

Glycolytic overload-driven dysfunction of periodontal ligament fibroblasts in high glucose concentration, corrected by glyoxalase 1 inducer

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Table S1. Proteins increased in high glucose concentration cultures

No	Protein	UNIPROT name	HG/LG abundance ratio
1	ATP-binding cassette sub-family E member 1	ABCE1_HUMAN	8.85
2	Axin interactor, dorsalization-associated protein	AIDA_HUMAN	7.57
3	E3 ubiquitin-protein ligase HUWE1	HUWE1_HUMAN	5.61
4	Isoform 2 of Electron transfer flavoprotein subunit beta	ETFB_HUMAN	5.57
5	Hexokinase-2	E9PB90_HUMAN	3.19
6	Ubiquilin-1	UBQL1_HUMAN	3.10
7	Laminin subunit beta-1	G3XAI2_HUMAN	2.62
8	Isoform 2 of Neutral alpha-glucosidase AB	GANAB_HUMAN	2.60
9	Isoform 2 of Serine/arginine-rich splicing factor 11	SRS11_HUMAN	2.50
10	Putative heat shock protein HSP 90-alpha A4	HS904_HUMAN	2.46
11	Something about silencing protein 10	SAS10_HUMAN	2.38
12	Catenin beta-1	CTNB1_HUMAN	2.37
13	F-box-like/WD repeat-containing protein TBL1XR1	TBL1R_HUMAN	2.33
14	Isoform 3 of Inositol monophosphatase 1	IMPA1_HUMAN	2.16
15	Diablo homolog, mitochondrial	DBLOH_HUMAN	2.14
16	Isoform 2 of Eukaryotic initiation factor 4A-II	IF4A2_HUMAN	2.11
17	ADP-ribosylation factor 4	ARF4_HUMAN	2.10
18	Isoform XB of Plasma membrane calcium-transporting ATPase 4	AT2B4_HUMAN	2.10
19	DNA damage-binding protein 1	DDB1_HUMAN	2.09
20	Eukaryotic translation initiation factor 3 subunit I	EIF3I_HUMAN	2.08
21	Isoform 2 of E3 ubiquitin-protein ligase CHIP	CHIP_HUMAN	2.04
22	Ribonuclease inhibitor	RINI_HUMAN	2.03
23	Isoform 2 of Probable ubiquitin carboxyl-terminal hydrolase FAF-X	USP9X_HUMAN	2.02
24	Endophilin-A2	SH3G1_HUMAN	2.00
25	Isoform 3 of E3 ubiquitin-protein ligase RNF31	RNF31_HUMAN	1.97
26	COP9 signalosome complex subunit 5	CSN5_HUMAN	1.96

27	Macrophage-capping protein	CAPG_HUMAN	1.95
28	Isoform 2 of Adenosine kinase	ADK_HUMAN	1.95
29	Isoform C1 of Tight junction protein ZO-2	ZO2_HUMAN	1.94
30	Serine/threonine-protein kinase Nek9	NEK9_HUMAN	1.94
31	T-complex protein 1 subunit eta	TCPH_HUMAN	1.91
32	Putative adenosylhomocysteinase 2	SAHH2_HUMAN	1.91
33	Isoform 2 of Mitogen-activated protein kinase 3	MK03_HUMAN	1.91
34	Isoform 3 of Disabled homolog 2	DAB2_HUMAN	1.90
35	Isoform 4 of Golgin subfamily A member 4	GOGA4_HUMAN	1.89
36	Isoform 5 of Ubiquitin-associated protein 2-like	UBP2L_HUMAN	1.87
37	Pyruvate kinase-M	H3BR70_HUMAN	1.84
38	TELO2-interacting protein 2	E5RIH5_HUMAN	1.84
39	GMP synthase [glutamine-hydrolyzing]	GUAA_HUMAN	1.83
40	40S ribosomal protein S17-like	RS17_HUMAN	1.82
41	X-ray repair cross-complementing protein 6	XRCC6_HUMAN	1.82
42	Eukaryotic translation initiation factor 4 gamma 3	A0A0A0MSA7_HUM	1.82
43	Serine/threonine-protein phosphatase 2A activator	A6PVN5_HUMAN	1.82
44	Puromycin-sensitive aminopeptidase	E9PLK3_HUMAN	1.82
45	Beta-hexosaminidase	H3BP20_HUMAN	1.80
46	Isoform 2 of Lysosomal alpha-mannosidase	MA2B1_HUMAN	1.79
47	Vacuolar protein sorting-associated protein 29	F8VXU5_HUMAN	1.79
48	Prefoldin subunit 3	B4DWR3_HUMAN	1.78
49	Chromobox protein homolog 3	CBX3_HUMAN	1.76
50	Acyl-protein thioesterase 2	LYPA2_HUMAN	1.76
51	DCC-interacting protein 13-alpha	DP13A_HUMAN	1.76
52	Isoform 2 of Protein flightless-1 homolog	FLII_HUMAN	1.73
53	UPF0364 protein C6orf211	ARMT1_HUMAN	1.73
54	Twinfilin-1	TWF1_HUMAN	1.73
55	Heterogeneous nuclear ribonucleoprotein L-like	B7WPG3_HUMAN	1.71
56	Isoform 5 of Rho guanine nucleotide exchange factor 7	ARHG7_HUMAN	1.70
57	Coronin-1B	COR1B_HUMAN	1.70

58	26S proteasome non-ATPase regulatory subunit 14	PSDE_HUMAN	1.69
59	Splicing factor 3A subunit 3	SF3A3_HUMAN	1.69
60	Isoform 4 of Glucosamine-6-phosphate isomerase 2	GNPI2_HUMAN	1.69
61	Glyoxalase domain-containing protein 4	F6TLX2_HUMAN	1.69
62	Phosphoglucomutase-2	PGM2_HUMAN	1.67
63	Filamin-C	FLNC_HUMAN	1.67
64	Isoform 2F of Cytoplasmic dynein 1 intermediate chain 2	DC1I2_HUMAN	1.64
65	Isoform 2 of Arf-GAP domain and FG repeat-containing protein 1	AGFG1_HUMAN	1.64
66	Heat shock 70 kDa protein 1A	HS71A_HUMAN	1.63
67	Isoform 2 of Programmed cell death 6-interacting protein	PDC6I_HUMAN	1.62
68	Isoform 2 of Serine/threonine-protein phosphatase 2B catalytic subunit 2	PP2BA_HUMAN	1.62
69	Aldo-keto reductase family 1 member C3	AK1C3_HUMAN	1.62
70	Target of Myb protein 1	TOM1_HUMAN	1.60
71	Rab GTPase-activating protein 1	RBGP1_HUMAN	1.60
72	Isocitrate dehydrogenase [NADP] cytoplasmic	IDHC_HUMAN	1.60
73	Isoform 2 of Ataxin-2-like protein	ATX2L_HUMAN	1.60
74	Prolow-density lipoprotein receptor-related protein 1	LRP1_HUMAN	1.59
75	Isoform 2 of NEDD8-activating enzyme E1 regulatory subunit 1	ULA1_HUMAN	1.59
76	Kinesin-1 heavy chain	KINH_HUMAN	1.59
77	Nucleoprotein TPR	TPR_HUMAN	1.58
78	T-complex protein 1 subunit zeta	TCPZ_HUMAN	1.57
79	Prefoldin subunit 5	PFD5_HUMAN	1.56
80	L-lactate dehydrogenase B chain	LDHB_HUMAN	1.56
81	F-actin-capping protein subunit alpha-2	CAZA2_HUMAN	1.55
82	T-complex protein 1 subunit delta	TCPD_HUMAN	1.55
83	T-complex protein 1 subunit epsilon	E9PCA1_HUMAN	1.55
84	Calpain-2 catalytic subunit	CAN2_HUMAN	1.54
85	26S proteasome non-ATPase regulatory subunit 3	PSMD3_HUMAN	1.54
86	Dihydrolipoyllysine-residue succinyltransferase component of 2-oxoglutarate dehydrogenase complex	ODO2_HUMAN	1.54
87	Tropomodulin-3	TMOD3_HUMAN	1.53
88	Valine--tRNA ligase	SYVC_HUMAN	1.53

89	Protein HEXIM1	HEXI1_HUMAN	1.53
90	Isoform 2 of Dynactin subunit 2	DCTN2_HUMAN	1.52
91	Isoform 2 of Elongation factor 1-gamma	EF1G_HUMAN	1.52
92	T-complex protein 1 subunit alpha	TCPA_HUMAN	1.52
93	4-trimethylaminobutyraldehyde dehydrogenase	AL9A1_HUMAN	1.51
94	T-complex protein 1 subunit beta	TCPB_HUMAN	1.51
95	Isoform 2 of Golgi-specific brefeldin A-resistance guanine nucleotide ex	GBF1_HUMAN	1.51
96	Cytoplasmic dynein 1 light intermediate chain 2	DC1L2_HUMAN	1.51
97	Glutathione S-transferase omega-1	GSTO1_HUMAN	1.50
98	Kinectin	KTN1_HUMAN	1.50
99	Dynactin subunit 1	E7EX90_HUMAN	1.50
100	Trifunctional purine biosynthetic protein adenosine-3	PUR2_HUMAN	1.49
101	Protein disulfide-isomerase A4	PDIA4_HUMAN	1.49
102	Lupus La protein	LA_HUMAN	1.49
103	Kinesin light chain 1	G3V5R9_HUMAN	1.49
104	COP9 signalosome complex subunit 6	CSN6_HUMAN	1.48
105	Uroporphyrinogen decarboxylase	DCUP_HUMAN	1.48
106	DnaJ homolog subfamily A member 2	DNJA2_HUMAN	1.48
107	Aspartate aminotransferase, cytoplasmic	AATC_HUMAN	1.48
108	Isoform 4 of Cold shock domain-containing protein E1	CSDE1_HUMAN	1.48
109	Transitional endoplasmic reticulum ATPase	TERA_HUMAN	1.48
110	Prostaglandin reductase 1	PTGR1_HUMAN	1.48
111	Isoleucine--tRNA ligase, cytoplasmic	J3KR24_HUMAN	1.47
112	Sialic acid synthase	SIAS_HUMAN	1.46
113	Asparagine--tRNA ligase, cytoplasmic	SYNC_HUMAN	1.46
114	Peptidyl-prolyl cis-trans isomerase FKBP10	FKB10_HUMAN	1.46
115	Isoform IIa of Prolyl 4-hydroxylase subunit alpha-2	P4HA2_HUMAN	1.46
116	Isoform 2 of Protein SEC13 homolog	SEC13_HUMAN	1.45
117	26S protease regulatory subunit 6A	E9PM69_HUMAN	1.45
118	26S proteasome non-ATPase regulatory subunit 1	PSMD1_HUMAN	1.44
119	Heat shock protein 105 kDa	HS105_HUMAN	1.43

120	Gamma-adducin	ADDG_HUMAN	1.43
121	ATP-dependent 6-phosphofructokinase, platelet type	PFKAP_HUMAN	1.42
122	Peroxiredoxin-2	PRDX2_HUMAN	1.42
123	Heat shock cognate 71 kDa protein	A8K7Q2_HUMAN	1.42
124	Eukaryotic translation initiation factor 3 subunit H	B3KS98_HUMAN	1.42
125	Actin-like protein 6A	ACL6A_HUMAN	1.41
126	Serine/threonine-protein phosphatase 2A 65 kDa regulatory subunit A alpha 2	2AAA_HUMAN	1.41
127	Methionine--tRNA ligase, cytoplasmic	SYMC_HUMAN	1.41
128	F-actin-capping protein subunit alpha-1	CAZA1_HUMAN	1.41
129	Eukaryotic translation initiation factor 3 subunit L	B0QY89_HUMAN	1.39
130	Isoform 2 of Nuclear pore complex protein Nup214	NU214_HUMAN	1.38
131	Isoform 2 of Poly(U)-binding-splicing factor PUF60	PUF60_HUMAN	1.38
132	Rab3 GTPase-activating protein non-catalytic subunit	RBGPR_HUMAN	1.38
133	Protein GJA9-MYCBP	MYCBP_HUMAN	1.37
134	Prolyl 4-hydroxylase subunit alpha-1	P4HA1_HUMAN	1.34
135	Isoform 2 of Tyrosine-protein phosphatase non-receptor type 11	PTN11_HUMAN	1.34
136	Serine/threonine-protein kinase OSR1	OXSR1_HUMAN	1.34
137	Isoform Sap-mu-9 of Prosaposin	SAP_HUMAN	1.34
138	Vimentin	VIME_HUMAN	1.33
139	Isoform 2 of Far upstream element-binding protein 1	FUBP1_HUMAN	1.32
140	Poly(rC)-binding protein 1	PCBP1_HUMAN	1.30
141	Phosphomannomutase 2	PMM2_HUMAN	1.28
142	Peptidyl-prolyl cis-trans isomerase A	PPIA_HUMAN	1.27
143	Mitochondrial 10-formyltetrahydrofolate dehydrogenase	AL1L2_HUMAN	1.27
144	Profilin-1	PROF1_HUMAN	1.25

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Table S2. Proteins at risk of MG modification - modification sites and location in functional domains.

No	Protein	Uniprot ID	No of MG modification sites	No of arg	MG modification sites	MG-modified arg in RBD	MG modification sites in RBD
1	Vimentin	VIME_HUMAN	20	43	R78, R100, R113, R145, R155, R170, R175, R186, R207, R270, R273, R304, R310, R321, R345, R378, R401, R424, R450	11	R145, R175, R186, R207, R273, R304, R321, R345, R401, R424, R450
2	Endoplasmic reticulum chaperone BiP	BIP_HUMAN	13	28	R74, R101, R197, R214, R306, R324, R367, R470, R532, R540, R562	2	R214, R532
3	Endoplasmic	ENPL_HUMAN	12	37	R43, R51, R67, R84, R116, R156, R395, R415, R448, R505, R557, R690	4	R43, R51, R156, R690
4	Prelamin-A/C	LMNA_HUMAN	10	64	R62, R72, R101, R156, R275, R351, R377, R439, R527, R541	2	R156, R275
5	Plectin	PLEC_HUMAN	9	453	R248, R258, R349, R517, R587, R1782, R1824, R2141, R2265	3	R258, R517, R2141
6	Cytoskeleton-associated protein 4	CKAP4_HUMAN	8	36	R177, R228, R326, R394, R429, R454, R491, R523	3	R228, R429, R454
7	Stress-70 protein, mitochondrial	GRP75_HUMAN	8	36	R146, R218, R284, R391, R405, R541, R578, R634	2	R541, R578
8	Actin, cytoplasmic 2	ACTG_HUMAN	6	18	R196, R206, R312, R372	3	R196, R312, R372
9	Alpha-actinin-4	ACTN4_HUMAN	6	51	R79, R95, R204, R251, R439, R695	4	R79, R204, R251, R439
10	Neuroblast differentiation-associated protein AHNAK	AHNAK_HUMAN	6	44	R186, R1104, R1811, R2490, R3924, R5366		
11	Protein disulfide-isomerase	PDIA1_HUMAN	6	16	R97, R120, R132, R213, R300	2	R132, R213
12	Annexin A6	ANXA6_HUMAN	5	42	R140, R206, R358, R427, R471	2	R140, R206
13	Moesin	MOES_HUMAN	5	41	R40, R100, R233, R495, R533	2	R233, R533
14	Protein disulfide-isomerase A4	PDIA4_HUMAN	5	22	R131, R155, R165, R370, R622	4	R155, R165, R370, R622
15	Filamin-A	FLNA_HUMAN	4	93	R285, R921, R1312, R1381	2	R285, R1312
16	Heat shock cognate 71 kDa protein	HSP7C_HUMAN	4	28	R155, R171, R342, R517	1	R155
17	Protein disulfide-isomerase A6	PDIA6_HUMAN	4	20	R132, R256, R386		
18	10 kDa heat shock protein, mitochondrial	CH10_HUMAN	3	4	R15, R20, R92		
19	14-3-3 protein zeta/delta	1433Z_HUMAN	3	11	R60, R91, R127		
20	Annexin A1	ANXA1_HUMAN	3	19	R124, R144, R177	1	R144
21	Annexin A5	ANXA5_HUMAN	3	19	R18, R123, R245	1	R18

22	Calreticulin	CALR_HUMAN	3	8	R73, R177, R222	1	R222
23	Citrate synthase	CISY_HUMAN	3	21	R60, R81, R316		
24	Collagen alpha-1(I) chain	CO1A1_HUMAN	3	71	R598, R1036, R1252	1	R1252
25	Fructose-bisphosphate aldolase A	ALDOA_HUMAN	3	15	R22, R43, R259	1	R43
26	Galectin-1	LEG1_HUMAN	3	5	R49, R74, R112	3	R49, R74, R112
27	Glucosidase 2 subunit beta	GLU2B_HUMAN	3	20	R124, R381, R484	1	R484
28	Glutamate dehydrogenase 1, mitochondrial	DHE3_HUMAN	3	35	R151, R274, R516		
29	Heterogeneous nuclear ribonucleoprotein Q	HNRPQ_HUMAN	3	45	R60, R171, R343		
30	Isoform 2 of Heterogeneous nuclear ribonucleoprotein A1	ROA1_HUMAN	3	24	R75, R140, R146	3	R75, R140, R146
31	Isoform 4 of Perilipin-3	PLIN3_HUMAN	3	19	R98, R143, R168		
32	Phosphoglycerate kinase 1	PGK1_HUMAN	3	11	R66, R171, R206		
33	Protein disulfide-isomerase A3	PDIA3_HUMAN	3	22	R119, R140, R448		
34	Ribosome-binding protein 1	RRBP1_HUMAN	3	46	R669, R1227, R1333		
35	Tropomyosin alpha-4 chain	TPM4_HUMAN	3	18	R27, R142, R208	1	R27
36	Vinculin	VINC_HUMAN	3	67	R56, R113, R669		
37	Voltage-dependent anion-selective channel protein 1	VDAC1_HUMAN	3	7	R63, R93, R163	2	R63, R163
38	6-phosphogluconate dehydrogenase, decarboxylating	6PGD_HUMAN	2	20	R111, R382	2	R111, R382
39	60 kDa heat shock protein, mitochondrial	CH60_HUMAN	2	22	R121, R370	1	R370
40	Aconitate hydratase, mitochondrial	ACON_HUMAN	2	34	R548, R632		
41	Annexin A4	ANXA4_HUMAN	2	24	R24, R96	1	R96
42	Calmodulin	CALM3_HUMAN	2	6	R75, R91		
43	Elongation factor 2	EF2_HUMAN	2	44	R647	1	R647
44	Endoplasmic reticulum resident protein 44	ERP44_HUMAN	2	24	R148, R285		
45	Glucose-6-phosphate isomerase (Fragment)	G6PI_HUMAN	2	27	R81, R111		
46	Heat shock protein HSP 90-beta	HS90B_HUMAN	2	32	R504, R639	2	R504, R639
47	Heterogeneous nuclear ribonucleoproteins A2/B1	ROA2_HUMAN	2	24	R38, R147	1	R147

48	Isoform 4 of Inhibitor of nuclear factor kappa-B kinase-interacting protein	IKIP_HUMAN	2	17	R218, R285		
49	L-lactate dehydrogenase B chain	LDHB_HUMAN	2	8	R100, R113	1	R100
50	Malate dehydrogenase, mitochondrial	MDHM_HUMAN	2	10	R52, R191		
51	Membrane-associated progesterone receptor component 2	PGRC2_HUMAN	2	14	R101	1	R101
52	Microtubule-associated protein 1B	MAP1B_HUMAN	2	64	R990, R1495	2	R990, R1495
53	NADH-cytochrome b5 reductase 3	NB5R3_HUMAN	2	18	R143, R192		
54	Nucleolin	NUCL_HUMAN	2	26	R420, R457		
55	Peptidyl-prolyl cis-trans isomerase B	PPIB_HUMAN	2	9	R109, R180		
56	Prolyl 4-hydroxylase subunit alpha-1	P4HA1_HUMAN	2	26	R90, R136	1	R90
57	Protein S100-A11	S10AB_HUMAN	2	2	R12, R62		
58	Protein S100-A6	S10A6_HUMAN	2	3	R55		
59	Reticulocalbin-1	RCN1_HUMAN	2	23	R90, R188	1	R188
60	SH3 domain-binding glutamic acid-rich-like protein 3	SH3L3_HUMAN	2	6	R159, R180		
61	Stress-induced-phosphoprotein 1	STIP1_HUMAN	2	26	R305, R351		
62	Talin-1	TLN1_HUMAN	2	105	R606, R1122		
63	Transgelin	TAGL_HUMAN	2	11	R128, R146	1	R146
64	Transmembrane emp24 domain-containing protein 10	TMEDA_HUMAN	2	14	R71, R116		
65	14-3-3 protein epsilon	1433E_HUMAN	1	14	R225		
66	26S proteasome non-ATPase regulatory subunit 7	PSMD7_HUMAN	1	11	R25		
67	40S ribosomal protein S17	RS17_HUMAN	1	13	R81	1	R81
68	40S ribosomal protein S28	RS28_HUMAN	1	10	R31		
69	60S acidic ribosomal protein P2	RLA2_HUMAN	1	1	R38	1	R38
70	Acyl-CoA-binding protein	ACBP_HUMAN	1	2	R100		

71	Adenylate kinase 2, mitochondrial	KAD2_HUMAN	1	15	R138		
72	Adenylyl cyclase-associated protein 1	CAP1_HUMAN	1	12	R167		
73	Alpha-actinin-1	ACTN1_HUMAN	1	54	R60	1	R60
74	Alpha-enolase	ENOA_HUMAN	1	17	R32		
75	Annexin A11	ANX11_HUMAN	1	27	R494	1	R494
76	Annexin A2	ANXA2_HUMAN	1	21	R273		
77	Proliferation marker protein Ki-67	KI67_HUMAN	1	196	R1939	1	R1939
78	Apoptotic chromatin condensation inducer in the nucleus	ACINU_HUMAN	1	148	R1176		
79	ATP synthase subunit alpha, mitochondrial	ATPA_HUMAN	1	38	R149		
80	ATP synthase subunit beta, mitochondrial	ATPB_HUMAN	1	26	R456	1	R456
81	Caldesmon (Fragment)	CALD1_HUMAN	1	86	R159	1	R159
82	Calponin-2	CNN2_HUMAN	1	9	R35		
83	Capping protein (Actin filament) muscle Z-line, beta, isoform CRA_a	CAPZB_HUMAN	1	15	R213		
84	Catenin alpha-1	CTNA1_HUMAN	1	49	R165	1	R165
85	Polymerase I and transcript release factor	CAVN1_HUMAN	1	29	R355	1	R355
86	CD99 antigen	CD99_HUMAN	1	5	R170	1	R170
87	Chloride intracellular channel protein 1	CLIC1_HUMAN	1	9	R165	1	R165
88	Coactosin-like protein	COTL1_HUMAN	1	7	R91	1	R91
89	Cofilin-1	COF1_HUMAN	1	4	R119		
90	Collagen alpha-2(I) chain	CO1A2_HUMAN	1	72	R1154		
91	Collagen alpha-2(VI) chain	CO6A2_HUMAN	1	68	R993		
92	Collagen alpha-3(VI) chain	CO6A3_HUMAN	1	188	R925		
93	Complement component 1 Q subcomponent-binding protein, mitochondrial	C1QBP_HUMAN	1	15	R94	1	R94
94	D-tyrosyl-tRNA(Tyr) deacylase (Fragment)	DTD1_HUMAN	1	13	R78		

95	Dihydrolipoyllysine-residue succinyltransferase component of 2-oxoglutarate dehydrogenase complex, mitochondrial	ODO2_HUMAN	1	30	R144	1	R144
96	DNA damage-binding protein 1	DDB1_HUMAN	1	48	R1102	1	R1102
97	Dolichyl-diphosphooligosaccharide--protein glycosyltransferase	RPN1_HUMAN	1	29	R536	1	R536
98	Dynactin subunit 2	DCTN2_HUMAN	1	14	R282		
99	Elongation factor 1-alpha 1	EF1A1_HUMAN	1	17	R96		
100	Endoplasmic reticulum resident protein 29	ERP29_HUMAN	1	8	R75		
101	Enoyl-CoA hydratase, mitochondrial	ECHM_HUMAN	1	12	R54	1	R54
102	Epoxide hydrolase 1	HYEP_HUMAN	1	21	R267		
103	Eukaryotic translation initiation factor 4B	IF4B_HUMAN	1	78	R165	1	R165
104	Eukaryotic translation initiation factor 5A-1	IF5A1_HUMAN	1	5	R86	1	R86
105	Filamin-C	FLNC_HUMAN	1	117	R916		
106	Glutathione S-transferase omega-1	GSTO1_HUMAN	1	9	R48		
107	Glyceraldehyde-3-phosphate dehydrogenase	G3P_HUMAN	1	10	R80	1	R80
108	Heat shock protein beta-1	HSPB1_HUMAN	1	16	R188	1	R188
109	Heat shock protein HSP 90-alpha	HS90A_HUMAN	1	30	R46		
110	Heterogeneous nuclear ribonucleoprotein F	HNRPF_HUMAN	1	24	R52	1	R52
111	Hypoxia up-regulated protein 1	HYOU1_HUMAN	1	57	R729		
112	Integrin beta-1	ITB1_HUMAN	1	29	R174		
113	Interleukin enhancer-binding factor 2	ILF2_HUMAN	1	22	R65		
114	Interleukin enhancer-binding factor 3	ILF3_HUMAN	1	37	R177		
115	Isoform 2 of Band 4.1-like protein 3	E41L3_HUMAN	1	54	R525		
116	Isoform 2 of Gelsolin	GELS_HUMAN	1	42	R575		

117	Isoform 2 of Tropomyosin alpha-3 chain	TPM3_HUMAN	1	14	R142		
118	Isoform 2 of Vesicle-associated membrane protein-associated protein A	VAPA_HUMAN	1	13	R127		
119	Isoform 3 of Nucleoside diphosphate kinase B	NDKB_HUMAN	1	9	R173		
120	Isoform 7 of CD44 antigen	CD44_HUMAN	1	34	R665		
121	Isoform Cytoplasmic of Fumarate hydratase, mitochondrial	FUMH_HUMAN	1	19	R243		
122	L-lactate dehydrogenase A	LDHA_HUMAN	1	11	R99	1	R99
123	Lamina-associated polypeptide 2, isoforms beta/gamma	LAP2A_HUMAN	1	34	R33		
124	Laminin subunit gamma-1	LAMC1_HUMAN	1	95	R149		
125	Leucine-rich PPR motif-containing protein, mitochondrial	LPPRC_HUMAN	1	67	R1223		
126	LIM domain and actin-binding protein 1	LIMA1_HUMAN	1	42	R335		
127	Lupus La protein	LA_HUMAN	1	17	R266		
128	MARCKS-related protein	MRP_HUMAN	1	3	R10		
129	Membrane-associated progesterone receptor component 1	PGRC1_HUMAN	1	11	R47		
130	Multifunctional protein ADE2 (Fragment)	PUR6_HUMAN	1	16	R298		
131	Multiple coagulation factor deficiency protein 2	MCFD2_HUMAN	1	4	R126		
132	Myristoylated alanine-rich C-kinase substrate	MARCS_HUMAN	1	2	R18		
133	Nardilysin	NRDC_HUMAN	1	47	R762		
134	Nascent polypeptide-associated complex subunit	NACAM_HUMAN	1	17	R1949		
135	Nucleobindin 2, isoform CRA_b	NUCB2_HUMAN	1	16	R311	1	R311
136	Nucleophosmin	NPM_HUMAN	1	8	R291	1	R291
137	Peptidyl-prolyl cis-trans isomerase A	PPIA_HUMAN	1	6	R148	1	R148

138	Peroxiredoxin-6	PRDX6_HUMAN	1	12	R106		
139	Phosphatidylethanolamine-binding protein 1	PEBP1_HUMAN	1	9	R49		
140	Presequence protease, mitochondrial	PREP_HUMAN	1	50	R405		
141	Profilin-1	PROF1_HUMAN	1	5	R89		
142	Prohibitin-2	PHB2_HUMAN	1	24	R209	1	R209
143	Prosaposin	SAP_HUMAN	1	8	R421		
144	Protein deglycase DJ-1	PARK7_HUMAN	1	7	R48		
145	Protein DEK	DEK_HUMAN	1	15	R29	1	R29
146	Protein ERGIC-53	LMAN1_HUMAN	1	29	R373	1	R373
147	Protein LZIC	LZIC_HUMAN	1	9	R139		
148	Protein S100-A10	S10AA_HUMAN	1	2	R32		
149	Protein S100-A13	S10AD_HUMAN	1	5	R78		
150	Protein transport protein Sec61 subunit beta	SC61B_HUMAN	1	7	R95		
151	Pyruvate kinase PKM	KPYM_HUMAN	1	31	R246		
152	Rab GDP dissociation inhibitor beta	GDIB_HUMAN	1	22	R367		
153	Reticulocalbin-3	RCN3_HUMAN	1	26	R214	1	R214
154	Reticulon-3	RTN3_HUMAN	1	24	R1009		
155	Rho GDP-dissociation inhibitor 1	GDIR1_HUMAN	1	9	R49	1	R49
156	S-phase kinase-associated protein 1	SKP1_HUMAN	1	3	R81	1	R81
157	Septin-2	SEPT2_HUMAN	1	24	R91		
158	Surfeit locus protein 4	SURF4_HUMAN	1	9	R19		
159	TATA element modulatory factor	TMF1_HUMAN	1	53	R934		
160	Thioredoxin domain-containing protein 5	TXND5_HUMAN	1	18	R134		
161	Thioredoxin-dependent peroxide reductase, mitochondrial	PRDX3_HUMAN	1	10	R170		
162	Transaldolase	TALDO_HUMAN	1	15	R239		
163	Transgelin-2	TAGL2_HUMAN	1	11	R49	1	R49
164	Transmembrane emp24 domain-containing protein 9	TMED9_HUMAN	1	18	R169	1	R169
165	Ubiquitin carboxyl-terminal hydrolase isozyme L1	UCHL1_HUMAN	1	9	R153	1	R153
166	Ubiquitin-conjugating enzyme E2 N	UBE2N_HUMAN	1	9	R14		

167	Uncharacterized protein	E9PAM4_HUMAN	1	27	R205		
168	Very long-chain specific acyl-CoA dehydrogenase, mitochondrial	ACADV_HUMAN	1	34	R316		
169	Vesicle-associated membrane protein 3	VAMP3_HUMAN	1	6	R49	1	R49
170	Voltage-dependent anion-selective channel protein 2	VDAC2_HUMAN	1	7	R263		
171	X-ray repair cross-complementing protein 5	XRCC5_HUMAN	1	27	R141		
172	X-ray repair cross-complementing protein 6	XRCC6_HUMAN	1	32	R517	1	R517
			353	5140		114	
	Number of arginine residues with MG modification in the		114 (32%)		Number of proteins with MG modification in the functional		74 (43%)

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Table S3. Pathways enriched with proteins susceptible to modification by methylglyoxal.

Pathway	Count	Fold enrichment	P-value	FDR	Proteins
Protein processing in endoplasmic reticulum	20	7.4	1.71E-09	1.30E-08	Cytoskeleton-associated protein 4, Calreticulin Dolichyl-diphosphooligosaccharide-protein glycosyltransferase subunit 1 Endoplasmic reticulum chaperone BiP Endoplasmic reticulum resident protein 29 Endoplasmin Glucosidase 2 subunit beta Heat shock cognate 71 kDa protein, HSP 90-alpha & -beta Hypoxia up-regulated protein 1 Protein disulfide-isomerase A1, A3, A4 & A6 Protein ERGIC-53 Protein transport protein Sec61 subunit beta S-phase kinase-associated protein 1 Ribosome-binding protein 1 Thioredoxin domain-containing protein 5
Carbon metabolism	15	8.3	3.05E-07	2.40E-06	Aconitate hydratase, mitochondrial Alpha-enolase Dihydrolipoyllysine-residue succinyltransferase component of 2-oxoglutarate dehydrogenase complex, mitochondrial Enoyl-CoA hydratase, mitochondrial Fructose-bisphosphate aldolase A Fumarate hydratase, mitochondrial Glutamate dehydrogenase 1, mitochondrial Glyceraldehyde-3-phosphate dehydrogenase

					Malate dehydrogenase, mitochondrial
					6-phosphogluconate dehydrogenase, decarboxylating
					Phosphoglycerate kinase 1
					Pyruvate kinase PKM
					Transaldolase
					6-phosphogluconate dehydrogenase, decarboxylating
					Aconitate hydratase, mitochondrial
					Adenylate kinase 2, mitochondrial
					Alpha-enolase
					Citrate synthase
					Dihydrolipoyllysine-residue succinyltransferase component of 2-oxoglutarate dehydrogenase complex, mitochondrial
					Enoyl-CoA hydratase, mitochondrial
Biosynthesis of antibiotics	19	5.6	6.52E-07	5.10E-06	Fructose-bisphosphate aldolase A
					Fumarate hydratase, mitochondrial
					Glyceraldehyde-3-phosphate dehydrogenase
					L-lactate dehydrogenase, A chain and B chain
					Malate dehydrogenase, mitochondrial
					Multifunctional protein ADE2
					Nucleoside diphosphate kinase B
					Phosphoglycerate kinase 1
					Pyruvate kinase PKM
					Transaldolase