           ENSG000024444         CHRI         12.367         2.48E-03         ENSG000023661         TERF1P5         2.195         2.89E-02           ENSG0000233070         TMEM253         12.087         7.29E-03         ENSG000024553         2.107         1.31E-02           ENSG0000233673         ANAPC1P1         12.083         2.76E-03         ENSG0000215315         CEP162         2.102         1.18E-04           ENSG00000233673         ANAPC1P1         12.083         0.66E-02         ENSG0000015315         CEP162         2.102         1.18E-04           ENSG0000023670         UFSAT93         11.933         4.55E-02         ENSG00000164162         AL162253.2         2.017         3.98E-02           ENSG0000023600         CIPH44         11.668         3.06E-02         ENSG0000017879         NPIPA5         2.005         7.73E-05           ENSG0000017472         TSPAN1         11.663         3.04E-02         ENSG0000017879         FMM20A         1.996         5.60E-07           ENSG0000025630         AC10553.1         11.623         1.27E-03         ENSG0000017877         FAM20A         1.996         5.60E-	ENSG00000264577	AC010761.1	12,562	3.01E-02	ENSG00000188818	ZDHHC11	2.203	3.11E-02
ENSGO000244414         CFHR1         12.367         2.48E-03         ENSG0000023641         TERF1P5         2.195         2.89E-02           ENSG0000028445         AL355334.2         12.357         2.48E-03         ENSG0000023997         AC022905.1         2.107         1.31E-05           ENSG00000233067         ALAS9715.1         12.083         7.72E-0.3         ENSG0000023532         NEAT1         2.104         1.06E-04           ENSG0000023707         DIFFAP3         11.933         4.55E-02         ENSG0000023610         AL16253.2         2.017         3.98E-02           ENSG00000238100         LINC02863         11.924         4.03E-02         ENSG0000019470         DIFFAP3         2.005         7.73E-02           ENSG0000025954         CHURC1-FNTB         11.668         3.86E-07         ENSG0000017897         RPV1G2-DDX39B         1.996         1.27E-00           ENSG00000268030         CAP444         11.668         3.86E-07         ENSG0000017897         FAM220A         1.979         1.65E-03           ENSG00000268030         AC00553.1         11.623         1.27E-03         ENSG0000017897         FAM220A         1.979         1.65E-03           ENSG00000266066         AC01581.2         5.364         5.29E-15         ENSG00000023767	ENSG00000251246	AL 691442 2	12.502	1.45E-02	ENSG00000267059	AC005943.1	2.199	3.38E-02
ENSCO0000254445         AL35534.2         12.257         8.79E.03         ENSG0000025307         NPTN-ITI         2.152         1.78E.03           ENSCO0000233070         TLEM253         12.087         7.29E-03         ENSG0000025307         AL39715.1         2.083         2.76E-03         ENSG000002532         NEATI         2.104         1.06E-04           ENSG00000233673         ANAPC1P1         12.083         2.76E-03         ENSG0000025315         CEP162         2.102         1.18E-04           ENSG0000023670         UPE3AP3         11.933         4.55E-02         ENSG0000025440         AL16225.2         2.017         3.98E-02           ENSG0000025630         CEP162         2.005         7.73E-02         ENSG0000025630         AL16225.2         2.005         7.73E-02           ENSG0000025630         CENTR         11.683         3.86E-07         ENSG0000025660         AL16225.2         2.005         7.73E-02           ENSG00000125053         CENTR         11.643         3.04E-02         ENSG000002562         CFF117         1.996         5.60E-07           ENSG0000026163         SERPINA3         9.434         5.18-06         ENSG0000027055         CI2750.2         1.966         3.95E-02           ENSG00000257379         AC023055.1	ENSG00000244414	CFHR1	12.362	2 48F-03	ENSG00000226361	TERF1P5	2.195	2.89E-02
ENGLODOUZING         TIMENZAS         12.07         7.729E-03         ENSG000023007         TMENZAS         2.107         1.31E-05           ENSG0000232007         TMENZAS         12.087         7.729E-03         ENSG0000235315         CEP162         2.102         1.31E-05           ENSG0000023707         UPF3AP3         11.933         4.55E-02         ENSG00000251194         AL123330.1         2.036         2.80E-02           ENSG00000234070         UPF3AP3         11.933         4.55E-02         ENSG00000254870         AL162253.2         2.017         3.98E-02           ENSG00000254810         LINCC2663         11.924         4.03E-02         ENSG0000018793         NIPA5         2.005         7.73E-05           ENSG0000026430         CAPA4         11.668         3.04E-02         ENSG00000178379         FIP4V1G2-DDX39B         1.996         5.60E-07           ENSG000001630         CAPA4         11.668         3.04E-02         ENSG00000178379         FAM220A         1.979         1.65E-02           ENSG000001636         SERPINA3         9.434         5.13E-06         ENSG0000027055         KL12553.2         1.960         3.95E-02           ENSG00000178377         AC02355.1         5.044         3.96E-37         ENSG0000027055         KL18553.2 <td>ENSG00000244444</td> <td>AI 355334 2</td> <td>12.307</td> <td>2.40E 03</td> <td>ENSG00000281183</td> <td>NPTN-IT1</td> <td>2.152</td> <td>1.78E-03</td>	ENSG00000244444	AI 355334 2	12.307	2.40E 03	ENSG00000281183	NPTN-IT1	2.152	1.78E-03
LISGO000223967       AL3S715.1       12.080       2.76E.03       ENSG000023532       NEATI       2.104       1.06E.04         ENSG000023367       AL3S715.1       12.083       8.75E.03       ENSG0000235316       CIP162       2.102       1.18E.04         ENSG000023470       UPT3AP3       11.933       4.55E.02       ENSG0000251194       AL13330.1       2.036       2.80E.02         ENSG0000023470       UPT3AP3       11.934       4.03E.02       ENSG0000258470       ATP6V1G2-DDX39B       1.996       1.27E.06         ENSG0000025630       CFAP44       11.663       3.86E-02       ENSG0000024870       ATP6V1G2-DDX39B       1.996       1.27E.06         ENSG0000026530       CGAP44       11.663       3.86E-02       ENSG0000024778       CBMD4P       1.996       1.56E.00         ENSG0000026630       AC03523.1       11.623       1.27E-03       ENSG0000027055       AC12750.2       1.960       3.95E-02         ENSG00000257379       AC023509.1       5.866       9.68E-38       ENSG0000027055       AC12750.2       1.960       3.95E-02         ENSG00000257390       AC02355.1       5.044       3.96E-37       ENSG0000027562       ENSG0000027562       ENSG0000027562       ENSG0000027562       ENSG0000027562       ENSG0000027562	ENSG00000280445	TMEM253	12.237	7 20F 03	ENSG00000250979	AC022905.1	2.107	1.31E-05
LING0000233673         ANACTPI         LING03         LING03         LING040           ENSG00000233673         ANACTPI         LONG         3,06E-0.2         ENSG0000023513         CEPI62         2.102         1.18E-0.4           ENSG00000234709         UPF3AP3         11.933         4,55E-0.2         ENSG00000251944         ALI33330.1         2.036         2.80E-0.2           ENSG0000023575         CHURC1-FNTB         11.933         4,55E-0.2         ENSG0000025470         ATPA/S         2.005         7.73E-0.6           ENSG0000025530         CFAP44         11.668         3.86E-07         ENSG0000024778         CBWD4P         1.994         5.65E-0.6           ENSG0000024777         CGXPA44         11.668         3.86E-07         ENSG0000024778         CBWD4P         1.994         5.66E-07           ENSG0000017379         AC025309.1         5.86         9.68E-38         ENSG0000178397         FAM220A         1.979         1.65E-03           ENSG0000017379         AC023509.1         5.86         9.68E-38         ENSG0000078367         K1AA0408         1.917         1.965         2.829         3.52E-0.2         ENSG0000078367         K1AA0408         1.917         1.65E-03           ENSG0000025739         AC02355.1         5.044         3	ENSG00000232070	AI 350715 1	12.087	7.29E-03	ENSG00000245532	NEAT1	2.104	1.06E-04
LINGODOU22392         FRANCE IF 1         12.085         6.732-03         14.14 <th14.14< th="">         14.14         14.14</th14.14<>	ENSC00000233907	AL339/13.1	12.083	2.70E-03 8.75E-02	ENSG00000135315	CEP162	2.102	1.18E-04
ENSCONDUCTS         ENSCONDUCTS         ENSCONDUCTS         ENSCONDUCTS           ENSCONDUCTS         ENSCONDUCTS         ENSCONDUCTS         2.017         3.98E-02           ENSCONDUCTS         ENSCONDUCTS         ENSCONDUCTS         2.017         1.996         5.68E-07           ENSCONDUCTS         ENSCONDUCTS         ENSCONDUCTS         ENSCONDUCTS         2.017         1.65E-03           ENSCONDUCTS         SERPINA3         9.434         5.13E-06         ENSCONDUCTS         AC14553.2         1.907         5.18E-03           ENSCONDUCTS         AC15853.2         1.907         5.18E-03         ENSCONDUCTS         AC14553.2         1.907         5.18E-03           ENSCONDUCTS         AC143         3.96E-37         ENSCONDUCTS         ESC31B         1.820         9.91E-03           ENSCONDUCTS         AC007318.1         4.544         3.98E-02	ENSG00000255075	EDMD9D1	12.065	0.73E-03	ENSG00000251194	AL133330.1	2.102	2 80E-02
ENSG0000234709       OFF3AF3       11933       4.33E-02       ENSG0000023631       ENSG000023532       2.015       7.73E-05         ENSG0000228530       CFAP44       11.668       3.86E-07       ENSG0000024870       ATP6V1G2-DDX39B       1.996       1.27E-06         ENSG0000026830       CFAP44       11.663       3.04E-02       ENSG00000178397       FNIPA5       2.005       7.73E-05         ENSG0000026803       AC005253.1       11.623       1.27E-03       ENSG00000178397       FAM220A       1.979       1.65E-03         ENSG0000026803       AC005253.1       11.623       1.27E-03       ENSG00000178397       FAM220A       1.979       1.65E-03         ENSG0000025803       AC023509.1       5.586       9.68E-38       ENSG00000255       C12750.2       1.960       3.95E-02         ENSG00000257309       AC023055.1       5.044       3.96E-37       ENSG0000025362       EC31B       1.882       9.91E-03         ENSG00000273760       AC023055.1       5.044       3.96E-37       ENSG0000015324       LINC00630       1.866       1.19E-02         ENSG00000273760       AC023055.3       4.416       1.08E-12       ENSG0000015324       LINC11       1.855       2.63E-07         ENSG00000273763       AC023165.3 </td <td>ENSG00000227942</td> <td></td> <td>12.008</td> <td>5.00E-02</td> <td>ENSG00000286162</td> <td>AL 162253.2</td> <td>2.030</td> <td>3.98E-02</td>	ENSG00000227942		12.008	5.00E-02	ENSG00000286162	AL 162253.2	2.030	3.98E-02
ENSG00000253100       LINC02605       11.924       4.05E-02       ENSG00000254870       ATP6V1G2-DDX39B       1.936       1.7.126-06         ENSG0000025554       CHURC1FNTB       11.868       3.86E-07       ENSG00000254870       ATP6V1G2-DDX39B       1.996       5.60E-07         ENSG0000026530       CFAP44       11.668       3.86E-07       ENSG00000254770       CBWD4P       1.994       5.45E-04         ENSG000002630       AC005253.1       11.623       1.27E-03       ENSG0000017897       FAM220A       1.977       1.65E-03         ENSG00000257379       AC03550.1       5.586       9.68E-38       ENSG00000270055       AC127502.2       1.960       3.95E-02         ENSG00000155437       RDH5       5.229       3.52E-02       ENSG0000027367       KAA0408       1.917       1.05E-03         ENSG00000155437       RDH5       5.229       3.52E-02       ENSG0000025366       EIC31B       1.882       9.91E-03         ENSG00000257390       AC023055.1       5.044       3.96E-37       ENSG0000023546       LINC00630       1.866       1.19E-02         ENSG00000257921       AC023105.1       5.044       3.752       EMSG0000023347       MAP3K21       1.846       8.09E-03         ENSG00000277921       AC025165.	ENSG00000234709	UPFSAPS	11.935	4.33E-02	ENSG00000200102	NPIPA 5	2.017	7.73E-05
ENSG000002539         CHORCLENTB         11,800         2,74E-05         ENSG00002570         ALP1-05         EDSG00002500         CFAP44         11.668         3.86E-07         ENSG00000152926         ZNF117         1.996         5.60E-07           ENSG0000026030         CAC05253.1         11.623         1.27E-03         ENSG0000017837         FAM220A         1.979         1.65E-03           ENSG0000025737         AC025509.1         5.586         9.68E-38         ENSG00000270055         CL27502.2         1.960         3.95E-02           ENSG00000257379         AC023509.1         5.586         9.68E-38         ENSG0000027376         KLAA0408         1.917         1.05E-02           ENSG00000257390         AC023055.1         5.044         3.96E-37         ENSG0000027356         SEC31B         1.882         9.91E-03           ENSG00000240038         AMY2B         4.699         3.48E-02         ENSG0000023551         CM21078.1         1.846         8.09E-02           ENSG00000273761         AC023165.3         4.416         1.08E-12         ENSG0000013524         NR4A2         1.855         2.63E-07           ENSG0000027392         AC079776.1         3.782         4.76E-02         ENSG00000153254         NC1078.1         1.840         1.44E-06	ENSG00000238160	CHUDCI ENTD	11.924	4.03E-02	ENSG00000185775	ATP6V1G2_DDX30B	1 996	1.75E-05
ENS.G00000206330       CFAP44       11.668       3.86E-07       ENS.G00000126226       ENS.G0000021747       STSM1       11.643       3.04E-02       ENS.G0000027085       CBWD4P       1.994       1.994       5.45E-04         ENS.G0000017472       STSM1       11.643       3.04E-02       ENS.G00000270055       AC127502.2       1.960       3.95E-02         ENS.G00000257379       AC023509.1       5.586       9.68E-38       ENS.G0000027055       AC14353.2       1.907       5.18E-03         ENS.G00000135437       RDH5       5.229       3.52E-02       ENS.G00000235761       AC118553.2       1.907       5.18E-03         ENS.G0000025739       AC023055.1       5.044       3.96E-37       ENS.G00000235162       MALATI       1.855       2.63E-07         ENSG0000025792       AC025165.3       4.416       1.08E-12       ENSG00000235154       MALATI       1.846       8.09E-03         ENSG0000025792       AC025165.3       4.416       1.08E-12       ENSG0000023514       AC18153.2       1.846       8.09E-03         ENSG0000025792       AC025165.3       4.416       1.98E-03       ENSG0000023521       AC021078.1       1.840       1.44E-06         ENSG0000027314       ELNC00653       3.753       2.36E-02       ENSG00	ENSG00000125954	CHURCI-FNIB	11.890	2.74E-03	ENSG00000254870	7NF117	1.996	5.60E.07
ENS.G000001/4/2       ISAN1       11.643       3.04E-02       ENS.G0000026773       FAM220A       1.974       J.942-04         ENS.G0000026803       AC002353.1       11.623       1.27E-03       ENS.G0000017837       FAM220A       1.979       1.65E-03         ENS.G00000257379       AC023509.1       5.586       9.68E-38       ENS.G00000189367       KIA.A0408       1.917       1.05E-02         ENS.G00000257379       AC023055.1       5.044       3.96E-37       ENS.G00000251562       EC31B       1.882       9.91E-03         ENS.G00000257309       AC023055.1       5.044       3.96E-37       ENS.G00000251562       MALAT1       1.855       2.63E-07         ENS.G00000257304       AC023055.1       5.044       3.96E-137       ENS.G00000251562       MALAT1       1.855       2.63E-07         ENS.G00000257305       AC023155.3       4.416       1.08E-12       ENS.G0000023515       AC021078.1       1.846       8.09E-03         ENS.G00000273148       LINC00653       3.753       2.36E-02       ENS.G00000153234       NR4A2       1.835       7.57E-05         ENSG00000273148       LINC00653       3.753       2.36E-02       ENSG000002301515       KI27       1.827       9.47E-03         ENSG00000273145	ENSG00000206530	CFAP44	11.668	3.86E-07	ENSC00000152520	CPWD4P	1.990	5.00E-07
ENSG0000288030       AC005253.1       11.623       1.27E-03       ENSG0000017637       FAM1220A       1.979       1.03E-03         ENSG00000257379       AC023509.1       5.586       9.68E-38       ENSG0000075805       AC127502.2       1.907       5.18E-03         ENSG00000257379       AC023509.1       5.586       9.68E-38       ENSG0000075826       SEC31B       1.822       9.91E-03         ENSG00000257379       AC02355.1       5.044       3.96E-37       ENSG0000023546       LINC00630       1.866       1.19E-02         ENSG0000023763       AC07318.1       4.544       3.78E-20       ENSG0000023556       MALAT1       1.855       2.63E-02         ENSG0000023763       AC07318.1       4.544       3.78E-20       ENSG0000023551       MC021078.1       1.846       8.09E-03         ENSG00000273783       AC07318.1       4.544       3.78E-20       ENSG0000023551       AC021078.1       1.846       8.09E-03         ENSG00000273783       AC07976.1       3.782       4.76E-02       ENSG000002351       AC021078.1       1.840       1.44E-06         ENSG0000027148       LINC00653       3.753       2.36E-02       ENSG0000027018       FAM106A       1.781       1.35E-04         ENSG0000027942       AC09279.2 </td <td>ENSG0000117472</td> <td>I SPANI</td> <td>11.643</td> <td>3.04E-02</td> <td>ENSC00000204778</td> <td></td> <td>1.994</td> <td>1.45E-04</td>	ENSG0000117472	I SPANI	11.643	3.04E-02	ENSC00000204778		1.994	1.45E-04
ENSG00000196116       SERPINA3       9.434       5.13E-06       ENSG00000270035       AC12/302.2       1.900       5.364         ENSG00000257379       AC023509.1       5.586       9.68E-38       ENSG0000028376       AC118553.2       1.907       5.18E-03         ENSG00000257390       AC023055.1       5.044       3.96E-37       ENSG00000223546       LINC00630       1.866       1.19E-02         ENSG00000273763       AC023055.1       5.044       3.96E-37       ENSG0000023055       MALATI       1.855       2.63E-07         ENSG00000257390       AC023055.1       5.044       3.78E-20       ENSG0000023055       MALATI       1.846       8.09E-03         ENSG000002373763       AC007318.1       4.544       3.78E-20       ENSG00000153234       MALATI       1.846       8.09E-03         ENSG00000217289       AC029776.1       3.782       4.76E-02       ENSG00000153234       NR4A2       1.835       7.57E-05         ENSG0000027348       LINC00653       3.753       2.36E-15       ENSG0000023051       AC021078.1       1.846       7.98E-03         ENSG0000027942       AC09279.2       3.401       1.12E-02       ENSG00000273018       FAM106A       1.781       1.35E-04         ENSG0000027945       AC0242842.3	ENSG00000268030	AC005253.1	11.623	1.2/E-03	ENSC000001/839/	FAWI220A	1.979	1.03E-03
ENSG0000257379       AC023509.1       5.586       9.68E-38       ENSG00000159367       KIAA0408       1.917       1.03E-02         ENSG0000026086       AC015813.2       5.364       5.29E-15       ENSG00000275761       AC118553.2       1.907       5.18E-03         ENSG00000257390       AC023055.1       5.044       3.96E-37       ENSG00000223546       LINC00630       1.866       1.19E-02         ENSG00000220038       AMY2B       4.699       3.48E-02       ENSG0000023551       MALAT1       1.855       2.63E-07         ENSG00000273763       AC007318.1       4.544       3.78E-20       ENSG0000023551       AC021078.1       1.840       1.44E-06         ENSG00000217289       AC079776.1       3.782       4.76E-02       ENSG00000153234       NR4A2       1.835       7.37E-05         ENSG00000273428       LINC00653       3.753       2.36E-02       ENSG00000240058       LVF27       1.827       9.47E-03         ENSG00000279425       AC092279.2       3.401       1.12E-02       ENSG00000240053       LVF65B       1.732       1.08E-03         ENSG0000027904       AC142086.6       2.967       1.12E-04       ENSG0000023055       LANTR       1.700       3.76E-02         ENSG0000027904       AC120286.6	ENSG00000196136	SERPINA3	9.434	5.13E-06	ENSG00000270033	AC12/302.2	1.900	3.93E-02
ENSG0000266086       AC015813.2       5.364       5.29E-15       ENSG00000243761       AC11853.2       1.907       5.18E-03         ENSG00000135437       RDH5       5.229       3.52E-02       ENSG00000223764       ENC00630       1.866       1.19E-03         ENSG00000240038       AMY2B       4.699       3.48E-02       ENSG0000023562       MALATI       1.855       2.63E-07         ENSG00000257921       AC023055.1       5.044       3.96E-37       ENSG0000023561       AC021078.1       1.846       8.09E-03         ENSG00000257921       AC025165.3       4.416       1.08E-12       ENSG00000230551       AC021078.1       1.840       1.44E-06         ENSG00000273748       AC079776.1       3.782       4.76E-02       ENSG00000153234       NR4A2       1.835       7.57E-05         ENSG00000279425       AC02279.2       3.401       1.12E-02       ENSG0000027318       KIP27       1.827       3.08E-03         ENSG00000279425       AC242842.3       3.192       2.36E-15       ENSG0000023051       KG016629.3       1.792       3.08E-03         ENSG00000279030       AC142086.6       2.967       1.28E-09       ENSG0000023051       KANTR       1.700       4.81E-06         ENSG00000279304       AC142086.6	ENSG00000257379	AC023509.1	5.586	9.68E-38	ENSG0000018930/	KIAA0408	1.917	1.05E-02
ENSG0000013543       RDH5       5.229       3.52E-02       ENSG0000023826       SEC.31B       1.882       9.91E-03         ENSG00000257390       AC023055.1       5.044       3.96E-37       ENSG00000223546       LINC00630       1.866       1.19E-02         ENSG00000273763       AC007318.1       4.544       3.78E-20       ENSG00000230551       AC021078.1       1.846       8.09E-03         ENSG00000257921       AC025165.3       4.416       1.08E-12       ENSG0000015324       NR4A2       1.835       7.57E-05         ENSG00000217389       AC079776.1       3.782       4.76E-02       ENSG0000015115       KIF27       1.827       9.47E-03         ENSG00000273148       LINC00653       3.753       2.36E-02       ENSG0000027318       KM106A       1.781       1.35E-04         ENSG00000273148       LINC00653       3.753       2.36E-15       ENSG0000027318       FAM106A       1.781       1.35E-04         ENSG00000286185       AC242842.3       3.192       2.36E-15       ENSG00000273018       FAM106A       1.781       1.35E-04         ENSG00000277903       ADTL       3.012       1.98E-09       ENSG0000023051       AP065B       1.732       1.71E-02         ENSG00000279030       AC07336.3       2	ENSG00000266086	AC015813.2	5.364	5.29E-15	ENSG00000283761	AC118553.2	1.907	5.18E-03
ENSG0000257390       AC023055.1       5.044       3.96E-37       ENSG00000223546       LINC00630       1.866       1.19E-02         ENSG00000240038       AMY2B       4.699       3.48E-02       ENSG00000251562       MALAT1       1.855       2.63E-07         ENSG00000273763       AC007318.1       4.544       3.78E-20       ENSG0000230551       AC021078.1       1.840       1.44E-06         ENSG00000217289       AC0279776.1       3.782       4.76E-02       ENSG00000185115       KIF27       1.827       9.47E-03         ENSG00000273425       AC09279.2       3.401       1.12E-02       ENSG00000286104       AC016629.3       1.792       3.08E-03         ENSG00000286185       AC242842.3       3.192       2.36E-15       ENSG0000027318       FAM106A       1.781       1.35E-04         ENSG0000027304       AC142086.6       2.967       1.12E-02       ENSG00000230153       KANTR       1.700       3.76E-02         ENSG0000027304       AC142086.6       2.967       1.12E-02       ENSG000002301878       CENPE       1.700       4.81E-06         ENSG0000027304       AC142086.6       2.967       1.12E-04       ENSG0000023539       KANTR       1.700       3.76E-02         ENSG0000025524       NPIPB8	ENSG00000135437	RDH5	5.229	3.52E-02	ENSG000000/5826	SEC31B	1.882	9.91E-03
ENSG0000240038       AMY2B       4.699       3.48E-02       ENSG0000025162       MALA11       1.855       2.63E-07         ENSG00000273763       AC007318.1       4.544       3.78E-20       ENSG00000143674       MAP3K21       1.846       8.09E-03         ENSG00000257921       AC025165.3       4.416       1.08E-12       ENSG0000013234       NR4A2       1.835       7.57E-05         ENSG00000277289       AC079776.1       3.782       4.76E-02       ENSG0000015155       KIF27       1.827       9.47E-03         ENSG00000273148       LINC00653       3.753       2.36E-15       ENSG00000273018       FAM106A       1.792       3.08E-03         ENSG00000278425       AC092279.2       3.401       1.12E-02       ENSG00000273018       FAM106A       1.781       1.35E-04         ENSG00000286185       AC242842.3       3.192       2.36E-15       ENSG00000273018       FAM106A       1.781       1.35E-04         ENSG0000027904       DTL       3.012       1.98E-09       ENSG00000232593       KANTR       1.700       3.76E-02         ENSG0000027304       AC142086.6       2.967       1.12E-04       ENSG00000232593       KANTR       1.695       2.91E-04         ENSG0000027304       AC07336.3       2.947 <td>ENSG00000257390</td> <td>AC023055.1</td> <td>5.044</td> <td>3.96E-37</td> <td>ENSG00000223546</td> <td>LINC00630</td> <td>1.866</td> <td>1.19E-02</td>	ENSG00000257390	AC023055.1	5.044	3.96E-37	ENSG00000223546	LINC00630	1.866	1.19E-02
ENSG0000273763       AC007318.1       4.544       3.78E-20       ENSG000001436/4       MAPSK21       1.846       8.09E-03         ENSG0000257921       AC025165.3       4.416       1.08E-12       ENSG0000230551       AC021078.1       1.840       1.44E-06         ENSG0000217289       AC07976.1       3.782       4.76E-02       ENSG0000153234       NR4A2       1.835       7.57E-05         ENSG0000273148       LINC00653       3.753       2.36E-02       ENSG00000286104       AC016629.3       1.792       3.08E-03         ENSG00000279425       AC092279.2       3.401       1.12E-02       ENSG00000286104       AC016629.3       1.792       3.08E-03         ENSG00000286185       AC242842.3       3.192       2.36E-15       ENSG0000273018       FAM106A       1.781       1.35E-04         ENSG0000029974       DDTL       3.012       1.98E-09       ENSG000002393553       KANTR       1.700       3.76E-02         ENSG00000279030       AC007336.3       2.947       3.68E-02       ENSG00000239519       AP002784.1       1.695       2.91E-04         ENSG0000025524       NPIB8       2.898       3.82E-02       ENSG00000239152       ANRD10-1T1       1.687       2.70E-02         ENSG00000239653       SCM06-AS2	ENSG00000240038	AMY2B	4.699	3.48E-02	ENSG00000251562	MALAII	1.855	2.63E-0/
ENSG00000257921       AC025165.3       4.416       1.08E-12       ENSG0000230551       AC021078.1       1.840       1.44E-06         ENSG00000188629       ZNF177       3.940       1.98E-03       ENSG00000153234       NR4A2       1.835       7.57E-05         ENSG0000217289       AC079776.1       3.782       4.76E-02       ENSG00000165115       KIF27       1.827       9.47E-03         ENSG0000273148       LINC00653       3.753       2.36E-02       ENSG00000286104       AC016629.3       1.792       3.08E-03         ENSG0000286185       AC242842.3       3.192       2.36E-15       ENSG0000273018       FAM106A       1.781       1.35E-04         ENSG00000297704       MC14286.6       2.967       1.12E-02       ENSG0000240053       LY6G5B       1.732       1.71E-02         ENSG00000279030       AC04242842.3       3.012       1.98E-09       ENSG00000232593       KANTR       1.700       4.81E-06         ENSG00000279030       AC142086.6       2.967       1.12E-04       ENSG00000232593       KANTR       1.695       2.91E-04         ENSG00000255524       NPIPB8       2.898       3.82E-02       ENSG0000027934       AP002784.1       1.695       2.91E-04         ENSG00000239653       PSMD6-AS2	ENSG00000273763	AC007318.1	4.544	3.78E-20	ENSG00000143674	MAP3K21	1.846	8.09E-03
ENSG00000188629       ZNF177       3.940       1.98E-03       ENSG00000153234       NR4A2       1.835       7.57E-05         ENSG00000217289       AC079776.1       3.782       4.76E-02       ENSG00000165115       KIF27       1.827       9.47E-03         ENSG00000273148       LINC0653       3.753       2.36E-02       ENSG000004799       PDK4       1.810       7.39E-07         ENSG00000279425       AC092279.2       3.401       1.12E-02       ENSG0000273018       FAM106A       1.781       1.35E-04         ENSG00000286185       AC242842.3       3.192       2.36E-15       ENSG0000240053       LY665B       1.732       1.71E-02         ENSG0000029974       DDTL       3.012       1.98E-09       ENSG0000232593       KANTR       1.700       4.81E-06         ENSG00000277030       AC142086.6       2.967       1.12E-04       ENSG0000232593       KANTR       1.695       2.91E-04         ENSG00000255524       NPIPB8       2.898       3.82E-02       ENSG00000279342       AP000866.6       1.689       3.24E-02         ENSG00000250511       AC107982.1       2.881       5.00E-02       ENSG00000279342       AP000866.6       1.689       3.24E-02         ENSG00000250513       AC003002.3       2.685 </td <td>ENSG00000257921</td> <td>AC025165.3</td> <td>4.416</td> <td>1.08E-12</td> <td>ENSG00000230551</td> <td>AC021078.1</td> <td>1.840</td> <td>1.44E-06</td>	ENSG00000257921	AC025165.3	4.416	1.08E-12	ENSG00000230551	AC021078.1	1.840	1.44E-06
ENSG00000217289       AC079776.1       3.782       4.76E-02       ENSG00000165115       KIF27       1.827       9.47E-03         ENSG00000273148       LINC00653       3.753       2.36E-02       ENSG000002499       PDK4       1.810       7.39E-07         ENSG00000279425       AC092279.2       3.401       1.12E-02       ENSG0000286104       AC016629.3       1.792       3.08E-03         ENSG00000286185       AC242842.3       3.192       2.36E-15       ENSG0000273018       FAM106A       1.781       1.35E-04         ENSG0000029974       DDTL       3.012       1.98E-09       ENSG000002353       KANTR       1.700       3.76E-02         ENSG00000279030       AC04336.3       2.967       1.12E-04       ENSG000027933       KANTR       1.695       2.91E-04         ENSG00000255524       NPIPB8       2.898       3.82E-02       ENSG000027932       AKRD10-IT1       1.687       2.70E-02         ENSG00000259533       AC003002.3       2.685       4.99E-02       ENSG00000258741       H2AZ2P1       1.681       6.42E-03         ENSG00000265533       AC03002.3       2.667       2.49E-02       ENSG00000258741       H2AZ2P1       1.666       6.57E-05         ENSG00000265533       AC003002.3       2.667	ENSG00000188629	ZNF177	3.940	1.98E-03	ENSG00000153234	NR4A2	1.835	7.57E-05
ENSG00000273148       LINC00653       3.753       2.36E-02       ENSG0000004799       PDK4       1.810       7.39E-07         ENSG00000279425       AC092279.2       3.401       1.12E-02       ENSG0000286104       AC016629.3       1.792       3.08E-03         ENSG00000286185       AC242842.3       3.192       2.36E-15       ENSG0000273018       FAM106A       1.781       1.35E-04         ENSG00000166343       MSS51       3.044       1.99E-02       ENSG00000240053       LY6G5B       1.732       1.71E-02         ENSG00000277304       AC142086.6       2.967       1.12E-04       ENSG00000232593       KANTR       1.700       3.76E-02         ENSG00000255524       NPIPB8       2.898       3.82E-02       ENSG0000027932       AP002784.1       1.695       2.91E-04         ENSG00000250511       AC107982.1       2.881       5.00E-02       ENSG0000027932       ANKRD10-IT1       1.687       2.70E-02         ENSG00000239653       PSMD6-AS2       2.741       4.21E-02       ENSG00000258741       H2AZ2P1       1.681       6.42E-03         ENSG00000261542       AC011978.2       2.674       2.49E-02       ENSG00000175265       GOLGA8A       1.666       6.57E-05         ENSG00000232186       TERF1P7	ENSG00000217289	AC079776.1	3.782	4.76E-02	ENSG00000165115	KIF27	1.827	9.47E-03
ENSG00000279425       AC092279.2       3.401       1.12E-02       ENSG0000286104       AC016629.3       1.792       3.08E-03         ENSG00000286185       AC242842.3       3.192       2.36E-15       ENSG0000273018       FAM106A       1.781       1.35E-04         ENSG00000166343       MSS51       3.044       1.99E-02       ENSG0000240053       LY6G5B       1.732       1.71E-02         ENSG00000277304       AC142086.6       2.967       1.12E-04       ENSG0000232593       KANTR       1.700       3.76E-02         ENSG0000025524       NPIPB8       2.898       3.82E-02       ENSG00000279342       AP000866.6       1.689       3.24E-02         ENSG0000025554       NPIPB8       2.898       3.82E-02       ENSG00000259152       ANKRD10-IT1       1.687       2.70E-02         ENSG0000025953       PSMD6-AS2       2.741       4.21E-02       ENSG00000258741       H2AZ2P1       1.681       6.42E-03         ENSG00000261542       AC011978.2       2.674       2.49E-02       ENSG00000175265       GOLGA8A       1.666       6.57E-05         ENSG0000023186       TERF1P7       2.670       1.24E-02       ENSG00000175265       GOLGA8A       1.657       8.68E-04         ENSG000001711121       KCNMB3 <td< td=""><td>ENSG00000273148</td><td>LINC00653</td><td>3.753</td><td>2.36E-02</td><td>ENSG0000004799</td><td>PDK4</td><td>1.810</td><td>7.39E-07</td></td<>	ENSG00000273148	LINC00653	3.753	2.36E-02	ENSG0000004799	PDK4	1.810	7.39E-07
ENSG0000286185       AC242842.3       3.192       2.36E-15       ENSG0000273018       FAM106A       1.781       1.35E-04         ENSG00000166343       MSS51       3.044       1.99E-02       ENSG00000240053       LY6G5B       1.732       1.71E-02         ENSG00000277304       AC142086.6       2.967       1.12E-04       ENSG0000225593       KANTR       1.700       3.76E-02         ENSG00000255524       NPIPB8       2.898       3.82E-02       ENSG0000279342       AP000866.6       1.689       3.24E-02         ENSG00000250511       AC107982.1       2.881       5.00E-02       ENSG00000258741       H2AZ2P1       1.681       6.42E-03         ENSG00000265533       AC003002.3       2.665       4.99E-02       ENSG0000175265       GOLGA8A       1.666       6.57E-05         ENSG0000023186       TERF1P7       2.670       1.24E-02       ENSG0000259522       AL136295.4       1.657       8.68E-04         ENSG00000213250       RBMS2P1       2.616       1.42E-09       ENSG0000259522       AL136295.4       1.657       8.68E-04	ENSG00000279425	AC092279.2	3.401	1.12E-02	ENSG00000286104	AC016629.3	1.792	3.08E-03
ENSG0000166343       MSS51       3.044       1.99E-02       ENSG0000240053       LY6G5B       1.732       1.71E-02         ENSG0000099974       DDTL       3.012       1.98E-09       ENSG00000138778       CENPE       1.700       4.81E-06         ENSG00000277304       AC142086.6       2.967       1.12E-04       ENSG00000232593       KANTR       1.700       3.76E-02         ENSG00000255524       NPIPB8       2.898       3.82E-02       ENSG00000279342       AP000866.6       1.689       3.24E-02         ENSG0000025953       PSMD6-AS2       2.741       4.21E-02       ENSG00000258741       H2AZ2P1       1.681       6.42E-03         ENSG00000261542       AC011978.2       2.674       2.49E-02       ENSG0000175265       GOLGA8A       1.666       6.57E-05         ENSG00000232186       TERF1P7       2.670       1.24E-02       ENSG00000259522       AL136295.4       1.657       8.68E-04         ENSG00000213250       RBMS2P1       2.616       1.42E-09       ENSG0000259522       AL136295.4       1.657       8.68E-04	ENSG00000286185	AC242842.3	3.192	2.36E-15	ENSG00000273018	FAM106A	1.781	1.35E-04
ENSG0000099974         DDTL         3.012         1.98E-09         ENSG0000138778         CENPE         1.700         4.81E-06           ENSG00000277304         AC142086.6         2.967         1.12E-04         ENSG0000232593         KANTR         1.700         3.76E-02           ENSG00000279030         AC007336.3         2.947         3.68E-02         ENSG00000250519         AP002784.1         1.695         2.91E-04           ENSG00000255524         NPIPB8         2.898         3.82E-02         ENSG00000279342         AP000866.6         1.689         3.24E-02           ENSG0000025953         PSMD6-AS2         2.741         4.21E-02         ENSG00000258741         H2AZ2P1         1.681         6.42E-03           ENSG00000261542         AC011978.2         2.674         2.49E-02         ENSG0000175265         GOLGA8A         1.666         6.57E-05           ENSG0000023186         TERF1P7         2.670         1.24E-02         ENSG00000259522         AL136295.4         1.657         8.68E-04           ENSG00000171121         KCNMB3         2.656         4.69E-02         ENSG00000259522         AL136295.4         1.657         8.68E-04	ENSG00000166343	MSS51	3.044	1.99E-02	ENSG00000240053	LY6G5B	1.732	1.71E-02
ENSG0000277304       AC142086.6       2.967       1.12E-04       ENSG0000232593       KANTR       1.700       3.76E-02         ENSG0000279030       AC007336.3       2.947       3.68E-02       ENSG0000250519       AP002784.1       1.695       2.91E-04         ENSG00000255524       NPIPB8       2.898       3.82E-02       ENSG00000279342       AP000866.6       1.689       3.24E-02         ENSG00000239653       PSMD6-AS2       2.741       4.21E-02       ENSG00000258741       H2AZ2P1       1.681       6.42E-03         ENSG00000261542       AC011978.2       2.674       2.49E-02       ENSG0000175265       GOLGA8A       1.666       6.57E-05         ENSG00000232186       TERF1P7       2.670       1.24E-02       ENSG00000259522       AL136295.4       1.657       8.68E-04         ENSG00000213250       RBMS2P1       2.616       1.42E-09       1.42E-09       1.42E-09	ENSG0000099974	DDTL	3.012	1.98E-09	ENSG00000138778	CENPE	1.700	4.81E-06
ENSG0000279030       AC007336.3       2.947       3.68E-02       ENSG0000250519       AP002784.1       1.695       2.91E-04         ENSG0000255524       NPIPB8       2.898       3.82E-02       ENSG00000279342       AP000866.6       1.689       3.24E-02         ENSG00000250511       AC107982.1       2.881       5.00E-02       ENSG00000229152       ANKRD10-IT1       1.687       2.70E-02         ENSG00000239653       PSMD6-AS2       2.741       4.21E-02       ENSG00000258741       H2AZ2P1       1.681       6.42E-03         ENSG00000269533       AC003002.3       2.665       4.99E-02       ENSG00000196597       ZNF782       1.679       1.43E-02         ENSG00000232186       TERF1P7       2.670       1.24E-02       ENSG00000259522       AL136295.4       1.657       8.68E-04         ENSG00000171121       KCNMB3       2.656       4.69E-02       ENSG00000259522       AL136295.4       1.657       8.68E-04         ENSG00000213250       RBMS2P1       2.616       1.42E-09       1.42E-09       1.42E-09       1.42E-09	ENSG00000277304	AC142086.6	2.967	1.12E-04	ENSG00000232593	KANTR	1.700	3.76E-02
ENSG0000255524       NPIPB8       2.898       3.82E-02       ENSG0000279342       AP000866.6       1.689       3.24E-02         ENSG00000250111       AC107982.1       2.881       5.00E-02       ENSG00000229152       ANKRD10-IT1       1.687       2.70E-02         ENSG00000239653       PSMD6-AS2       2.741       4.21E-02       ENSG00000258741       H2AZ2P1       1.681       6.42E-03         ENSG00000261542       AC011978.2       2.674       2.49E-02       ENSG0000175265       GOLGA8A       1.666       6.57E-05         ENSG00000232186       TERF1P7       2.670       1.24E-02       ENSG00000259522       AL136295.4       1.657       8.68E-04         ENSG00000213250       RBMS2P1       2.616       1.42E-09       1.42E-09       1.42E-09	ENSG00000279030	AC007336.3	2.947	3.68E-02	ENSG00000250519	AP002784.1	1.695	2.91E-04
ENSG0000250111       AC107982.1       2.881       5.00E-02       ENSG00000229152       ANKRD10-IT1       1.687       2.70E-02         ENSG00000239653       PSMD6-AS2       2.741       4.21E-02       ENSG00000258741       H2AZ2P1       1.681       6.42E-03         ENSG00000269533       AC003002.3       2.685       4.99E-02       ENSG0000196597       ZNF782       1.679       1.43E-02         ENSG00000232186       TERF1P7       2.670       1.24E-02       ENSG00000259522       AL136295.4       1.657       8.68E-04         ENSG00000213250       RBMS2P1       2.616       1.42E-09       1.42E-09       1.42E-09	ENSG00000255524	NPIPB8	2.898	3.82E-02	ENSG00000279342	AP000866.6	1.689	3.24E-02
ENSG0000239653       PSMD6-AS2       2.741       4.21E-02       ENSG0000258741       H2AZ2P1       1.681       6.42E-03         ENSG0000269533       AC003002.3       2.685       4.99E-02       ENSG0000196597       ZNF782       1.679       1.43E-02         ENSG0000261542       AC011978.2       2.674       2.49E-02       ENSG0000175265       GOLGA8A       1.666       6.57E-05         ENSG00000232186       TERF1P7       2.670       1.24E-02       ENSG00000259522       AL136295.4       1.657       8.68E-04         ENSG00000213250       RBMS2P1       2.616       1.42E-09       1.42E-09       1.42E-09	ENSG00000250111	AC107982.1	2.881	5.00E-02	ENSG00000229152	ANKRD10-IT1	1.687	2.70E-02
ENSG0000269533       AC003002.3       2.685       4.99E-02       ENSG0000196597       ZNF782       1.679       1.43E-02         ENSG0000261542       AC011978.2       2.674       2.49E-02       ENSG0000175265       GOLGA8A       1.666       6.57E-05         ENSG00000232186       TERF1P7       2.670       1.24E-02       ENSG00000259522       AL136295.4       1.657       8.68E-04         ENSG00000213250       RBMS2P1       2.616       1.42E-09       1.42E-09       1.42E-09       1.42E-09	ENSG00000239653	PSMD6-AS2	2.741	4.21E-02	ENSG00000258741	H2AZ2P1	1.681	6.42E-03
ENSG0000261542       AC011978.2       2.674       2.49E-02       ENSG0000175265       GOLGA8A       1.666       6.57E-05         ENSG00000232186       TERF1P7       2.670       1.24E-02       ENSG0000259522       AL136295.4       1.657       8.68E-04         ENSG00000213250       RBMS2P1       2.616       1.42E-09       1.42E-09       1.42E-09	ENSG00000269533	AC003002.3	2.685	4.99E-02	ENSG00000196597	ZNF782	1.679	1.43E-02
ENSG00000232186       TERF1P7       2.670       1.24E-02       ENSG00000259522       AL136295.4       1.657       8.68E-04         ENSG00000213250       RBMS2P1       2.616       1.42E-09       1.42E-09       1.42E-09	ENSG00000261542	AC011978.2	2.674	2.49E-02	ENSG00000175265	GOLGA8A	1.666	6.57E-05
ENSG0000171121         KCNMB3         2.656         4.69E-02           ENSG00000213250         RBMS2P1         2.616         1.42E-09	ENSG00000232186	TERF1P7	2.670	1.24E-02	ENSG00000259522	AL136295.4	1.657	8.68E-04
ENSG00000213250 RBMS2P1 2.616 1.42E-09	ENSG00000171121	KCNMB3	2.656	4.69E-02				
	ENSG00000213250	RBMS2P1	2.616	1.42E-09				

Supplementary Table 1: Contd....

Gene name

Log2 ratio

Р

Gene ID

Contd...

Supplementary Table 1: Contd			Supplementary Table 1: Contd				
Gene ID	Gene name	Log2 ratio	Р	Gene ID	Gene name	Log2 ratio	Р
		(Cytokine + JSHT/Cytokine)				(Cytokine + JSHT/Cytokine)	
ENSG00000122483	CCDC18	1.644	1.29E-03	ENSG00000154874	CCDC144B	1.329	7.57E-04
ENSG00000259959	AC107068.1	1.639	1.15E-02	ENSG00000261490	AC005674.2	1.326	4.31E-02
ENSG00000162927	PUS10	1.627	8.28E-03	ENSG00000277701	AC159540.2	1.325	3.51E-03
ENSG00000257524	AL157935.2	1.616	6.53E-05	ENSG00000244754	N4BP2L2	1.316	4.75E-03
ENSG00000283050	GTF2IP12	1.595	3.37E-02	ENSG00000189195	BTBD8	1.315	2.02E-02
ENSG00000188611	ASAH2	1.594	3.58E-03	ENSG00000121621	KIF18A	1.314	1.85E-03
ENSG00000183479	TREX2	1.579	3.43E-02	ENSG00000153914	SREK1	1.309	2.01E-03
ENSG00000235770	LINC00607	1.576	4.09E-02	ENSG00000103995	CEP152	1.308	4.11E-03
ENSG00000198157	HMGN5	1.570	4.21E-02	ENSG0000089048	ESF1	1.307	4.32E-04
ENSG00000268173	AC007192.1	1.548	8.49E-05	ENSG00000133863	TEX15	1.306	2.69E-02
ENSG00000139116	KIF21A	1.525	1.46E-02	ENSG00000250299	MRPS31P4	1.296	1.99E-02
ENSG00000250067	YJEFN3	1.523	1.89E-04	ENSG00000196696	PDXDC2P-NPIPB14P	1.293	7.43E-03
ENSG00000278662	GOLGA6L10	1.522	3.34E-02	ENSG00000267680	ZNF224	1.288	4.77E-03
ENSG00000115604	IL18R1	1.503	2.66E-02	ENSG00000227671	AL390728.4	1.278	1.29E-03
ENSG00000233327	USP32P2	1.502	6.40E-04	ENSG00000182263	FIGN	1.272	1.13E-02
ENSG00000270069	MIR222HG	1.500	5.77E-04	ENSG00000274272	AC069281.2	1.271	3.76E-02
ENSG00000138587	MNS1	1.492	2.97E-02	ENSG00000166004	CEP295	1.264	2.38E-03
ENSG00000107890	ANKRD26	1.484	6.09E-04	ENSG00000279419	AC004925.1	1.264	2.72E-02
ENSG00000146247	PHIP	1.476	9.18E-05	ENSG00000180376	CCDC66	1.263	2.34E-03
ENSG00000173588	CEP83	1.472	8.99E-04	ENSG00000196693	ZNF33B	1.256	1.09E-02
ENSG00000101745	ANKRD12	1.469	3.42E-05	ENSG00000162572	SCNN1D	1.254	4.29E-02
ENSG00000156876	SASS6	1.459	1.61E-03	ENSG00000256525	POLG2	1.250	3.87E-02
ENSG00000230373	GOLGA6L5P	1.454	1.34E-02	ENSG00000241697	TMEFF1	1.250	5.41E-03
ENSG00000280046	AC104581.4	1.453	5.42E-03	ENSG00000177888	ZBTB41	1.250	8.76E-04
ENSG00000223509	AC135983.3	1.451	9.86E-03	ENSG000001/8146	AL6/220/.1	1.245	2.95E-02
ENSG00000197969	VPS13A	1.421	1.66E-03	ENSG00000267368	UPK3BL1	1.245	5.00E-02
ENSG00000163535	SGO2	1.416	6.86E-05	ENSG00000255717	SNHGI	1.241	1.00E-02
ENSG00000120832	MTERF2	1.415	3.18E-02	ENSG00000288473	AL669830.2	1.234	1.58E-03
ENSG00000196247	ZNF10/	1.414	3.63E-04	ENSG00000251022	THAP9-AST	1.231	1.29E-02
ENSG00000175471	MCTPI	1.412	6.26E-04	ENSG00000114857	NKIR MEG2	1.225	6.89E-04
ENSG0000003987	MIMK/	1.406	2.20E-02	ENSG00000214548	MEG5 D2CNIT5	1.222	1.24E-03
ENSC00000198/0/	CEP290	1.400	1.21E-04	ENSC00000170397	DOUNTO MIS19DD1	1.217	3.3/E-02
ENSG0000000279	ASPM DECE1	1.399	3.11E-04	ENSG00000129534	MIS18BP1	1.215	1.00E-03
ENSG000001/4/18	KESFI DDN2D1	1.398	7.27E-05	ENSG00000197050	ZINF420	1.201	4.55E-05
ENSC00000248124	CDD 125	1.391	2.64E-02	ENSC00000270350		1.195	2.90E-03
ENSC00000181019	APPDC2	1.309	2.04E-02	ENSC00000230433	EANCM	1.191	4.95E-02
ENSG00000173509	ZNE518A	1.385	5.18E-03	ENSG00000187790	FTA A 1	1.191	1.95E-03
ENSG00000177855	ROCK1P1	1.385	2.79E-02	ENSG00000173275	ZNE449	1.189	1.95E-05
ENSG00000205000	SVCP2	1.385	2.79E-02 4 73E-02	ENSG00000175275	DNM3OS	1.189	$2.01E_{-0.02}$
ENSG00000190074	7NF441	1.380	6.23E-02	ENSG00000230030	PHF3	1.187	2.01E-02
ENSG00000127044	GOI GA4	1.330	1.48F-04	ENSG00000110402	RIF1	1.187	2.10E-03
ENSG00000210151	MT-TS1	1.374	2 80E-03	ENSG00000178338	ZNF354B	1.185	2.02E 03
ENSG00000197837	H4-16	1.374	2.00E 05 2.46E-02	ENSG0000075292	ZNF638	1.182	2.17E 02
ENSG00000254536	AL360181.3	1.365	1.95E-02	ENSG00000273136	NBPF26	1 180	8.68E-03
ENSG00000173209	AHSA2P	1.365	7.28E-04	ENSG0000085224	ATRX	1.175	4.13E-04
ENSG00000152409	JMY	1.360	1.37E-03	ENSG00000171016	PYGO1	1.174	2.21E-02
ENSG00000224287	MSL3P1	1.360	9.66E-03	ENSG00000162601	MYSM1	1.173	2.61E-03
ENSG00000196437	ZNF569	1.350	2.65E-03	ENSG00000258441	LINC00641	1.172	6.17E-03
ENSG00000138182	KIF20B	1.348	2.87E-04	ENSG00000197978	GOLGA6L9	1.169	3.42E-02
ENSG00000188994	ZNF292	1.341	5.20E-04	ENSG00000196081	ZNF724	1.169	1.22E-02
ENSG00000189423	USP32P3	1.336	1.26E-02	ENSG00000132424	PNISR	1.169	2.27E-03
ENSG00000165813	CCDC186	1.331	8.92E-04	ENSG0000092140	G2E3	1.166	4.95E-03
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Supplementary T	Table 1: Contd			Supplementary Table 1: Contd			
Gene ID	Gene name	Log2 ratio (Cytokine +	Р	Gene ID	Gene name	Log2 ratio (Cytokine +	Р
		JSHT/Cytokine)				JSHT/Cytokine)	
ENSG00000197054	ZNF763	1.164	4.53E-02	ENSG00000169131	ZNF354A	1.073	1.22E-02
ENSG00000134897	BIVM	1.162	1.65E-06	ENSG00000139793	MBNL2	1.072	1.12E-02
ENSG00000257315	ZBED6	1.159	1.35E-03	ENSG00000229419	RALGAPA1P1	1.070	2.30E-02
ENSG00000139618	BRCA2	1.158	7.82E-03	ENSG00000198046	ZNF667	1.069	2.46E-02
ENSG00000137135	ARHGEF39	1.143	3.48E-02	ENSG0000047410	TPR	1.068	3.05E-03
ENSG00000230397	SPTLC1P1	1.143	2.14E-02	ENSG00000183474	GTF2H2C	1.068	7.58E-03
ENSG00000131127	ZNF141	1.142	3.17E-02	ENSG00000140285	FGF7	1.067	2.59E-03
ENSG0000083535	PIBF1	1.139	4.43E-03	ENSG00000182504	CEP97	1.066	5.84E-03
ENSG00000254413	CHKB-CPT1B	1.135	4.13E-03	ENSG00000117724	CENPF	1.066	4.42E-03
ENSG00000197989	SNHG12	1.134	8.69E-03	ENSG00000011405	PIK3C2A	1.066	4.05E-03
ENSG00000228315	GUSBP11	1.134	1.27E-02	ENSG00000163029	SMC6	1.065	4.01E-03
ENSG00000236801	RPL24P8	1.134	2.01E-02	ENSG00000256591	AP003108.2	1.065	2.69E-02
ENSG0000082269	FAM135A	1.131	1.07E-02	ENSG00000159086	PAXBP1	1.064	6.28E-03
ENSG00000176055	MBLAC2	1.130	2.14E-02	ENSG00000146757	ZNF92	1.063	1.19E-02
ENSG00000157741	UBN2	1.129	5.72E-03	ENSG00000116741	RGS2	1.053	1.30E-02
ENSG00000146414	SHPRH	1.128	7.65E-03	ENSG00000230606	AC092683.1	1.053	3.39E-03
ENSG00000170396	ZNF804A	1.126	3.65E-03	ENSG00000181450	ZNF678	1.047	2.09E-02
ENSG00000120798	NR2C1	1.126	8 08E-03	ENSG00000163738	MTHFD2L	1.045	2.55E-02
ENSG00000141446	FSCO1	1.125	2 70E-03	ENSG00000137871	ZNF280D	1.045	7.95E-03
ENSG00000127081	ZNF484	1.123	1.03E-02	ENSG000001378797	PPIG	1.043	5.01E-03
ENSG00000127001	KTN1	1.120	1.53E-02	ENSG00000145241	CENPC	1.042	1.37E_02
ENSG00000120777	POLK	1.120	2.84E.02	ENSG00000143241	ZNE248	1.042	7.08E.03
ENSC00000122008	TENI CDK3	1.119	5 50E 03	ENSG00000198105	CED85I	1.041	7.33E-03
ENSC00000201408	PP1CC1	1.117	2.22E-02	ENSC00000152165	PCPD3	1.040	2.25E 02
ENSC0000023287	ACAD4	1.114	2.23E-03	ENSC00000133103	TNE721	1.040	1.64E 02
ENSC00000188234	AUAP4	1.112	2.00E-02	ENSG00000182905	ZINF/21	1.036	1.04E-03
ENSG0000009094	I ENMI ECD4	1.110	2.44E-02	ENSG0000092208	GEMINZ DCAD1	1.036	4.29E-02
ENSG00000139132	FGD4	1.109	2.2/E-03	ENSG0000019/121	PGAPI	1.036	2.58E-02
ENSG0000280347	AC000123.3	1.108	3.49E-02	ENSG0000129317	PUS/L	1.034	4.79E-03
ENSG00000136603	SKIL	1.107	1.46E-02	ENSG0000179104	IMIC2	1.030	4.01E-02
ENSG00000114120	SLC25A36	1.107	1.98E-02	ENSG00000163848	ZNF148	1.024	2.02E-02
ENSG00000145777	TSLP	1.107	7.85E-03	ENSG00000205413	SAMD9	1.021	4.47E-03
ENSG00000163428	LRRC58	1.106	3.01E-03	ENSG00000133739	LRRCC1	1.021	6.39E-03
ENSG00000167635	ZNF146	1.106	3.68E-03	ENSG00000198464	ZNF480	1.020	8.07E-03
ENSG00000118412	CASP8AP2	1.103	3.13E-03	ENSG00000185246	PRPF39	1.019	1.12E-02
ENSG00000189057	FAM111B	1.100	9.39E-03	ENSG00000138688	KIAA1109	1.012	1.67E-02
ENSG00000119778	ATAD2B	1.099	1.91E-02	ENSG0000032219	ARID4A	1.011	4.66E-03
ENSG00000149054	ZNF215	1.098	3.03E-02	ENSG00000127914	AKAP9	1.011	5.53E-04
ENSG00000100815	TRIP11	1.097	1.27E-03	ENSG0000083097	DOP1A	1.011	3.07E-02
ENSG00000125351	UPF3B	1.095	6.28E-03	ENSG00000164463	CREBRF	1.009	1.86E-02
ENSG00000189190	ZNF600	1.095	2.72E-02	ENSG00000151835	SACS	1.008	5.30E-03
ENSG00000138399	FASTKD1	1.092	3.62E-02	ENSG00000135968	GCC2	1.006	7.64E-03
ENSG00000117262	GPR89A	1.091	3.96E-03	ENSG00000118939	UCHL3	1.005	1.88E-02
ENSG0000078177	N4BP2	1.085	1.08E-02	ENSG00000115355	CCDC88A	1.004	5.53E-03
ENSG00000135338	LCA5	1.085	8.36E-03	ENSG00000113448	PDE4D	1.003	3.13E-02
ENSG00000163611	SPICE1	1.085	2.74E-02	ENSG00000114796	KLHL24	1.002	4.09E-03
ENSG00000165525	NEMF	1.084	2.30E-03	ENSG00000198521	ZNF43	1.000	4.29E-03
ENSG00000196757	ZNF700	1.083	1.79E-02	ENSG00000213689	TREX1	-1.003	2.04E-02
ENSG00000196227	FAM217B	1.080	5.24E-03	ENSG00000257511	AC084824.1	-1.012	2.78E-02
ENSG00000102189	EEA1	1.080	3.08E-03	ENSG00000270800	RPS10-NUDT3	-1.054	9.04E-04
ENSG00000145734	BDP1	1.078	1.80E-03	ENSG00000100311	PDGFB	-1.065	9.15E-04
ENSG00000226102	SEPTIN7P3	1.077	1.98E-02	ENSG00000174977	AC026271.1	-1.081	3.45E-02
ENSG00000100592	DAAM1	1,076	9.06E-03	ENSG0000286219	NOTCH2NLC	-1.127	4.43E-02
ENSG00000223705	NSUN5P1	1.075	1.49E-02	ENSG00000149798	CDC42EP2	-1.133	8.31E-04
	0		-				

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Gene ID         Gene name         Log2 ratio         P           (Cytokine + ISHTUCytokine)         Gene name         Log2 ratio         P           (Cytokine + ISK00000270011         ZNF559-ZNF17         1.137         4.98-20         INSG00000186223         AD0006711         2.547         5.14E-44           DNSC0000023464         ALICISI.2         1.144         2.01-03         INSG00000186223         AD000671         2.758         6.782         4.07F-02           ENSC0000023751         MSTO2P         1.192         3.04E-04         INSG00000118726         COROTAC         2.258         6.782         0.97E-06         2.969         9.74E-06           ENSC0000017772         KCNA3         -1.207         4.11E-02         INSG0000011878         GUID14A-ACY1         -3.043         7.31E-0           ENSC0000017772         KCNA3         -1.217         3.01E-0         INSG0000014786         GUID14A-ACY1         -3.044         7.35E-0           ENSC0000017775         KCNA3         -1.216         2.86F-0         INSG0000014784         TGAIN3         -3.100         -3.104         -2.66F-0           ENSC0000012519         MISD2F         -1.227         3.01E-0         INSG0000014784         TGAIN3         -3.198         -2.66F-0         INSG0000014784	Supplementary T	Table 1: Contd			Supplementary Table 1: Contd			
INSTRUCTOR         INSTRUCTOR<	Gene ID	Gene name	Log2 ratio (Cytokine +	Р	Gene ID	Gene name	Log2 ratio (Cytokine +	Р
ENSCO00027011         ZMS39-ZNF177         -1.137         4.98F-02         ENSCO00021642         ZMS271         -2.547         5.44E-04           ENSCO000236534         ALD0151.2         -1.192         4.06E-03         ENSCO000236534         2.758         4.67E-02           ENSCO000226638         ALD0151.2         -1.192         3.01E-03         ENSCO000236734         COROT-PAMIG         -2.758         4.67E-02           ENSCO000226638         RELM44         -1.195         3.01E-04         ENSCO0000101747         ACU0232.1         -3.147         1.44E-11           ENSCO0000251756         KETA4         -1.261         1.51E-02         ENSCO00001774         ACU1232.1         -3.147         1.44E-11           ENSCO0000251758         MESD2         -3.266         2.65E-02         ENSC000001773         ACU133         -3.148         7.62E-03           ENSCO0000251758         MESD2         -3.266         2.65E-02         ENSC000002569         MFSD2B         -3.356         2.63E-02         ENSC000002569         MFSD2B         -3.356         2.63E-02         ENSC000002569         MFSD2B         -3.356         2.63E-02         ENSC000002569         MFSD2B         -3.356         2.63E-02         ENSC000002569         MFSD2B         -3.356         2.64E-02         ENSC0000025			JSHT/Cytokine)				JSHT/Cytokine)	
ENSCOUDOUZ3448         ALIES12         -1.154         2.01E-03         ENSCOUDOUZ344         ZBS72P1         -2.53         P.73E-03           ENSCOUDOUZ3644         APOL9312         -1.192         4.06E-04         ENSCOUDOUZ344         CLINCU2502         -2.751         6.78E-06           ENSCOUDOUZ3645         REPLAY4         -1.192         3.01E-03         ENSCOUDOUZ3757         -3.0137         7.33E-03           ENSCOUDOUZ3757         KCNA3         -1.207         4.11E-02         ENSCOUDOUT3727         ACCI0322.1         -3.127         1.44E-11           ENSCOUDOUZ3751         KR134         -1.261         1.51E-02         ENSCOUD0243753         -3.118         1.216         1.51E-02         ENSCOUD0243753         -3.118         1.216         1.51E-02         ENSCOUD024353         -3.128         -7.62E-03           ENSCOUD0025335         APOL306.1         -1.321         4.14E-02         ENSCOUD024536         MFSD2         -3.56         2.63F-02           ENSCOUD0025395         NEDS-NEDP         -1.329         6.18E-04         ENSCOUD024546         MCV1C-AS1         -3.66         2.43F-02           ENSCOUD0021397         AND1527         -3.786         A.86E-03         -2.175         3.86E-03           ENSCOUD0021398         MAS14	ENSG00000270011	ZNF559-ZNF177	-1.137	4.89E-02	ENSG00000188223	AD000671.1	-2.547	5.14E-04
ENSCO0000288534         AP00191.2         -1.192         3.01E-0.0         ENSCO00002363         -2.758         4.67E-0.2           ENSCO00002661         ACU92718.3         -1.107         3.01E-0.0         ENSCO0000103426         CORO.7+PANI6         -2.99         9.74E-0.6           ENSCO00002761         NSTO2P         -1.224         8.00E-0.4         ENSCO000016774         ACU0232.1         -3.147         1.44E-11           ENSCO000025783         CFMIN7-AS1         -3.140         1.20F-0.2         ENSCO000025784         CFMIN7-AS1         -3.140         1.20F-0.2           ENSCO000025583         NETN2         -1.237         3.01E-0.2         ENSCO000025784         CFMIN7-AS1         -3.140         1.20F-0.2           ENSCO000025553         NEDDA-MDP1         -1.326         3.09E-0.2         ENSCO00002569         MFSD2B         -3.536         2.63F-0.2           ENSCO00002591         PMS2P7         -1.377         3.58E-0.2         ENSCO00002596         MFSD2B         -3.638         2.45F-0.2           ENSCO00002591         PMS2P7         -1.478         2.84E-0.2         ENSCO00002794         CDRL4         -3.964         3.66E-03           ENSCO00002595         YCI1A         -1.478         2.84E-0.2         ENSCO00002794         CDRL4         -3.	ENSG00000234648	AL162151.2	-1.154	2.01E-03	ENSG00000212643	ZRSR2P1	-2.563	9.73E-03
ENSCOUND2064         AC192718.3         -1.192         3.01F-0.6         FNSCOUND232527         LINC02802         -2.781         6.78E-0.6           ENSCOUND207212         KCNA3         -1.207         A11F-0.2         ENSCOUND207474         AC101825.         -3.0127         1.44F-11           ENSCOUND2017272         KCNA3         -1.201         1.51F-0.2         ENSCOUND2774         AC101825.1         -3.127         1.44F-11           ENSCOUND25338         NETAT         -1.261         1.51F-0.2         ENSCOUND27442         CENTP         -3.127         1.44F-0.1           ENSCOUND25338         APD1326.0.1         -1.321         4.14F-0.2         ENSCOUND25565         MFSD2B         -3.056         2.45E-0.2           ENSCOUND25357         APD1277         -3.177         3.58E-0.2         ENSCOUND25565         MFSD2B         -3.356         2.45E-0.2           ENSCOUND25358         APD1327         -1.377         3.58E-0.2         ENSCOUND25794         ADD1527.2         -3.755         3.86E-0.2           ENSCOUND25959         MCD4         -1.458         1.30E-0.3         ENSCOUND25794         ADD1527.2         -3.755         3.86E-0.2           ENSCOUND25959         ENSCOUND25950         MCD4         -4.550         -3.661         BNSCOUND25794	ENSG00000288534	AP001931.2	-1.192	4.06E-03	ENSG00000130940	CASZ1	-2.758	4.67E-02
ENSCO0000229638         RPL4P4         -1.195         3.06E-04         ENSCO000017374         CORO7-PAM16         -2.969         9.74E-06           ENSCO00001272         KCNA3         -1.201         4.11E-04         ENSCO000017373         A.114-A-CYL         -3.127         1.44E-11           ENSCO000013737         KRT34         -1.261         1.51E-02         ENSCO000017373         A.1143         -3.140         7.62E-03           ENSCO000025582         NFIPA2         -1.277         3.01E-02         ENSCO000025585         MFD2B         -3.56         2.65E-02           ENSCO000025558         NFD2B         -3.56         2.65E-02         ENSCO000025558         MFD2B         -3.56         2.65E-02         ENSCO000025598         MFD2B         -3.56         2.65E-02         ENSCO00002598         MFD2B         -3.56         2.65E-02         ENSCO000025998         AD01572.2         -3.75         3.85E-02           ENSCO00002599         AFD110         -1.478         2.84E-03         ENSCO0000239704         CDRT4         -3.944         3.63E-18           ENSCO00002599         XCD11A         -1.478         2.84E-03         ENSCO0000239704         CDRT4         -3.944         3.63E-18           ENSCO00002599         XCD11A         -1.478         3.30E-02 <td>ENSG00000260643</td> <td>AC092718.3</td> <td>-1.192</td> <td>3.01E-03</td> <td>ENSG00000232527</td> <td>LINC02802</td> <td>-2.781</td> <td>6.78E-06</td>	ENSG00000260643	AC092718.3	-1.192	3.01E-03	ENSG00000232527	LINC02802	-2.781	6.78E-06
ENSCO000017222         ECNA3         -1.207         4.11E-02         ENSCO000017576         ABD14A-ACCY         -3.043         7.33E-03           ENSCO000025339         MLT3352.1         -1.261         1.51E-02         ENSCO000007348         GEMIN7-AS1         -3.140         1.20E-02           ENSCO000025339         ALT3352.1         -1.263         2.26E-02         ENSCO000024324         K1P12         -3.204         4.65F-02           ENSCO000025515         APD0236.0.1         -1.321         4.14E-02         ENSCO000023569         MTSD2B         -3.536         2.64F-02           ENSCO00002550         NEDD8-MDP1         -1.326         3.09F-02         ENSCO000024764         PCDILC-S         -3.664         3.506         2.64F-02           ENSCO00002570         PNSCO0000247950         NEDD8-MDP1         -1.478         2.84E-02         ENSCO000024764         PCDILC-S         -3.664         3.506E-13           ENSCO000021591         RNSCO0000247592         RNSCO000025793         AD01527.2         -3.785         3.86E-03           ENSCO000021595         XTOLA         -1.478         2.84E-03         ENSCO000025734         AD3564.3         -4.210         2.75F-03           ENSCO000021595         XTOLA         -1.48         5.76F-02         ENSCO000025734	ENSG00000229638	RPL4P4	-1.195	3.60E-04	ENSG00000103426	CORO7-PAM16	-2.969	9.74E-06
ENSCO000012775         IMSTO2P         -1.224         8.00E-04         ENSCO000017474         GCMINT-AS1         -3.127         1.4E-12           ENSCO0000125339         AL133352.1         -1.263         2.26E-02         ENSCO000027348         GRMINT-AS1         -3.108         7.62E-03           ENSCO000025539         AL13352.1         -1.277         3.01E-02         ENSCO000025530         MED2B         -3.204         4.65E-02         ENSCO000025530         MED2B         -3.643         -3.562         2.63E-02           ENSCO000025919         ARTGATZ         -1.377         3.58E-02         ENSCO000024076         PCMGCS         -3.643         3.50E-11           ENSCO000021491         ARGATZ         -1.377         3.58E-02         ENSCO000024098         AC073508.2         -3.739         1.88E-08           ENSCO000021492         ARGATA         A444         AL443         ENSCO000023970         CDR14         -3.964         3.63E-18           ENSCO0000215915         ATAJOC         -1.464         1.90E-08         ENSCO000023141         AL1238654.3         -4.210         -2.75E-03           ENSCO000023958         AC03581.2         -1.618         5.74E-03         ENSCO000023141         AL926         -3.33E-02         ENSCO000023141         AL926         -3.575 <td>ENSG00000177272</td> <td>KCNA3</td> <td>-1.207</td> <td>4.11E-02</td> <td>ENSG00000114786</td> <td>ABHD14A-ACY1</td> <td>-3.043</td> <td>7.33E-03</td>	ENSG00000177272	KCNA3	-1.207	4.11E-02	ENSG00000114786	ABHD14A-ACY1	-3.043	7.33E-03
ENSCO00002373         KT14         -1.261         1.51E-02         FNSC000002548         GEMINT-ASI         -3.140         1.20E-02           ENSC0000025482         NFIPA2         -1.277         3.01E-02         FNSC0000023648         MCG1N3         -3.140         A65E-02           ENSC000002545         NFUD2A         -3.204         4.465E-02         FNSC0000023656         MYCL-ASI         -3.603         2.45E-02           ENSC000002545         NEDD8-MMP1         -1.326         3.05E-02         FNSC0000023656         MYCL-ASI         -3.604         3.50E-1           ENSC000002540         PMSC1         -1.377         3.58E-02         FNSC0000023964         PMOTASI         -3.643         -3.56E         3.56E-1           ENSC0000021464         BGNG1         -1.473         3.43E-02         FNSC0000023974         AD01527.2         -3.785         3.86E-02           ENSC0000021459         RASACP         -1.502         7.36E-02         ENSC000002374         AD12524.3         -4.100         -4.465         ISSC000002374         AD12524.3         -4.100         -4.462         ISSC0000027534         AL2354.3         -4.100         -5.275E-03         ISE-04         ENSC0000027548         AD1254.4         -4.362         2.38E-042           ENSC00000021759	ENSG00000203761	MSTO2P	-1.224	8.00E-04	ENSG00000167774	AC010323.1	-3.127	1.44E-11
ENSCO000025339         ALI3352.1         1.263         22.6E-02         ENSC00000214823         CRN1P2         -3.204         4.65E-02           ENSC00000255315         AP002560.1         -1.21         4.14E-02         ENSC0000023656         MYCL-ASI         -3.003         2.45E-02           ENSC0000025519         AP102560.1         -1.326         3.09E-02         ENSC0000027646         MYCL-ASI         -3.003         2.45E-02           ENSC0000025191         ARIS2P7         -1.377         3.58E-02         ENSC0000023914         CDHC5         -3.554         3.50E-11           ENSC00000214631         ROFO4         -1.433         3.43E-02         ENSC0000023914         AD01572.2         -3.785         3.86E-03           ENSC0000021915         ATD3C         -1.446         1.306-38         ENSC0000023910         AD01572.2         -3.785         3.86E-03           ENSC0000023903         RASA4CP         -1.520         7.36E-48         ENSC0000023914         AJ28654.33         -4.210         2.75E-04           ENSC0000021915         SATD3C         -1.618         5.74E-03         ENSC0000027341         AJ28656.2         -4.533         -4.162         2.75E-03           ENSC0000021780         GTT214         -1.618         5.74E-03         ENSC0000027348 <td>ENSG00000131737</td> <td>KRT34</td> <td>-1.261</td> <td>1.51E-02</td> <td>ENSG00000267348</td> <td>GEMIN7-AS1</td> <td>-3.140</td> <td>1.20E-02</td>	ENSG00000131737	KRT34	-1.261	1.51E-02	ENSG00000267348	GEMIN7-AS1	-3.140	1.20E-02
ENSCO000025482         NIPA2         1.277         3.01E-02         ENSCO000025432         CIX1P2         3.204         4.65E.02           ENSCO000025515         AP002360.1         -1.321         4.14E-02         ENSCO000023663         MFSD2B         -3.536         2.63E-02           ENSCO000025512         NEDD8-MJDP1         -1.326         3.09F-02         ENSCO000023664         MYCL-AS1         -3.603         2.43E-02           ENSCO0000151313         ROBO4         -1.437         3.58F-02         ENSCO000023964         AD0157.2         -3.739         3.86E-03           ENSCO000023995         ZYG11A         -1.478         2.84E-03         ENSC0000023964         AD0157.2         -3.664         -3.664         AS06000023965         AC073481.2         -4.056         -4.44E-03           ENSC0000023985         XCG11A         -1.478         2.84F-04         ENSC0000023130         AL35811.1         -4.180         -5.77E           ENSC0000023863         RA54ACP         -1.612         4.89E-02         ENSC0000021368         NED14.4         -4.534         2.97E-03           ENSC0000023573         GT214         -1.612         4.89E-02         ENSC0000021376         NIPLA         -4.334         2.11E-03           ENSC0000023573         GLD2533         <	ENSG00000255339	AL133352.1	-1.263	2.26E-02	ENSG00000144834	TAGLN3	-3.198	7.62E-03
ENSCO0000255153         AP002401         -1.326         3.09E-02         ENSC0000025659         MESD2B         -3.536         2.45E-02           ENSC00000255526         NEDD8-MDP1         -1.326         3.09E-10         -8.650         3.69E-10         -3.664         3.50E-11           ENSC00000254018         PMSR27         -1.377         3.58E-02         ENSC00000240764         PCDHCC5         -3.654         3.50E-11           ENSC00000214313         ROHO         -1.478         2.84E-02         ENSC000002590         CDR14         -3.964         3.65E-13           ENSC0000021595         XTATIA         -1.479         3.50E-02         ENSC0000025902         AC244230.2         -4.056         4.4E-03           ENSC00000228903         RASA4CP         -1.520         7.36E-44         ENSC00000259741         A1.92865.4.3         -4.210         2.75E-04           ENSC0000021398         RASA4CP         -1.520         7.36E-44         ENSC0000025983         AL358113.1         -4.180         -4.352         2.75E-03           ENSC0000021398         RASPLASIL1         -1.626         3.336-02         ENSC0000027548         NIPAL4         -4.364         2.88E-04           ENSC0000021395         SACL21         -1.687         3.04E-02         ENSC0000027548	ENSG00000254852	NPIPA2	-1.277	3.01E-02	ENSG00000214322	CBX1P2	-3.204	4.65E-02
ENSCO000025552         NEDD8-MDP1         -1.326         3.09F-02         ENSC0000025646         NVCL-NS1         -3.603         2.45F-02           ENSC00000259018         PMS2P7         -1.377         3.58E-02         ENSC00000279504         AC073508.2         -3.738         3.86E-03           ENSC00000259018         PMS2P7         -1.477         3.58E-02         ENSC00000279504         AC013508.2         -3.785         3.86E-03           ENSC00000216915         ATDAT         -1.478         2.84E-03         ENSC0000025402         AC24420.2         -4.056         4.44E-03           ENSC00000215915         ATDAT         -1.486         1.30E-03         ENSC0000025414         AL258113.1         -4.160         6.37E-11           ENSC00000225803         RASA4CP         -1.520         7.36E-44         ENSC00000125195         BASPLAS1         -4.252         3.04E-02           ENSC0000025817         SUS511.1         -1.618         5.47E-02         ENSC00000027314         IJ29864.3         -4.210         -7.75         2.57E-35           ENSC00000275317         SUN-121         -1.633         3.45E-02         ENSC0000027559         AC106486.2         -4.533         2.11E-03           ENSC00000275539         AC04556.3         -1.687         1.09E-03	ENSG00000255135	AP002360.1	-1.321	4.14E-02	ENSG00000205639	MFSD2B	-3.536	2.63E-02
ENSCO0000163219         ARHGAP25         -1.329         6.18E-04         ENSC00000240764         PCHGC5         -3.654         3.50E-11           ENSC00000124013         ROBC4         -1.453         3.85E-02         ENSC00000239704         CDRT4         -3.964         3.65E-18           ENSC0000021464         BGNT10         -1.478         2.84E-03         ENSC00000229704         CDRT4         -3.964         3.65E-18           ENSC0000022895         ZYGI1A         -1.479         3.50E-02         ENSC00000227302         AC244230.2         -4.056         4.44E-03           ENSC0000022895         ZYGI1A         -1.486         1.30E-03         ENSC0000027314         L2DS654.3         -4.210         2.75E-03           ENSC0000021898         AC105341.1         -1.626         3.37E-03         ENSC00000272819         BRAL4         -4.354         2.31E-03           ENSC000002173780         GT2214         -1.631         4.86E-06         ENSC00000272812         UG2317.1         -7.870         1.25E-02           ENSC00000224545         AC00533.1         -1.667         1.09E-05         ENSC0000027859         AC0141.4         1.50E-02           ENSC0000027676         PCHGA8         -1.710         5.04E-04         ENSC00000227675         HC14.4         3.50E-02<	ENSG00000255526	NEDD8-MDP1	-1.326	3.09E-02	ENSG00000236546	MYCL-AS1	-3.603	2.45E-02
ENSG0000229018         PMS2P7         -1.377         3.58E-02         ENSG00000274058         AC073508.2         -3.739         1.88E-08           ENSG0000014133         R0B04         -1.4473         3.48E-02         ENSG00000279504         AD01572.2         -3.785         3.86E-03           ENSG00000216995         ZYG11A         -1.478         3.96E-02         ENSG0000025402         AC2442.02.2         -4.056         4.44E-03           ENSG00000215915         ATAD3C         -1.686         1.30E-03         ENSG00000257314         AL928654.3         -4.210         2.75E-03           ENSG00000228003         RASA4CP         -1.520         7.36E-04         ENSG00000127344         H292654.3         -4.252         3.04E-03           ENSG00000273741         SUSS0700017348         NID24654.3         -4.252         3.04E-03         ENSG0000027314         H292654.3         -1.612         2.87E-02         ENSG0000027181         BIVM-ENCCS         -5.775         2.57E-35           ENSG00000273415         SIN503         -1.637         3.45E-02         ENSG0000027634         AC04556.3         -1.687         1.20E-02         ENSG0000025539         AC04556.3         -1.687         1.20E-02         ENSG0000025539         AC04556.3         -1.698         ENSG0000025539         AC04471.1	ENSG00000163219	ARHGAP25	-1.329	6.18E-04	ENSG00000240764	PCDHGC5	-3.654	3.50E-11
ENSG0000154133         ROBO4         -1.453         3.43E-02         ENSG0000279504         AD001527.2         -3.785         3.86E-03           ENSG000021464         BIGNT10         -1.478         2.84E-03         ENSG000023904         CDR14         -3.964         3.63E-18           ENSG000025995         ZYG11A         -1.479         3.50E-02         ENSG0000025502         AC424230.2         -4.66         4.44E-03           ENSG0000226807         RACD3481.2         -1.612         4.89E-02         ENSG0000025196         BASP1-AS1         -4.252         3.04E-03           ENSG0000026387         AC033481.2         -1.618         5.74E-03         ENSG00000125196         BASP1-AS1         -4.252         3.04E-03           ENSG00000213880         GTF2H4         -1.631         4.89E-06         ENSG00000271281         BIVM-ERCC5         -5.775         2.57E-35           ENSG00000276345         AC004556.3         -1.687         1.09E-03         ENSG0000027427         SDD2-OT1         -1.184         1.50E-02           ENSG00000025010         CX3CL1         -1.688         8.10E-03         ENSG0000023427         SLD2-OT1         -1.184         2.16E-02           ENSG00000025010         CX3CL1         -1.688         8.10E-03         ENSG0000023427         SD	ENSG00000229018	PMS2P7	-1.377	3.58E-02	ENSG00000264058	AC073508.2	-3.739	1.83E-08
ENSG000021464         B3GNT10         -1.478         2.84E-03         ENSG0000239704         CDRT4         -3.964         3.63E-18           ENSG0000202595         ZYG11A         -1.479         3.50E-02         ENSG0000025302         AC2430.2         -4.066         4.44E-03           ENSG0000025915         ATAD3C         -1.486         1.30E-03         ENSG00000257314         AL358113.1         -4.180         6.37E-11           ENSG0000026387         AC053481.2         -1.612         4.89E-02         ENSG000002548         NTPAL4         -4.364         2.83E-04           ENSG0000016317         SYNPO2L         -1.618         S.74E-03         ENSG0000027848         NTPAL4         -4.364         2.83E-04           ENSG00000213780         GTF2H4         -1.631         4.89E-06         ENSG0000027818         BIVM-ERCC5         -5.775         2.57E-03           ENSG0000027635         CL22P1         -1.648         8.10E-03         ENSG0000027821         U62317.1         -7.870         1.25E-02           ENSG0000027635         AC004556.3         -1.687         1.20E-04         ENSG000002592         ACAPI-TT         -1.18.34         1.50E-02           ENSG0000027539         AC004553.3         AC10957.1         -1.282         3.35E-02         -1.618	ENSG00000154133	ROBO4	-1.453	3.43E-02	ENSG00000279504	AD001527.2	-3.785	3.86E-03
ENSG000023995         ZYG11A         -1.479         3.50E-02         ENSG000028402         AC244230.2         -4.056         4.44E-03           ENSG00002395         TAD3C         -1.486         1.30E-03         ENSG000023430         AL35811.1         -4.180         6.37E-11           ENSG0000263887         AC053481.2         -1.612         4.89E-02         ENSG00000125196         BASP1-AS1         -4.252         3.04E-03           ENSG0000125389         AL053411.1         -1.626         3.32E-03         ENSG0000012548         NIPA14         -4.364         2.83E-04           ENSG0000023539         GTF2H4         -1.631         4.89E-06         ENSG0000025421         UG2317.1         -7.870         1.25E-02           ENSG000002545         AC05456.3         -1.678         8.10E-03         ENSG0000025427         S012-071         -1.183         4.50E-02           ENSG0000025639         AC05456.3         -1.688         8.10E-03         ENSG0000025427         S012-071         -1.184         4.02E-02           ENSG0000025639         AC05456.3         -1.688         8.10E-03         ENSG0000025427         S012-071         -1.184         6.2E-02           ENSG0000025639         AC05875         -1.719         1.30E-02         ENSG0000025468         ENCU2763	ENSG00000214654	B3GNT10	-1.478	2.84E-03	ENSG00000239704	CDRT4	-3.964	3.63E-18
ENSG0000215915         ATAD3C         -1.486         1.30E-03         ENSG00002285130         AL358113.1         -4.180         6.37E-11           ENSG0000025807         ACSA4CP         -1.520         7.36E-04         ENSG00000257341         AL252         3.04E-03           ENSG0000016837         SYNPO2L         -1.618         5.74E-03         ENSG0000012548         NIPAL4         -4.364         2.83E-04           ENSG00000235370         GTT2214         -1.618         5.74E-03         ENSG0000027081         BIVM-ERCC5         -5.775         5.27E-35           ENSG0000023533         CLK2P1         -1.687         1.20E-05         ENSG00000273529         SOD2-OT1         -11.834         1.50E-02           ENSG00000253639         AC004556.3         -1.687         1.20E-05         ENSG000002535529         AGAP1-TT1         -11.988         6.02E-03           ENSG00000253639         AC00583.1         -1.695         1.09E-03         ENSG0000025369         AC10917.1         -2.208         3.35E-02           ENSG00000253639         AC105875         -1.719         1.33E-02         ENSG0000025496         ENC0142.6         -12.294         3.45E-05           ENSG00000253769         PCDHGA8         -1.710         4.32E-04         ENSG0000025496         EXOC142.2	ENSG00000203995	ZYG11A	-1.479	3.50E-02	ENSG00000285402	AC244230.2	-4.056	4.44E-03
ENSG0000228903         RASA4CP         -1.520         7.36E-04         ENSG0000257341         AL928654.3         -4.210         2.75E-03           ENSG0000026387         AC053481.2         -1.612         4.89E-02         ENSG000017548         NIPAL4         -4.364         2.38E-04           ENSG0000021370         GTP2144         -1.631         4.89E-06         ENSG0000027821         UG2317.1         -7.870         1.25E-03           ENSG0000025353         CLK2P1         -1.668         3.45E-02         ENSG0000027821         UG2317.1         -7.870         1.25E-02           ENSG0000025355         AC04556.3         -1.687         1.20E-05         ENSG0000235498         RLINC0763         -11.983         6.02E-03           ENSG0000025367         PCDHGA8         -1.710         5.40E-04         ENSG00000231050         AL109917.1         -12.082         3.35E-02           ENSG00000253767         PCDHGA8         -1.719         1.38E-02         ENSG00000230596         AC01422.6         -12.234         1.24E-11           ENSG00000253705         SMIM11B         -1.744         4.26E-04         ENSG00000254968         AL109917.1         -12.082         3.35E-02           ENSG00000253705         SMIM11B         -1.719         1.382-02         ENSG00000254968	ENSG00000215915	ATAD3C	-1.486	1.30E-03	ENSG00000285130	AL358113.1	-4.180	6.37E-11
ENSG0000263887         AC053481.2         -1.612         4.89E-02         ENSG0000215196         BASP1-AS1         -4.252         3.04E-03           ENSG000016317         SYNP02L         -1.618         5.74E-03         ENSG0000027589         NIPAL4         -4.364         2.88E-04           ENSG000013780         GTE2144         -1.631         4.89E-06         ENSG00000270181         BIVM-ERCC5         -5.775         2.57E-35           ENSG0000023553         CLK2P1         -1.653         3.45E-02         ENSG00000278521         C6317.1         -7.870         1.25E-02           ENSG0000025639         AC004556.3         -1.687         1.20E-05         ENSG00000235529         AGP1-IT1         -11.908         2.16E-02           ENSG0000025639         AC005833.1         -1.695         1.09E-03         ENSG00000231050         AL10917.1         -12.082         3.35E-02           ENSG0000187013         LINC02875         -1.719         1.33E-02         ENSG0000025466         ENSG0000025467         ENSG0000027599         SIMIM11B         -1.741         4.62E-04         ENSG0000026963         AC010422.6         -12.234         1.24E-11           ENSG00000257949         IEN1         -1.833         6.2E-66         ENSG0000026933         AC010422.6         -12.241         3.45E-	ENSG00000228903	RASA4CP	-1.520	7.36E-04	ENSG00000257341	AL928654.3	-4.210	2.75E-03
ENSG000016317         SYNP02L         -1.618         5.74E-03         ENSG00000172548         NIPAL4         -4.364         2.83E-04           ENSG00000185389         AL035411.1         -1.626         3.33E-03         ENSG0000270181         BIVM-ERCC5         -5.775         2.57E-35           ENSG0000023553         CLC2P1         -1.653         3.45E-02         ENSG00000272821         U62317.1         -7.870         1.25E-02           ENSG0000025649         AC004556.3         -1.687         1.20E-05         ENSG0000025496         LINC02763         -11.988         6.02E-03           ENSG00000255649         AC004556.3         -1.687         1.20E-04         ENSG0000025496         LINC02763         -11.988         6.02E-03           ENSG00000255659         AC005833.1         -1.695         1.09E-03         ENSG0000025496         LINC02763         -11.983         6.02E-03           ENSG00000273505         SMIM11B         -1.710         5.40E-04         ENSG0000025436         EXOC314         -12.112         2.91E-02           ENSG0000027590         SMIM11B         -1.741         4.62E-04         ENSG0000022053         AC10422.6         -12.234         3.45E-05           ENSG0000027590         SMM11B         -1.814         4.36E-02         ENSG000002233	ENSG0000263887	AC053481.2	-1.612	4.89E-02	ENSG00000215196	BASP1-AS1	-4.252	3.04E-03
ENSG0000185839         AL035411.1         -1.626         3.33E-03         ENSG0000260899         AC106886.2         -4.533         2.11E-03           ENSG00000213780         GTE2H4         -1.631         4.89E-06         ENSG000027281         UG2317.1         -7.870         1.25E-02           ENSG00000275635         CLK2P1         -1.633         3.45E-02         ENSG000028547         SOD2-OT1         -11.834         1.50E-02           ENSG0000025636         AC004556.3         -1.645         1.20E-05         ENSG000028547         SOD2-OT1         -11.834         1.50E-02           ENSG0000025567         PCDHGA8         -1.710         5.40E-04         ENSG0000231050         AL109917.1         -1.208         2.32E-02           ENSG00000255767         PCDHGA8         -1.711         4.62E-04         ENSG0000026436         AC10472.6         -1.224         1.24E-11           ENSG00000257950         SIMI11B         -1.741         4.62E-04         ENSG0000026433         AC10472.6         -1.234         1.24E-11           ENSG00000273949         TENI         -1.823         1.82E-06         ENSG0000027328         AC11272.1         -1.241         4.16E-02           ENSG0000027249         AL139398.1         -1.866         5.55E-03         ENSG0000027329         <	ENSG00000166317	SYNPO2L	-1.618	5.74E-03	ENSG00000172548	NIPAL4	-4.364	2.83E-04
ENSG00000213780         GTE2H4         1.651         4.89E-06         ENSG0000027181         BTVM-ERCC5         5.775         2.57E-35           ENSG00000213780         GTE2H4         1.653         3.45E-02         ENSG0000027821         U6217.1         -7.870         1.25E-02           ENSG0000025453         AC004556.3         -1.687         1.20E-05         ENSG0000025529         SOD2-OT1         -11.834         1.50E-02           ENSG00000255639         AC005833.1         -1.695         1.09E-03         ENSG0000025406         LINC02763         -11.983         6.02E-03           ENSG00000273509         SMIN11B         -1.711         5.40E-04         ENSG0000025406         AC10422.6         -12.234         1.24E-11           ENSG00000273509         SMIN11B         -1.741         4.62E-04         ENSG0000026693         AC10422.6         -12.234         1.24E-11           ENSG0000027390         SMIN11B         -1.766         8.65E-07         ENSG0000022023         AC112721.2         -12.217         -12.34         1.24E-14           ENSG0000027449         TEN1         -1.823         1.82E-06         ENSG0000022323         AC112721.2         -2.217         -7.16E-04           ENSG0000027449         TAN1         -1.866         5.55E-03         ENSG00	ENSG00000185839	AL035411 1	-1.626	3 33E-03	ENSG00000260899	AC106886 2	-4 533	2 11E-03
ENSG00000232553         CHE2P1         1.653         3.45E-02         ENSG00000272821         UG317.1         .7.870         1.25E-02           ENSG00000232553         CCUQ4556.3         -1.687         1.20E-05         ENSG0000025427         SOD2-OT1         -1.18.34         1.50E-02           ENSG0000025553         AC004556.3         -1.688         8.10E-03         ENSG0000025492         AGAP1-IT1         -1.19.83         6.02E-03           ENSG00000253767         PCDHGA8         -1.719         1.33E-02         ENSG0000025495         ENCC3L4         -12.112         2.91E-02           ENSG00000253767         PCDHGA8         -1.714         4.62E-04         ENSG0000025693         AC010422.6         -12.234         3.45E-05           ENSG0000025090         SMIMI1B         -1.741         4.62E-04         ENSG0000026693         AC010422.6         -12.234         3.45E-05           ENSG0000025091         ARDIN-AP3S2         -1.833         6.22E-06         ENSG0000022683         AC109460.2         -12.294         3.45E-05           ENSG0000025091         ARPIN-AP3S2         -1.833         6.22E-06         ENSG0000026818         EEF1E1-BLOC155         -12.951         3.65E-02           ENSG00000254247         AC09950.2         -1.843         4.30E-02         ENSG	ENSG00000213780	GTF2H4	-1 631	4 89E-06	ENSG00000270181	BIVM-ERCC5	-5 775	2.11E 05
Ensconouo227643         AC004556.3         -1.687         1.20E-05         ENSG0000025527         SOD2-OT1         -11.834         1.50E-02           ENSG0000027643         AC004556.3         -1.688         8.10E-03         ENSG00000235529         AGAP1-TT1         -11.983         6.02E-03           ENSG00000255637         AC005833.1         -1.687         1.09E-03         ENSG0000023105         AL109917.1         -12.082         3.35E-02           ENSG00000235507         PCDEGA8         -1.710         5.40E-04         ENSG0000025436         EXOC31.4         -12.112         2.91E-02           ENSG0000023590         SMIM11B         -1.741         4.62E-04         ENSG00000269693         AC01942.6         -12.234         1.24E-104           ENSG0000023892         DEF6         -1.801         4.87E-02         ENSG0000022023         AC11922.6         -12.735         7.01E-04           ENSG0000025021         ARPIN-AP3S2         -1.833         6.22E-06         ENSG0000022323         AC11721.2         -12.817         4.10E-03           ENSG0000025497         AC099560.2         -1.914         1.03E-03         ENSG00000273259         AL049839.2         -13.517         1.60E-02           ENSG0000023497         AC139295.1         -1.943         6.96E-07         ENSG0	ENSG00000232553	CLK2P1	-1 653	3.45E-02	ENSG00000272821	U62317.1	-7 870	1.25E-02
EnsG00000002510       CXSCL1       -1.688       8.10E-03       ENSG0000025329       AGAP1-ITT       -1.1937       1.1937       6.022-03         ENSG000000255639       AC005833.1       -1.695       1.09E-03       ENSG0000023150       AL109917.1       -1.2.082       3.35E-02         ENSG00000273579       PCDHGA8       -1.710       5.40E-04       ENSG00000231050       AL109917.1       -12.082       3.35E-02         ENSG00000273590       SMIM11B       -1.741       4.62E-04       ENSG0000026693       AC010422.6       -12.234       1.24E-11         ENSG0000025402       DEF6       -1.801       4.87E-02       ENSG0000022032       AC109460.2       -12.234       3.45E-05         ENSG0000025002       ARPIN-AP352       -1.833       6.22E-06       ENSG0000022032       AC11271.2       -12.817       4.10E-03         ENSG0000025002       ARPIN-AP352       -1.833       4.30E-02       ENSG0000025688       AC0194839.2       -12.998       3.44E-07         ENSG0000025409       AL139296.5       -1.866       5.55E-03       ENSG00000256688       AC008982.2       -13.517       1.60E-02         ENSG0000025409       AL136295.1       -1.943       6.96E-07       ENSG000025679       AC005476.1       -13.574       5.56E-03	ENSG00000252555	AC004556 3	-1 687	1 20E-05	ENSG00000272021	SOD2-0T1	-11 834	1.20E-02
ENSG000022563         AC005833.1         -1.695         1.09E-03         ENSG0000254968         EINC02763         -1.1983         6.02E-03           ENSG00000255376         PCDHGA8         -1.710         5.40E-04         ENSG0000254366         EINC02763         -1.1983         6.02E-03           ENSG00000253905         SIMIM1B         -1.711         1.33E-02         ENSG0000025436         EXOC314         -12.112         2.91E-02           ENSG00000275905         SIMIM1B         -1.741         4.62E-04         ENSG0000025633         AC104960.2         -12.234         1.24E-11           ENSG000000275949         TENI         -1.823         1.82E-06         ENSG0000022032         AC112721.2         -12.817         4.10E-03           ENSG0000027549         TENI         -1.833         6.22E-06         ENSG000002739         AL49839.2         -12.998         3.44E-07           ENSG00000272449         AL139246.5         -1.863         4.30E-02         ENSG00000238123         MID1P1-ASI         -13.540         5.36E-02           ENSG00000234287         AC099560.2         -1.914         1.03E-03         ENSG00000238123         MID1P1-ASI         -13.778         8.95E-03           ENSG0000023607         FETSIP         -2.014         7.33E-03         ENSG00000238123 </td <td>ENSG000000270315</td> <td>CX3CL1</td> <td>-1 688</td> <td>8 10E-03</td> <td>ENSG00000235529</td> <td>AGAP1-IT1</td> <td>-11 908</td> <td>2 16E-02</td>	ENSG000000270315	CX3CL1	-1 688	8 10E-03	ENSG00000235529	AGAP1-IT1	-11 908	2 16E-02
ENSG0000253767       PCDHGA8       1.710       5.40E-04       ENSG00000253763       AL109917.1       1.2.082       3.35E-02         ENSG00000253767       PCDHGA8       1.711       4.62E-04       ENSG0000026903       AC109422.6       -12.234       1.24E-11         ENSG0000023892       SMIM1IB       1.741       4.62E-04       ENSG00000260853       AC109460.2       -12.294       3.45E-05         ENSG0000025392       DEF6       -1.801       4.87E-02       ENSG0000022023       AC112721.2       -12.817       4.10E-03         ENSG00000250021       ARPIN-AP3S2       -1.863       4.30E-02       ENSG00000273590       AC09889.2       -12.998       3.44E-07         ENSG00000234091       AL139246.5       -1.863       4.30E-02       ENSG00000273594       AL049839.2       -12.998       3.44E-07         ENSG0000023427       AC099560.2       -1.914       1.03E-03       ENSG0000027359       AL049839.2       -13.517       1.66E-07         ENSG0000023467       SETSIP       -2.014       7.33E-03       ENSG0000028576       AC131160.1       -13.848       5.09E-03         ENSG00000254692       AL16951.1       -1.943       6.96E-07       ENSG0000028576       AC131160.1       -13.848       5.09E-03         ENSG0000025466	ENSG00000255639	AC005833 1	-1 695	1.09E-03	ENSG00000254968	LINC02763	-11 983	6.02E-03
ENSG00000187013       LINC02875       -1.719       1.33E-02       ENSG00000205436       EXOC31.4       -12.112       2.91E-02         ENSG00000187013       LINC02875       -1.719       1.33E-02       ENSG0000026436       EXOC31.4       -12.12       2.91E-02         ENSG00000174028       FAM3C2       -1.766       8.65E-07       ENSG0000022633       AC109460.2       -12.234       1.24E-11         ENSG00000257949       TEN1       -1.823       1.82E-06       ENSG00000226382       AC112721.2       -12.817       4.10E-03         ENSG00000272449       AL139246.5       -1.863       4.30E-02       ENSG0000025793       AL049839.2       -12.998       3.44E-07         ENSG00000224287       AC099560.2       -1.914       1.03E-03       ENSG00000238123       MID1IP1-AS1       -13.517       1.60E-02         ENSG00000234287       AC099560.2       -1.914       1.03E-03       ENSG0000028375       AC131160.1       -13.848       5.09E-37         ENSG00000254667       SETSIP       -2.014       7.33E-03       ENSG0000028375       AC0364.6       -13.848       5.09E-37         ENSG00000254666       SYS1-DBNDD2       -2.024       7.29E-08       ENSG0000028523       AC006064.6       -13.848       5.09E-37         ENSG0000	ENSG00000253767	PCDHGA8	-1 710	5 40E-04	ENSG00000231050	AL109917.1	-12 082	3 35E-02
Line Source	ENSG00000187013	LINC02875	-1 719	1 33E-02	ENSG00000205436	EXOC3L4	-12.112	2.91E-02
ENSG00000174028       FAM3C2       -1.766       8.65E-07       ENSG0000026853       AC109460.2       -12.294       3.45E-05         ENSG0000025892       DEF6       -1.801       4.87E-02       ENSG0000026853       AC109460.2       -12.294       3.45E-05         ENSG00000250021       ARPIN-AP3S2       -1.833       6.22E-06       ENSG0000026853       EFF1E1-BLOC1S5       -12.951       3.65E-02         ENSG00000254391       AL139246.5       -1.863       4.30E-02       ENSG0000026988       AC008982.2       -13.517       1.60E-02         ENSG00000234287       AC099560.2       -1.914       1.03E-03       ENSG0000025818       ID11P1-AS1       -13.540       6.36E-03         ENSG0000023467       SETSIP       -2.014       7.33E-03       ENSG00000283765       AC131160.1       -13.844       5.09E-37         ENSG00000257007       AC112229.3       -2.091       2.42E-05       ENSG00000260272       AC093525.2       -14.146       8.14E-15         ENSG0000026888       AC018982.1       -2.110       4.11E-08       ENSG0000025129       AC004069.1       -14.870       1.02E-04         ENSG00000268083       AC08882.1       -2.110       4.11E-08       ENSG0000025129       AC094069.1       -14.870       1.02E-04         E	ENSG00000273590	SMIM11B	-1 741	4.62E-04	ENSG00000269693	AC010422.6	-12.234	1.24E-11
ENSG0000023892       DEF6       -1.801       4.87E-02       ENSG0000010121       GGTLC2       -12.735       7.01E-04         ENSG00000257949       TEN1       -1.823       1.82E-06       ENSG0000022302       AC112721.2       -12.817       4.10E-03         ENSG00000257049       ARPIN-AP3S2       -1.833       6.22E-06       ENSG0000023329       AL049839.2       -12.951       3.65E-02         ENSG00000234391       AL139398.1       -1.866       5.55E-03       ENSG0000023812       MID1IP1-AS1       -13.517       1.60E-02         ENSG00000234287       AC099560.2       -1.914       1.03E-03       ENSG0000023812       MID1IP1-AS1       -13.540       5.63E-03         ENSG0000023667       SETSIP       -2.014       7.33E-03       ENSG0000023875       AC131160.1       -13.824       2.79E-19         ENSG00000254806       SYS1-DBNDD2       -2.094       2.42E-05       ENSG000025027       AC093525.2       -14.146       8.14E-15         ENSG00000254808       SQS1-DBNDD2       -2.014       7.31E-04       ENSG0000025129       AC004069.1       -14.870       1.02E-04         ENSG00000254806       SYS1-DBNDD2       -2.094       2.15E-02       ENSG0000025129       AC04069.1       -14.870       1.02E-04         ENSG0000	ENSG00000174028	FAM3C2	-1.766	8.65E-07	ENSG00000260853	AC109460.2	-12.294	3.45E-05
ENSG00000257949       TEN1       -1.833       1.83E-06       ENSG0000022302       AC112721.2       -12.817       4.10E-03         ENSG00000257049       AL139246.5       -1.863       4.30E-02       ENSG0000025329       AL049839.2       -12.998       3.44E-07         ENSG00000234287       AC099560.2       -1.914       1.03E-03       ENSG00000238123       MID1IP1-AS1       -13.540       5.63E-03         ENSG00000236692       AL136951.1       -1.943       6.96E-07       ENSG0000238765       AC131160.1       -13.824       2.79E-19         ENSG00000237649       KL136951.1       -1.943       6.96E-07       ENSG00000238765       AC131160.1       -13.824       2.79E-19         ENSG00000230667       SETSIP       -2.014       7.33E-03       ENSG00000283765       AC131160.1       -13.848       5.09E-37         ENSG0000025707       AC112229.3       -2.091       2.42E-05       ENSG0000025222       -14.146       8.14E-15         ENSG00000258083       AC008982.1       -2.115       4.68E-04       ENSG00000251259       AC004069.1       -14.870       1.02E-04         ENSG00000268033       AC008982.1       -2.115       4.68E-04       ENSG0000025362       MT1A       -14.982       5.11E-05         ENSG00000268033       <	ENSG0000023892	DEF6	-1.801	4 87E-02	ENSG00000100121	GGTLC2	-12 735	7.01E-04
ENSG000002500021       ARPIN-AP3S2       -1.833       6.22E-06       ENSG00000226818       EEFE1-BLOC1S5       -12.951       3.65E-03         ENSG0000022449       AL139246.5       -1.863       4.30E-02       ENSG00000250818       EEFE1-BLOC1S5       -12.951       3.65E-03         ENSG000022449       AL139398.1       -1.866       5.55E-03       ENSG0000025688       AC008982.2       -13.517       1.60E-02         ENSG0000224692       AL136295.1       -1.943       6.96E-07       ENSG0000025707       AC005476.1       -13.778       8.95E-03         ENSG00000230667       SETSIP       -2.014       7.33E-03       ENSG0000028765       AC131160.1       -13.824       2.79E-19         ENSG00000257207       AC112229.3       -2.091       2.42E-05       ENSG0000028528       AC006064.6       -13.848       5.09E-37         ENSG00000254806       SYS1-DBNDD2       -2.094       2.15E-02       ENSG00000251259       AC004069.1       -14.46       8.14E-15         ENSG00000268033       AC008982.1       -2.115       4.68E-04       ENSG0000025620       MT1A       -14.982       5.11E-05         ENSG00000268033       AC008982.1       -2.138       1.05E-05       ENSG0000025620       AL139300.1       -15.042       1.15E-25	ENSG00000257949	TEN1	-1 823	1.82E-06	ENSG00000222032	AC112721.2	-12 817	4 10E-03
ENSG00000272449       AL139246.5       -1.863       4.30E-02       ENSG00000273259       AL049839.2       -12.998       3.44E-07         ENSG00000273449       AL139246.5       -1.863       4.30E-02       ENSG0000273259       AL049839.2       -12.998       3.44E-07         ENSG00000224287       AC099560.2       -1.914       1.03E-03       ENSG0000238123       MID1IP1-AS1       -13.540       5.63E-03         ENSG0000023667       SETSIP       -2.014       7.33E-03       ENSG0000283765       AC131160.1       -13.824       2.79E-19         ENSG0000025406       SETSIP       -2.024       7.29E-08       ENSG00000285238       AC006064.6       -13.848       5.09E-37         ENSG00000254806       SYS1-DBNDD2       -2.094       2.15E-02       ENSG00000251259       AC004069.1       -14.146       8.14E-15         ENSG00000268075       AL031282.2       -2.110       4.11E-08       ENSG00000251259       AC004069.1       -14.870       1.02E-04         ENSG00000268083       AC008982.1       -2.115       4.68E-04       ENSG0000025362       MT1A       -14.982       5.11E-02         ENSG00000268083       AC068631.3       -2.136       7.54E-07       ENSG0000025620       AL139300.1       -15.042       1.15E-25	ENSG00000250021	ARPIN-AP3S2	-1.833	6.22E-06	ENSG00000265818	EEF1E1-BLOC185	-12.951	3.65E-02
ENSG0000218139       IAL193100       11000       11000       1100000       1100000       1100000       1100000       1100000       1100000       1100000       1100000       1100000       11000000       11000000       11000000       110000000       1100000000000000000000000000000000000	ENSG00000272449	AL139246.5	-1.863	4.30E-02	ENSG00000273259	AL049839.2	-12.998	3.44E-07
ENSG0000234287       AC099560.2       -1.914       1.03E-03       ENSG00000238123       MID1IP1-AS1       -13.540       5.63E-03         ENSG00000234287       AC099560.2       -1.943       6.96E-07       ENSG00000238067       AC05476.1       -13.778       8.95E-03         ENSG00000234067       SETSIP       -2.014       7.33E-03       ENSG00002283765       AC131160.1       -13.824       2.79E-19         ENSG00000257207       AC112229.3       -2.091       2.42E-05       ENSG0000260272       AC093525.2       -14.146       8.14E-15         ENSG00000254808       SYS1-DBNDD2       -2.094       2.15E-02       ENSG0000259771       AL163636.2       -14.195       5.76E-13         ENSG00000268875       AL031282.2       -2.110       4.11E-08       ENSG0000251259       AC04069.1       -14.870       1.02E-04         ENSG00000268083       AC008982.1       -2.115       4.68E-04       ENSG000025620       AL139300.1       -15.042       1.15E-25         ENSG00000268083       AC008982.1       -2.138       1.05E-05       ENSG0000256500       AL139300.1       -15.042       1.15E-25         ENSG00000261553       AL137782.1       -2.155       5.15E-10       ENSG0000256500       AL139300.1       -16.658       3.68E-60	ENSG00000284391	AL139398.1	-1.866	5.55E-03	ENSG00000269688	AC008982.2	-13.517	1.60E-02
EnvisionHistinHis	ENSG00000234287	AC099560 2	-1 914	1.03E-03	ENSG00000238123	MID1IP1-AS1	-13 540	5.63E-03
ENSG0000230667       SETSIP       -2.014       7.33E-03       ENSG0000283765       AC131160.1       -13.824       2.79E-19         ENSG0000230667       SETSIP       -2.014       7.33E-03       ENSG0000283765       AC131160.1       -13.824       2.79E-19         ENSG000025707       AC112229.3       -2.091       2.42E-05       ENSG0000260272       AC093525.2       -14.146       8.14E-15         ENSG0000268575       AL031282.2       -2.110       4.11E-08       ENSG0000251259       AC004069.1       -14.870       1.02E-04         ENSG0000268083       AC008982.1       -2.115       4.68E-04       ENSG000025620       MT1A       -14.982       5.11E-05         ENSG00000283390       AC068631.3       -2.136       7.54E-07       ENSG0000265500       AL139300.1       -15.042       1.15E-25         ENSG00000261553       AL137782.1       -2.155       5.15E-10       ENSG0000265991       AL355312.5       -16.658       3.68E-60         ENSG0000026606       AC018523.2       -2.207       3.24E-03       ENSG0000235236       AC137630.2       -17.271       2.86E-24         ENSG0000026606       AC018523.2       -2.309       4.89E-02       ENSG000027702       AC239859.5       -18.151       9.91E-24         ENSG0000027282	ENSG00000254692	AL136295.1	-1.943	6.96E-07	ENSG00000259079	AC005476.1	-13.778	8.95E-03
EnvironmetricLineLineLineLineLineLineLineLineLineENSG00000137411VARS2-2.0247.29E-08ENSG0000285238AC006064.6-13.8485.09E-37ENSG0000257207AC112229.3-2.0912.42E-05ENSG0000260272AC093525.2-14.1468.14E-15ENSG00000254806SYS1-DBNDD2-2.0942.15E-02ENSG00000259171AL163636.2-14.1955.76E-13ENSG00000268575AL031282.2-2.1104.11E-08ENSG00000251259AC004069.1-14.8701.02E-04ENSG00000283390AC068631.3-2.1367.54E-07ENSG0000025620AL139300.1-15.0421.15E-25ENSG00000261553AL137782.1-2.1555.15E-10ENSG00000285991AL355312.5-16.6583.68E-60ENSG00000256206AC018523.2-2.2928.88E-03ENSG0000023526AC137630.2-17.2712.86E-24ENSG00000256206AC018523.2-2.2928.88E-03ENSG0000277702AC239859.5-18.1519.91E-24ENSG00000272822AC073610.2-2.3877.38E-03ENSG0000277702AC239859.5-18.1519.91E-24ENSG00000151967SCHIP1-2.4421.38E-02	ENSG00000230667	SETSIP	-2.014	7.33E-03	ENSG00000283765	AC131160.1	-13.824	2.79E-19
ENSG00000257207       AC112229.3       -2.091       2.42E-05       ENSG0000260272       AC093525.2       -14.146       8.14E-15         ENSG00000254806       SYS1-DBNDD2       -2.094       2.15E-02       ENSG00000251259       AC004069.1       -14.870       1.02E-04         ENSG00000268875       AL031282.2       -2.110       4.11E-08       ENSG00000251259       AC004069.1       -14.870       1.02E-04         ENSG00000283390       AC068631.3       -2.136       7.54E-07       ENSG00000256500       AL139300.1       -15.042       1.15E-25         ENSG00000261553       AL137782.1       -2.155       5.15E-10       ENSG00000235236       AC137630.2       -17.271       2.86E-24         ENSG00000256206       AC018523.2       -2.292       8.88E-03       ENSG00000235236       AC137630.2       -17.271       2.86E-24         ENSG00000256206       AC018523.2       -2.387       7.38E-03       ENSG00000277702       AC239859.5       -18.151       9.91E-24         ENSG00000151967       SCHIP1       -2.442       1.38E-02       -2.442       1.38E-02	ENSG00000137411	VARS2	-2.024	7.29E-08	ENSG00000285238	AC006064.6	-13.848	5.09E-37
ENSG00000254806       SYS1-DBNDD2       -2.094       2.15E-02       ENSG00000259171       AL163636.2       -14.195       5.76E-13         ENSG00000268875       AL031282.2       -2.110       4.11E-08       ENSG00000251259       AC004069.1       -14.870       1.02E-04         ENSG0000028803       AC008982.1       -2.115       4.68E-04       ENSG00000256500       AL139300.1       -15.042       1.15E-25         ENSG00000261533       AL137782.1       -2.155       5.15E-10       ENSG00000285991       AL355312.5       -16.658       3.68E-60         ENSG00000256206       AC018523.2       -2.292       8.88E-03       ENSG00000235236       AC137630.2       -17.271       2.86E-24         ENSG00000256206       AC018523.2       -2.309       4.89E-02       ENSG00000277702       AC239859.5       -18.151       9.91E-24         ENSG00000272822       AC073610.2       -2.387       7.38E-03       ENSG00000277702       AC239859.5       -18.151       9.91E-24         ENSG00000151967       SCHIP1       -2.442       1.38E-02       -2.442       1.38E-02	ENSG00000257207	AC112229.3	-2.091	2.42E-05	ENSG00000260272	AC093525.2	-14.146	8.14E-15
ENSG00000268575       AL031282.2       -2.110       4.11E-08       ENSG00000251259       AC004069.1       -14.870       1.02E-04         ENSG00000268083       AC008982.1       -2.115       4.68E-04       ENSG0000025362       MT1A       -14.982       5.11E-05         ENSG00000283390       AC068631.3       -2.136       7.54E-07       ENSG00000256500       AL139300.1       -15.042       1.15E-25         ENSG00000261553       AL137782.1       -2.155       5.15E-10       ENSG00000285991       AL355312.5       -16.658       3.68E-60         ENSG0000023618       GP1BB       -2.207       3.24E-03       ENSG00000235236       AC137630.2       -17.271       2.86E-24         ENSG00000256206       AC018523.2       -2.309       4.89E-02       ENSG0000027702       AC239859.5       -18.151       9.91E-24         ENSG00000272822       AC073610.2       -2.387       7.38E-03       ENSG00000151967       SCHIP1       -2.442       1.38E-02	ENSG00000254806	SYS1-DBNDD2	-2.094	2.15E-02	ENSG00000259171	AL163636.2	-14.195	5.76E-13
ENSG00000268083       AC008982.1       -2.115       4.68E-04       ENSG0000026362       MT1A       -14.982       5.11E-05         ENSG00000283390       AC068631.3       -2.136       7.54E-07       ENSG00000256500       AL139300.1       -15.042       1.15E-25         ENSG00000261553       AL137782.1       -2.155       5.15E-10       ENSG00000285991       AL355312.5       -16.658       3.68E-60         ENSG00000256206       AC018523.2       -2.292       8.88E-03       ENSG0000027702       AC239859.5       -18.151       9.91E-24         ENSG00000272822       AC073610.2       -2.387       7.38E-03       ENSG00000151967       SCHIP1       -2.442       1.38E-02	ENSG00000268575	AL031282.2	-2.110	4.11E-08	ENSG0000251259	AC004069.1	-14.870	1.02E-04
ENSG00000283390       AC068631.3       -2.136       7.54E-07       ENSG00000256500       AL139300.1       -15.042       1.15E-25         ENSG00000261553       AL137782.1       -2.155       5.15E-10       ENSG00000285991       AL355312.5       -16.658       3.68E-60         ENSG00000256206       AC018523.2       -2.292       8.88E-03       ENSG0000027702       AC239859.5       -18.151       9.91E-24         ENSG00000272822       AC073610.2       -2.387       7.38E-03       ENSG00000151967       SCHIP1       -2.442       1.38E-02	ENSG00000268083	AC008982.1	-2.115	4.68E-04	ENSG0000205362	MT1A	-14.982	5.11E-05
ENSG00000182890       GLUD2       -2.138       1.05E-05       ENSG00000261796       ISY1-RAB43       -16.060       6.13E-47         ENSG00000261553       AL137782.1       -2.155       5.15E-10       ENSG00000285991       AL355312.5       -16.658       3.68E-60         ENSG00000256206       AC018523.2       -2.292       8.88E-03       ENSG0000277702       AC239859.5       -18.151       9.91E-24         ENSG00000272822       AC073610.2       -2.387       7.38E-03       ENSG0000015196       SCHIP1       -2.442       1.38E-02	ENSG00000283390	AC068631.3	-2.136	7.54E-07	ENSG00000256500	AL139300.1	-15.042	1.15E-25
ENSG00000261553       AL137782.1       -2.155       5.15E-10       ENSG00000285991       AL355312.5       -16.658       3.68E-60         ENSG0000023618       GP1BB       -2.207       3.24E-03       ENSG00000235236       AC137630.2       -17.271       2.86E-24         ENSG00000256206       AC018523.2       -2.292       8.88E-03       ENSG00000277702       AC239859.5       -18.151       9.91E-24         ENSG00000272822       AC073610.2       -2.387       7.38E-03       ENSG00000151967       SCHIP1       -2.442       1.38E-02	ENSG00000182890	GLUD2	-2.138	1.05E-05	ENSG0000261796	ISY1-RAB43	-16.060	6.13E-47
ENSG0000203618       GP1BB       -2.207       3.24E-03       ENSG0000235236       AC137630.2       -17.271       2.86E-24         ENSG00000256206       AC018523.2       -2.292       8.88E-03       ENSG0000027702       AC239859.5       -18.151       9.91E-24         ENSG00000272822       AC073610.2       -2.387       7.38E-03       -2.442       1.38E-02       -2.442       -2.442       1.38E-02	ENSG00000261553	AL137782.1	-2.155	5.15E-10	ENSG00000285991	AL355312.5	-16.658	3.68E-60
ENSG00000256206       AC018523.2       -2.292       8.88E-03       ENSG00000277702       AC239859.5       -18.151       9.91E-24         ENSG00000272822       AC073610.2       -2.387       7.38E-03         ENSG00000151967       SCHIP1       -2.442       1.38E-02	ENSG0000203618	GP1BB	-2.207	3.24E-03	ENSG00000235236	AC137630.2	-17.271	2.86E-24
ENSG0000103710         RASL12         -2.309         4.89E-02           ENSG00000151967         SCHIP1         -2.442         1.38E-02	ENSG0000256206	AC018523.2	-2,292	8.88E-03	ENSG00000255250	AC239859 5	-18 151	9.91F_24
ENSG0000272822         AC073610.2         -2.387         7.38E-03           ENSG00000151967         SCHIP1         -2.442         1.38E-02	ENSG0000103710	RASL12	-2,309	4.89E-02	111000000211102		10.171	7.71L-2 <del>4</del>
ENSG0000151967 SCHIP1 -2.442 1.38E-02	ENSG00000272822	AC073610.2	-2.387	7.38E-03				
	ENSG00000151967	SCHIP1	-2.442	1.38E-02				
ENSG0000274810 NPHP3-ACAD11 -2.511 3.16E-08	ENSG00000274810	NPHP3-ACAD11	-2.511	3.16E-08				