

# Role of Glutathione in Neutrophil Chemotaxis in Periodontitis

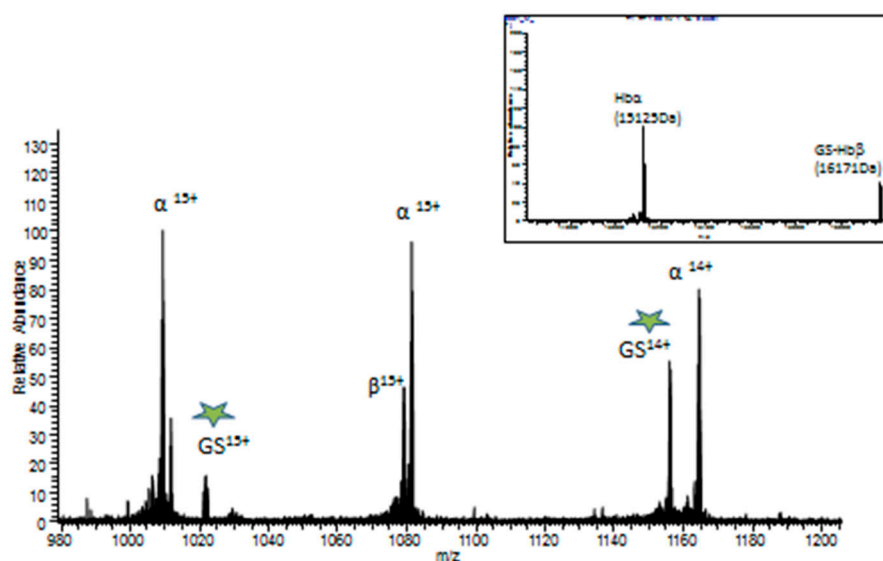
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To demonstrate that our instrumentation and methods could detect glutathionylated protein the method of Regazzoni et al., 2009 (J Chromatogr B Anal Technol Biomed Life Sci. 877(28):3456–61) was used to first modify haemoglobin by glutathionylation and then detection of the changes by mass spectrometry. Figure S1 shows that haemoglobin (Hb) can be detected with the post translational modification with glutathionylation by mass shift. The modified Hb was also digested and prepared for LC-MS/MS to explore if the localisation of the modification could be detected. Figure S2 shows the cysteines that were identified as being glutathionylated.



**Figure S1.** Mass spectrum of haemoglobin by direct infusion method showing alpha and glutathionylated beta peaks of masses 15125 Da and 16171 Da respectively in the top panel. The bottom panel depicts the mass spectra of hemoglobin along with the charge distribution for alpha and glutathionylated beta subunits of Hb.

MVHLTPEEKSAVTALWGKVVNDEVGGEALGRLLVVYPWTQRFFESFGDLSTPDAMGNPKV-  
KAHGKKVLGAFSDGLAHLNKLKGTFAITLSELHCDKLHVDPENFRLLGNVLVCVLAHHFGKEFTPPVQAAAYQKVVAG  
VANALAHKYH

Peptides:

GTFATLSELHcDK (4 PSMs)

VLGAFSDGLAHLNKLKGTFAITLSELHcDK (4 PSMs)

GTFATLSELHcDKLHVDPENFR (1 PSM)

LLGNVLVCVLAHHFGK (5 PSMs)

LLGnVLVCVLAHHFGK (4 PSMs)

**Figure S2.** Sequence of beta haemoglobin subunit with cysteine modified with glutathionylation highlighted in green.

**Table S1.** Accession number, description of protein and log fold change and p value for comparing the proteins isolated from neutrophils and identified by TMT based quantitative mass spectrometry from periodontitis patients and healthy controls.

Accession	Description	LOG2 fold change value	Log10 p-
P68871	Haemoglobin subunit beta	-1.02	1.55
P28161	Glutathione S-transferase Mu 2	-1.00	0.45
P00915	carbonic anhydrase 1	-0.88	1.40
P02042	Haemoglobin subunit delta	-0.84	1.74
P69905	Haemoglobin subunit alpha	-0.79	1.49
P00390	Glutathione reductase, mitochondrial	-0.52	2.44
P27695	DNA-(apurinic or apyrimidinic site) lyase	-0.20	2.12
P07339	Cathepsin D	0.11	1.52
Q07960	rho GTPase-activating protein 1	0.13	1.43
P35754	Glutaredoxin-1	0.24	1.42
Q9P2E9-1	Ribosome-binding protein 1	0.24	1.42
P60953	Cell division control protein 42 homolog	0.26	2.93
P06737-1	Glycogen phosphorylase, liver form	0.26	2.03
P11766	alcohol dehydrogenase class-3	0.30	3.91
P43490	nicotinamide phosphoribosyltransferase	0.33	1.34
P40227-1	T-complex protein 1 subunit zeta	0.34	1.55
P28838	cytosol aminopeptidase	0.41	1.44
Q14697-2	Isoform 2 of Neutral alpha-glucosidase AB	0.42	1.72
P28676	Grancalcin	0.46	1.33
Q01432-4	Isoform 2 of AMP deaminase 3	0.50	1.43
O75915	PRA1 family protein 3	0.61	1.55
Q9UJ70-2	Isoform 2 of N-acetyl-D-glucosamine kinase	0.63	1.69

P60842	Eukaryotic initiation factor 4A-I	1.01	0.64
P05164-3	Isoform H7 of Myeloperoxidase	1.06	0.50
Q6FI13	Histone H2A type 2-A	1.30	0.38
P08311	Cathepsin G	1.33	0.45
P11678	Eosinophil peroxidase	1.36	0.58
P23527	Histone H2B type 1-O	1.45	0.44
P62805	histone H4	1.46	0.48
P51858	hepatoma-derived growth factor	-0.75	0.68
P02769	Serum albumin	-0.73	1.20
P54819	Adenylate kinase 2, mitochondrial	-0.66	0.31
Q3SZR3	Alpha-1-acid glycoprotein	-0.66	0.69
P02768-1	Serum albumin	-0.56	0.73
P62140	Serine/threonine-protein phosphatase PP1-beta catalytic subunit	-0.56	0.48
P20810-6	Isoform 6 of Calpastatin	-0.56	0.50
P32119	Peroxiredoxin-2	-0.52	0.79
Q28194	Thrombospondin-1 (Fragment)	-0.52	0.67
P16402	Histone H1.3	-0.50	0.29
Q96HE7	ERO1-like protein alpha	-0.49	0.28
P14678-3	Isoform SM-B1 of Small nuclear ribonucleoprotein-associated proteins B and B'	-0.47	0.45
P54108-3	Isoform 3 of Cysteine-rich secretory protein 3	-0.47	0.53
P61981	14-3-3 protein gamma	-0.47	1.15
P10412	Histone H1.4	-0.46	0.20
O75015	Low affinity immunoglobulin gamma Fc region receptor III-B	-0.46	0.31
P16104	Histone H2AX	-0.45	0.81
P40121	Macrophage-capping protein	-0.43	0.83
P42166	Lamina-associated polypeptide 2, isoform alpha	-0.42	0.98
Q96E17	ras-related protein Rab-3C	-0.42	0.20
P32320	cytidine deaminase	-0.41	0.49
P04264	Keratin, type II cytoskeletal 1	-0.39	0.90
O75368	SH3 domain-binding glutamic acid-rich-like protein	-0.39	0.47
P31150	Rab GDP dissociation inhibitor alpha	-0.38	0.39
P11166	Solute carrier family 2, facilitated glucose transporter member 1	-0.38	0.23

P02763	Alpha-1-acid glycoprotein 1	-0.37	0.35
P23526-1	Adenosylhomocysteinase	-0.37	0.60
P08637	Low affinity immunoglobulin gamma Fc region receptor III-A	-0.37	0.81
P07910-1	Heterogeneous nuclear ribonucleoproteins C1/C2	-0.37	0.80
O00232-1	26s proteasome non-atpase regulatory subunit 12	-0.36	0.87
P50990	T-complex protein 1 subunit theta	-0.35	0.42
Q9Y2Y8	proteoglycan 3	-0.35	0.22
P36957	Dihydrolipoyllysine-residue succinyltransferase component of 2-oxoglutarate dehydrogenase complex, mitochondrial	-0.34	0.18
P25787	Proteasome subunit alpha type-2	-0.34	1.02
P62158	Calmodulin	-0.33	0.14
P00488	Coagulation factor XIII A chain	-0.33	0.18
P41218	Myeloid cell nuclear differentiation antigen	-0.33	0.49
P04179	Superoxide dismutase	-0.33	0.43
P05204	Non-histone chromosomal protein HMG-17	-0.33	0.11
P13645	Keratin, type I cytoskeletal 10	-0.33	0.55
Q5JTV8-3	Isoform 3 of Torsin-1A-interacting protein 1	-0.31	0.51
Q01518-1	adenylyl cyclase-associated protein 1	-0.31	0.20
Q92688	Acidic leucine-rich nuclear phosphoprotein 32 family member B	-0.30	0.45
Q14739	Lamin-B receptor	-0.30	0.14
P00918	Carbonic anhydrase 2	-0.29	1.06
P61077-3	Isoform 3 of Ubiquitin-conjugating enzyme E2 D3	-0.28	0.24
Q9Y2S6	Translation machinery-associated protein 7	-0.28	0.60
Q9HBI1-2	Isoform 2 of Beta-parvin	-0.28	0.22
P27348	14-3-3 protein theta	-0.28	0.16
Q15942	Zyxin	-0.28	0.43
P0DOX5	immunoglobulin gamma-1 heavy chain	-0.27	0.19
P49721	proteasome subunit beta type-2	-0.27	0.35
P22061-2	Isoform 2 of Protein-L-isoaspartate(D-aspartate) O-methyltransferase	-0.27	0.53
P62937	peptidyl-prolyl cis-trans isomerase A	-0.26	0.81

	Serine/threonine-protein phosphatase 2A		
Q15257-1	activator	-0.26	0.28
Q9UBW5-1	Bridging integrator 2	-0.26	0.22
P10768	S-formylglutathione hydrolase	-0.25	0.50
	Isoform 2 of Eukaryotic translation initiation		
P63241-2	factor 5A-1	-0.25	0.20
P09429	High mobility group protein B1	-0.24	0.41
P52907	F-actin-capping protein subunit alpha-1	-0.23	0.31
Q15366-2	Isoform 2 of Poly(rC)-binding protein 2	-0.23	0.61
P31146	Coronin-1A	-0.23	0.349
Q9NQR4	Omega-amidase NIT2	-0.22	0.16
P07737	profilin-1	-0.22	0.21
P14317	Hematopoietic lineage cell-specific protein	-0.22	0.47
P61970	nuclear transport factor 2	-0.22	0.83
P16401	Histone H1.5	-0.22	0.16
	Isoform 2 of Adenylyl cyclase-associated		
Q01518-2	protein 1	-0.21	0.23
	4-trimethylaminobutyraldehyde		
P49189	dehydrogenase	-0.21	0.31
P26583	High mobility group protein B2	-0.20	0.32
P06703	protein S100-A6	-0.20	0.16
Q14847-2	Isoform 2 of LIM and SH3 domain protein 1	-0.20	0.16
Q16698	2,4-dienoyl-CoA reductase, mitochondrial	-0.20	0.77
P80723	Brain acid soluble protein 1	-0.20	0.27
P13798	Acylamino-acid-releasing enzyme	-0.20	0.94
Q9UKM9-1	RNA-binding protein Raly	-0.20	0.94
P08758	annexin A5	-0.20	0.22
P12429	annexin A3	-0.20	0.23
P63313	thymosin beta-10	-0.20	0.78
Q9UL46	proteasome activator complex subunit 2	-0.20	0.26
Q14103	heterogeneous nuclear ribonucleoprotein D0	-0.19	0.42
P13693	Translationally-controlled tumor protein	-0.19	0.39
P24557-3	Isoform 3 of Thromboxane-A synthase	-0.19	0.27
P61626	lysozyme c	-0.19	0.18
Q06830	peroxiredoxin-1	-0.19	0.49
P02775	Platelet basic protein	-0.19	0.33
P20061	Transcobalamin-1	-0.19	0.16
P04083	annexin A1	-0.18	0.15

	Isoform 2 of BH3-interacting domain death		
P55957-2	agonist	-0.18	0.28
O75367-1	Core histone macro-H2A.1	-0.18	0.36
P50502	Hsc70-interacting protein	-0.18	0.20
	Isoform 2 of Medium-chain specific acyl-CoA		
P11310-2	dehydrogenase, mitochondrial	-0.17	0.24
Q05315	galectin-10	-0.17	0.13
Q99497	protein/nucleic acid deglycase DJ-1	-0.17	0.64
P14780	Matrix metalloproteinase-9	-0.17	0.26
Q14019	coactosin-like protein	-0.16	0.14
P30044-1	Peroxiredoxin-5, mitochondrial	-0.15	0.16
P36871-1	Phosphoglucomutase-1	-0.15	0.50
P31949	protein S100-A11	-0.15	0.10
A6NI72	Putative neutrophil cytosol factor 1B	-0.14	0.27
P51991-1	Heterogeneous nuclear ribonucleoprotein A3	-0.14	0.43
	Isoform 2 of Fructose-bisphosphate aldolase		
P04075-2	A	-0.14	0.29
P16403	Histone H1.2	-0.14	0.14
Q9NYL9	tropomodulin-3	-0.13	0.15
Q00839	Heterogeneous nuclear ribonucleoprotein U	-0.13	0.50
P26038	Moesin	-0.13	0.33
O75131	Copine-3	-0.13	0.30
	SH3 domain-binding glutamic acid-rich-like		
Q9H299	protein 3	-0.13	0.22
P40197	Platelet glycoprotein V	-0.12	0.14
Q92522	Histone H1x	-0.12	0.13
P61088	ubiquitin-conjugating enzyme E2 N	-0.12	0.64
P02730	Band 3 anion transport protein	-0.12	0.09
Q9NQC3	Reticulon-4	-0.12	0.18
P11215-2	Isoform 2 of Integrin alpha-M	-0.13	0.16
P13489	Ribonuclease inhibitor	-0.12	0.60
P00491	purine nucleoside phosphorylase	-0.12	0.16
P61916	Epididymal secretory protein E1	-0.11	0.26
O00764-1	Pyridoxal kinase	-0.12	0.15
P04040	catalase	-0.12	0.46
Q15084-2	Isoform 2 of Protein disulfide-isomerase A6	-0.12	0.23
P33241-3	Isoform 3 of Lymphocyte-specific protein 1	-0.12	0.13
P20340-1	Ras-related protein Rab-6A	-0.11	0.22
P22234	multifunctional protein ADE2	-0.11	0.59

P00761	Trypsin OS=Sus scrofa PE=1 SV=1	-0.11	0.20
P54725	UV excision repair protein RAD23 homolog A	-0.11	0.06
P07305	Histone H1.0	-0.10	0.08
P80511	Protein S100-A12	-0.10	0.11
Q1KMD3	heterogeneous nuclear ribonucleoprotein U-like protein 2	-0.10	0.19
P40926	Malate dehydrogenase, mitochondrial	-0.10	0.44
Q9UQ80	proliferation-associated protein 2G4	-0.10	0.11
P30504	HLA class I histocompatibility antigen, Cw-4 alpha chain	-0.10	0.19
P14314	Glucosidase 2 subunit beta	-0.10	0.06
P61604	10 kDa heat shock protein, mitochondrial	-0.09	0.20
P13796	Plastin-2	-0.08	0.07
P78417	Glutathione S-transferase omega-1	-0.08	0.09
P00558	phosphoglycerate kinase 1	-0.08	0.07
P40925-3	Isoform 3 of Malate dehydrogenase, cytoplasmic	-0.08	0.11
P51149	ras-related protein Rab-7a	-0.08	0.11
Q92930	Ras-related protein Rab-8B	-0.08	0.06
P19338	Nucleolin	-0.07	0.07
P80188	Neutrophil gelatinase-associated lipocalin	-0.07	0.08
P37837	Transaldolase	-0.07	0.06
P10599-1	thioredoxin	-0.07	0.10
P23528	Cofilin-1	-0.07	0.07
Q9UM07	Protein-arginine deiminase type-4	-0.07	0.03
Q9Y5Z4-1	Heme-binding protein 2	-0.07	0.37
P50552	Vasodilator-stimulated phosphoprotein	-0.07	0.15
P18669	Phosphoglycerate mutase 1	-0.07	0.13
Q6JBY9	CapZ-interacting protein	-0.07	0.13
P52566	Rho GDP-dissociation inhibitor 2	-0.06	0.08
P09211	Glutathione S-transferase P	-0.06	0.04
P08567	pleckstrin	-0.06	0.08
P63104	14-3-3 protein zeta/delta	-0.06	0.05
P0DMV8	heat shock 70 kDa protein 1A	-0.06	0.13
Q13011	Delta(3,5)-Delta(2,4)-dienoyl-CoA isomerase, mitochondrial	-0.06	0.16
P09917	arachidonate 5-lipoxygenase	-0.06	0.08
P23368-1	NAD-dependent malic enzyme, mitochondrial	-0.06	0.18

P25815	Protein S100-P	-0.05	0.04
P05107	Integrin beta-2	-0.05	0.11
P02788	Lactotransferrin	-0.05	0.05
Q969H8	Myeloid-derived growth factor	-0.05	0.12
P31946	14-3-3 protein beta/alpha	-0.05	0.07
P26641-2	Isoform 2 of Elongation factor 1-gamma	-0.05	0.11
Q9BRA2	Thioredoxin domain-containing protein 17	-0.05	0.05
Q15907	Ras-related protein Rab-11B	-0.05	0.14
P62258-1	14-3-3 protein epsilon	-0.05	0.26
Q00325-1	Phosphate carrier protein, mitochondrial	-0.04	0.07
Q96FJ2	Dynein light chain 2, cytoplasmic	-0.04	0.06
Q9NZN3	EH domain-containing protein 3	-0.04	0.03
Q3ZBD7	Glucose-6-phosphate isomerase OS=Bos taurus GN=GPI PE=2 SV=4	-0.04	0.04
Q12905	Interleukin enhancer-binding factor 2	-0.04	0.13
P05455	Lupus La protein	-0.04	0.05
P55008-1	Allograft inflammatory factor 1	-0.04	0.13
P26599-3	Isoform 3 of Polypyrimidine tract-binding protein 1	-0.04	0.11
Q6P4A8	Phospholipase B-like 1	-0.04	0.04
P22894	Neutrophil collagenase	-0.04	0.03
Q9BRF8-1	Serine/threonine-protein phosphatase CPPED1	-0.03	0.10
P58546	Myotrophin	-0.03	0.03
P07741-1	Adenine phosphoribosyltransferase	-0.03	0.17
P37802-2	Isoform 2 of Transgelin-2	-0.03	0.04
P60900	Proteasome subunit alpha type-6	-0.03	0.06
P06744	glucose-6-phosphate isomerase	-0.03	0.03
Q9HC38	Glyoxalase domain-containing protein 4	-0.03	0.02
P00738	Haptoglobin	-0.03	0.05
P00387-3	Isoform 3 of NADH-cytochrome b5 reductase 3	-0.03	0.30
P04839	Cytochrome b-245 heavy chain	-0.02	0.07
Q99439	Calponin-2	-0.02	0.03
P19878	Neutrophil cytosol factor 2	-0.02	0.06
P30048	Thioredoxin-dependent peroxide reductase, mitochondrial	-0.02	0.03
P05109	Protein S100-A8	-0.02	0.02
P30046	D-dopachrome decarboxylase	-0.02	0.04

Q16881-1	Thioredoxin reductase 1, cytoplasmic	-0.02	0.04
P08133-1	annexin A6	-0.02	0.02
P14866	Heterogeneous nuclear ribonucleoprotein L	-0.02	0.08
Q10588	ADP-ribosyl cyclase/cyclic ADP-ribose hydrolase 2	-0.02	0.04
P45880-1	Isoform 1 of Voltage-dependent anion-selective channel protein 2	-0.02	0.07
P46459	Vesicle-fusing ATPase	-0.01	0.02
Q92882	osteoclast-stimulating factor 1	-0.01	0.03
P68036-3	Isoform 3 of Ubiquitin-conjugating enzyme E2 L3	-0.01	0.01
P26447	Protein S100-A4	-0.01	0.01
P22626	heterogeneous nuclear ribonucleoproteins A2/B1	-0.01	0.01
P50395-1	Rab GDP dissociation inhibitor beta	-0.01	0.04
P47756-2	Isoform 2 of F-actin-capping protein subunit beta	-0.01	0.02
P11142-1	Heat shock cognate 71 kDa protein	-0.01	0.03
P30043	flavin reductase (NADPH)	-0.01	0.02
P11413-2	Isoform Long of Glucose-6-phosphate 1-dehydrogenase	-0.01	0.01
P07996	thrombospondin-1	-0.01	0.01
P29350-4	Isoform 4 of Tyrosine-protein phosphatase non-receptor type 6	-0.01	0.01
P15144	aminopeptidase N	-0.00	0.00
P09525	annexin A4	-0.00	0.00
P09960-1	leukotriene A-4 hydrolase	-0.00	0.00
P07359	Platelet glycoprotein Ib alpha chain	0.00	0.00
O43707	Alpha-actinin-4	0.00	0.00
P02776	Platelet factor 4	0.00	0.00
P54727	UV excision repair protein RAD23 homolog B	0.00	0.01
Q6UX06	Olfactomedin-4	0.00	0.00
P05106	Integrin beta-3	0.01	0.01
P53004	Biliverdin reductase A	0.01	0.03
P62328	Thymosin beta-4	0.01	0.02
P15311	Ezrin	0.01	0.04
P06702	Protein S100-A9	0.02	0.02
O75594	peptidoglycan recognition protein 1	0.02	0.02
P61224-1	Ras-related protein Rap-1b	0.02	0.03

P31948-2	Isoform 2 of Stress-induced-phosphoprotein 1	0.02	0.04
P52209-2	Isoform 2 of 6-phosphogluconate dehydrogenase, decarboxylating	0.02	0.03
P61978-2	Isoform 2 of Heterogeneous nuclear ribonucleoprotein K	0.02	0.03
Q9Y376	Calcium-binding protein 39	0.02	0.02
P49748-3	Isoform 3 of Very long-chain specific acyl-CoA dehydrogenase, mitochondrial	0.02	0.04
Q9ULZ3	apoptosis-associated speck-like protein containing a CARD	0.03	0.02
P23284	peptidyl-prolyl cis-trans isomerase B	0.03	0.04
P30405	Peptidyl-prolyl cis-trans isomerase F, mitochondrial	0.03	0.09
P12814-1	Alpha-actinin-1	0.03	0.07
P15954	Cytochrome c oxidase subunit 7C, mitochondrial	0.03	0.02
P22307-1	Non-specific lipid-transfer protein	0.03	0.26
P04080	Cystatin-B	0.03	0.02
P29401-2	Isoform 2 of Transketolase	0.03	0.02
P60174	Triosephosphate isomerase	0.04	0.05
P24158	Myeloblastin	0.04	0.04
P06733-1	alpha-enolase	0.04	0.04
P17213	Bactericidal permeability-increasing protein	0.04	0.03
P61204	ADP-ribosylation factor 3	0.04	0.03
P50995	annexin A11	0.04	0.23
P30040-1	Endoplasmic reticulum resident protein 29	0.04	0.25
P14550	alcohol dehydrogenase	0.04	0.30
P62136-2	Isoform 2 of Serine/threonine-protein phosphatase PP1-alpha catalytic subunit	0.04	0.33
Q12906-7	Isoform 7 of Interleukin enhancer-binding factor 3	0.05	0.19
P02647	Apolipoprotein A-I	0.05	0.15
P16949-2	Isoform 2 of Stathmin	0.05	0.05
Q13177	Serine/threonine-protein kinase PAK 2	0.05	0.18
P38646	Stress-70 protein, mitochondrial	0.05	0.05
O75390	citrate synthase, mitochondrial	0.05	0.77
P22314	Ubiquitin-like modifier-activating enzyme 1	0.05	0.13
O95336	6-phosphogluconolactonase	0.05	0.08

	Synaptic vesicle membrane protein VAT-1		
Q99536	homolog	0.06	0.12
P11021	78 kDa glucose-regulated protein	0.06	0.39
O15143	Actin-related protein 2/3 complex subunit 1B	0.06	0.11
O75340	programmed cell death protein 6	0.06	0.07
Q9P1F3	Costars family protein ABRACL	0.06	0.05
Q15833-1	Syntaxin-binding protein 2	0.06	0.12
P02675	Fibrinogen beta chain	0.06	0.06
O00194	ras-related protein rab-27b	0.06	0.03
P30086	phosphatidylethanolamine-binding protein 1	0.06	0.31
Q96QK1	Vacuolar protein sorting-associated protein 35	0.07	0.12
P46976-1	Glycogenin-1	0.07	0.15
O75083	WD repeat-containing protein 1	0.07	0.08
P10720	Platelet factor 4 variant	0.07	0.06
P07108-5	Isoform 5 of Acyl-CoA-binding protein	0.07	0.07
P19367-3	Isoform 3 of Hexokinase-1	0.07	0.12
Q9Y490	Talin-1	0.07	0.13
Q9H4A4	aminopeptidase B	0.07	0.08
	Mesencephalic astrocyte-derived		
P55145	neurotrophic factor	0.08	0.06
	Hypoxanthine-guanine		
P00492	phosphoribosyltransferase	0.08	0.61
P32942	Intercellular adhesion molecule 3	0.08	0.64
	Isoform 2 of Nicotinate		
Q6XQN6-2	phosphoribosyltransferase	0.08	0.72
P06865	Beta-hexosaminidase subunit alpha	0.08	0.23
P67936	Tropomyosin alpha-4 chain	0.08	0.08
P48595	serpin B10	0.08	0.20
	cAMP-dependent protein kinase type I-alpha		
P10644	regulatory subunit	0.08	0.07
P11234-2	Isoform 2 of Ras-related protein Ral-B	0.08	0.06
P12956	X-ray repair cross-complementing protein 6	0.08	0.11
P36222	Chitinase-3-like protein 1	0.08	0.10
P20073-1	Annexin A7	0.08	0.18
P49591	Serine--tRNA ligase, cytoplasmic	0.09	0.09
	Adipocyte plasma membrane-associated		
Q9HDC9	protein	0.09	0.33
P68104	Elongation factor 1-alpha 1	0.09	0.17

	Receptor-type tyrosine-protein phosphatase		
Q12913-1	eta	0.09	0.11
Q04760-1	lactoylglutathione lyase	0.09	0.29
P61158	actin-related protein 3	0.09	0.11
O15511-1	Actin-related protein 2/3 complex subunit 5	0.09	0.57
P31943	Heterogeneous nuclear ribonucleoprotein H	0.09	0.10
Q13561-2	Isoform 2 of Dynactin subunit 2	0.09	0.15
P55786	puromycin-sensitive aminopeptidase	0.10	0.18
P04406	glyceraldehyde-3-phosphate dehydrogenase	0.10	0.08
Q06323	Proteasome activator complex subunit 1	0.10	0.13
	Acidic leucine-rich nuclear phosphoprotein		
P39687	32 family member A	0.10	0.15
P30041	Peroxiredoxin-6	0.10	0.12
Q9NVA2-2	Isoform 2 of Septin-11	0.10	0.26
P13639	Elongation factor 2	0.10	0.12
O60234	glia maturation factor gamma	0.10	0.12
Q9ULV4-3	Isoform 3 of Coronin-1C	0.10	0.22
P08514-1	integrin alpha-IIb	0.10	0.18
P18206	Vinculin	0.10	0.27
P21333	Filamin-A	0.11	0.19
Q96RU3-1	Formin-binding protein 1	0.11	0.23
	UTP--glucose-1-phosphate		
Q16851	uridylyltransferase	0.11	0.63
P30520	adenylosuccinate synthetase isozyme 2	0.11	0.30
P61106	Ras-related protein Rab-14	0.11	1.14
Q6IBS0	Twinfilin-2	0.11	0.25
P99999	cytochrome c	0.11	0.11
	Microtubule-associated protein RP/EB family		
Q15691	member 1	0.12	0.13
O15144	Actin-related protein 2/3 complex subunit 2	0.12	0.10
P10809	60 kDa heat shock protein, mitochondrial	0.12	0.25
Q96G03	Phosphoglucomutase-2	0.12	0.24
O00151	PDZ and LIM domain protein 1	0.12	0.06
P15153	Ras-related C3 botulinum toxin substrate 2	0.12	0.37
Q9H0U4	ras-related protein Rab-1B	0.12	0.16
P48643	T-complex protein 1 subunit epsilon	0.12	0.19
Q14974	Importin subunit beta-1	0.12	0.28
	guanine nucleotide-binding protein G(i)		
P04899-1	subunit alpha-2	0.13	0.19

P61586	Transforming protein RhoA	0.12	0.43
P16050	arachidonate 15-lipoxygenase	0.12	0.22
Q92820	Gamma-glutamyl hydrolase	0.12	0.24
P06753-2	Isoform 2 of Tropomyosin alpha-3 chain	0.13	0.19
P13224-2	Isoform 2 of Platelet glycoprotein Ib beta chain	0.13	0.15
Q5JWF2-1	Guanine nucleotide-binding protein G(S) subunit alpha isoforms XLas	0.13	0.14
P52565	rho GDP-dissociation inhibitor 1	0.13	1.09
P61020	Ras-related protein Rab-5B	0.13	0.78
P55072	Transitional endoplasmic reticulum ATPase	0.14	0.42
P27105	erythrocyte band 7 integral membrane protein	0.14	0.23
P05089-2	Isoform 2 of Arginase-1	0.14	0.18
P59998-3	Isoform 3 of Actin-related protein 2/3 complex subunit 4	0.15	0.27
Q96C19	EF-hand domain-containing protein D2	0.15	0.50
O00299	chloride intracellular channel protein 1	0.15	0.31
P39019	40S ribosomal protein S19	0.15	0.13
Q7L1Q6-3	Isoform 3 of Basic leucine zipper and W2 domain-containing protein 1	0.15	0.42
P48147	prolyl endopeptidase	0.15	0.39
Q96QH2-2	Isoform 2 of PML-RARA-regulated adapter molecule 1	0.15	0.25
P00505	Aspartate aminotransferase, mitochondrial	0.16	0.31
Q99729-1	Heterogeneous nuclear ribonucleoprotein A/B	0.16	0.20
P04632	Calpain small subunit 1	0.16	0.62
P13716-2	Isoform 2 of Delta-aminolevulinic acid dehydratase	0.16	0.25
Q15365	Poly(RC)-binding protein 1	0.16	0.34
Q13813-2	Isoform 2 of Spectrin alpha chain, non-erythrocytic 1	0.17	0.19
P62826	GTP-binding nuclear protein RAN	0.17	0.46
O14773	Tripeptidyl-peptidase 1	0.17	0.60
P02671-1	Fibrinogen alpha chain	0.17	0.15
P22392-2	Isoform 3 of Nucleoside diphosphate kinase B	0.17	0.49
P07237	Protein disulfide-isomerase	0.18	0.23
P15586	N-acetylglucosamine-6-sulfatase	0.18	0.29
O43488	aflatoxin B1 aldehyde reductase member 2	0.18	0.38

	Isoform 2 of Programmed cell death 6-		
Q8WUM4-2	interacting protein	0.18	0.51
P27797	Calreticulin	0.18	0.32
P51159-1	Ras-related protein Rab-27A	0.18	0.61
P07602-3	Isoform Sap-mu-9 of Prosaposin	0.18	0.36
P29692-2	Isoform 2 of Elongation factor 1-delta	0.19	0.99
P09972	Fructose-bisphosphate aldolase C	0.19	0.33
	Guanine nucleotide-binding protein		
P62873	G(I)/G(S)/G(T) subunit beta-1	0.19	0.13
P37840-1	Alpha-synuclein	0.19	0.11
P04908	histone H2A type 1-B/E	0.19	0.07
	voltage-dependent anion-selective channel		
P21796	protein 1	0.19	0.46
P61160-2	Isoform 2 of Actin-related protein 2	0.19	0.59
P46940	Ras GTPase-activating-like protein IQGAP1	0.20	1.03
Q15080-1	Neutrophil cytosol factor 4	0.20	0.60
	Isoform Long of Proteasome subunit alpha		
P25786-2	type-1	0.20	0.39
Q15404-1	Ras suppressor protein 1	0.20	0.23
O75923-13	Isoform 13 of Dysferlin	0.20	0.22
	Receptor-type tyrosine-protein phosphatase		
P08575-1	C	0.20	0.51
Q13201	Multimerin-1	0.20	0.24
Q9UHD8-1	Septin-9	0.21	0.93
P61026	ras-related protein rab-10	0.21	0.27
Q8IX19	Mast cell-expressed membrane protein 1	0.21	0.32
P16671	Platelet glycoprotein 4	0.21	0.58
Q13185	chromobox protein homolog 3	0.21	0.46
O14950	Myosin regulatory light chain 12B	0.21	0.17
P30740	Leukocyte elastase inhibitor	0.21	0.54
P07195	L-lactate dehydrogenase B chain	0.22	0.18
P31939	bifunctional purine biosynthesis protein purH	0.22	0.50
Q9NUQ9	protein FAM49B	0.22	0.77
	Na(+)/H(+) exchange regulatory cofactor		
O14745	NHE-RF1	0.22	0.14
P16152	Carbonyl reductase	0.22	0.17
	Isoform 3 of LIM and senescent cell antigen-		
P48059-3	like-containing domain protein 1	0.22	0.28
O95810	caveolae-associated protein 2	0.22	0.15

Q14005-1	Pro-interleukin-16	0.23	0.33
P07355-2	Isoform 2 of Annexin A2	0.23	0.39
O75475-1	PC4 and SFRS1-interacting protein	0.24	0.29
P08238	Heat shock protein HSP 90-beta	0.24	0.49
P50570-1	Dynamin-2	0.24	0.45
	Probable ATP-dependent RNA helicase		
Q92841	DDX17	0.24	0.37
P53396-1	ATP-citrate synthase	0.25	0.25
P12724	eosinophil cationic protein	0.25	0.12
	Isoform 3 of Malignant T-cell-amplified		
Q9ULC4-3	sequence 1	0.25	0.71
P00338-3	Isoform 3 of L-lactate dehydrogenase A chain	0.25	0.17
P15121	aldose reductase	0.25	0.35
P19971-2	Isoform 2 of Thymidine phosphorylase	0.25	0.68
P30101	Protein disulfide-isomerase A3	0.25	0.35
P51148-2	Isoform 2 of Ras-related protein Rab-5C	0.26	0.35
P48735	Isocitrate dehydrogenase	0.26	0.55
Q9UII2-1	ATPase inhibitor, mitochondrial	0.26	0.75
	Activated RNA polymerase II transcriptional		
P53999	coactivator p15	0.26	0.33
P18054	Arachidonate 12-lipoxygenase, 12S-type	0.27	0.42
O75874	Isocitrate dehydrogenase	0.27	0.25
P09874	Poly	0.27	0.25
P02679	Fibrinogen gamma chain	0.28	0.22
P07900-2	Isoform 2 of Heat shock protein HSP 90-alpha	0.29	0.71
P14625	Endoplasmin	0.29	0.67
O15145	Actin-related protein 2/3 complex subunit 3	0.29	0.53
	Isoform 2 of Spliceosome RNA helicase		
Q13838-2	DDX39B	0.29	0.27
P17931	Galectin-3	0.29	1.15
Q86UX7	Fermitin family homolog 3	0.29	0.63
Q3ZCW2	Galectin-related protein	0.30	0.28
P06396	Gelsolin	0.30	0.86
	Solute carrier family 2, facilitated glucose		
P11169	transporter member 3	0.30	0.35
P06748	Nucleophosmin	0.32	0.33
P10153	Non-secretory ribonuclease	0.32	0.18
Q8IUE6	Histone H2A type 2-B	0.32	0.20

	Glutamate dehydrogenase 1, mitochondrial		
P00366	OS=Bos taurus GN=GLUD1 PE=1 SV=2	0.33	0.41
P27824-2	Isoform 2 of Calnexin	0.33	0.72
O43447	peptidyl-prolyl cis-trans isomerase H	0.34	0.44
P30085	UMP-CMP kinase	0.35	1.01
O75695	Protein XRP2	0.35	0.81
P84243	histone H3.3	0.36	0.17
P14770	Platelet glycoprotein IX	0.36	0.21
Q05655-2	Isoform 2 of Protein kinase C delta type	0.37	0.79
P28482	mitogen-activated protein kinase 1	0.37	0.63
P59665	Neutrophil defensin 1	0.37	0.35
P62979	Ubiquitin-40S ribosomal protein S27a	0.37	0.60
Q9H4M9	EH domain-containing protein 1	0.38	0.37
O60506	Heterogeneous nuclear ribonucleoprotein Q	0.38	0.33
	Neuroblast differentiation-associated protein		
Q09666-1	AHNAK	0.38	0.31
P14618	Pyruvate kinase PKM	0.39	0.78
P06576	ATP synthase subunit beta, mitochondrial	0.40	0.89
P28070	Proteasome subunit beta type-4	0.40	0.90
Q9NR31	GTP-binding protein SAR1a	0.40	1.10
P53634-1	Dipeptidyl peptidase 1	0.40	0.20
P02656	Apolipoprotein C-III	0.41	0.18
P24534	Elongation factor 1-beta	0.41	0.51
P60709	Actin, cytoplasmic 1	0.41	0.66
P20160	Azurocidin	0.43	0.39
O00160	Unconventional myosin-If	0.45	0.40
P52790	Hexokinase-3	0.46	0.68
P52272	Heterogeneous nuclear ribonucleoprotein M	0.48	0.32
	Platelet-activating factor acetylhydrolase IB		
Q15102	subunit gamma	0.49	0.64
P09651-1	Heterogeneous nuclear ribonucleoprotein A1	0.49	0.94
P68366	Tubulin alpha-4A chain	0.51	0.39
P09382	Galectin-1	0.52	0.66
P20700	Lamin-B1	0.52	0.43
P50225	Sulfotransferase 1A1	0.53	0.52
P0C0S5	Histone H2A.Z	0.53	0.37
P68032	Actin, alpha cardiac muscle 1	0.54	0.70
P49913	cathelicidin antimicrobial peptide	0.55	0.75
Q5QNW6-2	Isoform 2 of Histone H2B type 2-F	0.56	0.16

P43405-1	Tyrosine-protein kinase SYK	0.57	0.77
P68371	Tubulin beta-4B chain	0.58	0.56
P60660	Myosin light polypeptide 6	0.62	0.38
P08246	Neutrophil elastase	0.63	0.38
P68363	Tubulin alpha-1B chain	0.64	0.54
P13010	X-ray repair cross-complementing protein 5	0.69	1.00
P25705-1	ATP synthase subunit alpha, mitochondrial	0.69	0.69
P35579-1	Myosin-9	0.70	0.37
Q01469	Fatty acid-binding protein, epidermal	0.75	1.06
Q13418	Integrin-linked protein kinase	0.77	0.62
P07437	tubulin beta chain	0.82	0.44
Q9H4B7	tubulin beta-1 chain	0.82	1.20
P18124	60S ribosomal protein L7	0.87	0.50
P08670	Vimentin	0.90	0.39
P68431	Histone H3.1	0.93	0.34