

**Supplemental Data****Supplemental Table 1.** Proteins in whole human milk

<b>Protein Name</b>	<b>Protein ID</b>	<b>Average intensity [log 10]</b>	<b>Number of unique peptides</b>
Lactoferrin	P02788	10.8	278
Beta-casein	P05814	11.1	202
Serum albumin	P02768	10.4	146
Fatty acid synthase	P49327	9.01	108
Xanthine dehydrogenase/oxidase	P47989	9.50	102
Alpha-lactalbumin	P00709	10.8	93
Tenascin	P24821	8.98	91
Bile salt-activated lipase	P19835	9.80	89
Alpha-S1-casein	P47710	10.1	88
Complement C3	P01024	8.80	87
Macrophage mannose receptor 1	P22897	9.18	80
Complement C4-A	Q5JNX2	8.73	79
Polymeric immunoglobulin receptor	P01833	9.84	77
Kappa-casein	P07498	10.3	72
Ig alpha-1 chain C region	P01876	9.86	52
Lactadherin	Q08431	9.09	43
Butyrophilin subfamily 1 member A1	Q13410	9.25	42
Apolipoprotein B-100	P04114	7.58	41
Osteopontin	P10451	9.58	40
Chordin-like protein 2	Q6WN34	8.67	32

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Actin, cytoplasmic 1	P60709	8.96	32
Alpha-1-antitrypsin	P01009	8.62	31
Perilipin-2	Q99541	8.54	27
Gelsolin	P06396	7.72	25
Clusterin	P10909	9.23	25
Alpha-amylase 1	P04745	8.00	24
Lysozyme C	P61626	8.86	23
Sulfhydryl oxidase 1	O00391	7.96	22
Monocyte differentiation antigen CD14	P08571	8.68	22
Haptoglobin	P00738	8.09	22
Apolipoprotein A-I	P02647	8.47	22
Alpha-enolase	P06733	8.11	22
Vitamin D-binding protein	D6RF35	7.88	21
UTP--glucose-1-phosphate uridylyltransferase	Q16851	8.09	21
Lactoperoxidase	P22079	7.63	21
Alpha-1-antichymotrypsin	P01011	8.40	21
Zinc-alpha-2-glycoprotein	P25311	8.63	20
Prosaposin	P07602	8.00	20
Galectin-3-binding protein	Q08380	8.23	20
Perilipin-3	O60664	7.93	18
Myeloperoxidase	P05164	7.54	18
Ig alpha-2 chain C region	P01877	9.69	18
Fibronectin	P02751	7.18	18
Apolipoprotein A-IV	P06727	7.53	18
Thrombospondin-1	P07996	7.39	17

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Protein disulfide-isomerase	P07237	7.50	17
Ig mu chain C region	P01871	8.63	17
Complement factor B	P00751	7.52	17
78 kDa glucose-regulated protein	P11021	7.66	17
Pyruvate kinase PKM	P14618	7.51	16
Plastin-2	P13796	7.32	16
Mucin-4	Q99102	7.53	16
Ig kappa chain C region	P01834	9.35	16
Fructose-bisphosphate aldolase A	P04075	7.72	16
Ceruloplasmin	P00450	7.55	16
Transketolase	P29401	7.28	15
Selenium-binding protein 1	Q13228	7.36	15
Neutral alpha-glucosidase AB	Q14697	7.24	15
Lipoprotein lipase	P06858	7.95	15
Hyaluronan and proteoglycan link protein 3	Q96S86	7.46	15
Heat shock protein HSP 90-alpha	P07900	7.56	15
Glyceraldehyde-3-phosphate dehydrogenase	P04406	8.12	15
Cytosolic non-specific dipeptidase	Q96KP4	7.70	15
Beta-1,4-galactosyltransferase 1	P15291	8.01	15
Apolipoprotein E	P02649	7.66	15
Platelet glycoprotein 4	P16671	7.93	14
Leucine-rich alpha-2-glycoprotein	P02750	8.06	14
Alpha-2-macroglobulin	P01023	7.02	14
Rab GDP dissociation inhibitor beta	P50395	7.25	13
Plasminogen	P00747	7.15	13

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Nucleobindin-2	P80303	7.52	13
Moesin	P26038	7.26	13
Ig gamma-1 chain C region	P01857	8.47	13
Heat shock cognate 71 kDa protein	P11142	7.58	13
Fatty acid-binding protein, heart	P05413	8.85	13
Peptidyl-prolyl cis-trans isomerase B	P23284	7.62	12
Insulin-like growth factor-binding protein 2	P18065	7.86	12
Immunoglobulin lambda-like polypeptide 5	B9A064	8.81	12
Elongation factor 2	P13639	6.97	12
Carbonic anhydrase 6	P23280	8.33	12
C4b-binding protein alpha chain	P04003	7.35	12
Alpha-actinin-4	O43707	7.13	12
Alpha-1B-glycoprotein	P04217	7.16	12
Phosphoglucomutase-1	P36871	7.09	11
Nucleobindin-1	Q02818	7.40	11
Mucin-1	P15941	8.28	11
Fibrinogen gamma chain	P02679	7.32	11
Fibrinogen alpha chain	P02671	7.17	11
Beta-2-microglobulin	P61769	8.48	11
ATP-binding cassette sub-family G member 2	Q9UNQ0	7.24	11
Alpha-1-acid glycoprotein 1	P02763	7.95	11
Vimentin	P08670	7.01	10
Triosephosphate isomerase	P60174	7.48	10
Syntenin-1	O00560	7.12	10
Protein disulfide-isomerase A3	P30101	6.97	10

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Peptidyl-prolyl cis-trans isomerase A	P62937	7.66	10
Hemopexin	P02790	7.49	10
Elongation factor 1-alpha 1	P68104	7.69	10
Cathepsin S	P25774	7.11	10
Calreticulin	P27797	7.24	10
Alpha-2-HS-glycoprotein	P02765	7.77	10
6-phosphogluconate dehydrogenase	P52209	7.06	10
Vitronectin	P04004	7.65	9
Phosphoglycerate kinase 1	P00558	7.18	9
Phosphatidylethanolamine-binding protein 1	P30086	7.65	9
Peroxiredoxin-6	P30041	6.95	9
Na(+)/H(+) exchange regulatory cofactor NHE-RF1	O14745	7.06	9
Myosin-9	P35579	6.69	9
Ig gamma-2 chain C region	P01859	8.21	9
Heat shock 70 kDa protein 1A/1B	P08107	7.46	9
Fibrinogen beta chain	P02675	7.16	9
Endoplasmin	P14625	7.06	9
14-3-3 protein zeta/delta	P63104	7.62	9
Transforming protein RhoA	P61586	7.19	8
Ras-related protein Rab-18	Q9NP72	7.33	8
Nicotinamide phosphoribosyltransferase	P43490	6.85	8
Neutrophil elastase	P08246	7.67	8
Malate dehydrogenase, cytoplasmic	P40925	7.07	8
L-lactate dehydrogenase B chain	P07195	7.44	8
L-lactate dehydrogenase A chain	P00338	7.24	8

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Folate receptor alpha	P15328	7.69	8
Complement factor I	P05156	6.83	8
Cofilin-1	P23528	7.45	8
Apolipoprotein D	P05090	7.85	8
Ubiquitin-60S ribosomal protein L40	P62987	8.06	7
Tropomyosin alpha-3 chain	P06753	6.69	7
Rho GDP-dissociation inhibitor 2	P52566	7.23	7
Prolactin-inducible protein	P12273	7.60	7
Plasma protease C1 inhibitor	P05155	6.90	7
Kininogen-1	P01042	6.90	7
Kallikrein-6	Q92876	6.92	7
Isocitrate dehydrogenase [NADP] cytoplasmic	O75874	7.09	7
Immunoglobulin kappa variable 3-20	P01620	7.94	7
Immunoglobulin J chain	P01591	8.88	7
Heat shock protein beta-1	P04792	6.96	7
Follistatin-related protein 1	Q12841	7.36	7
Ezrin	P15311	7.29	7
Erythrocyte band 7 integral membrane protein	P27105	7.32	7
Cytoplasmic aconitate hydratase	P21399	6.75	7
Chitinase-3-like protein 1	P36222	6.92	7
Cell death activator CIDE-A	O60543	7.00	7
Beta-2-glycoprotein 1	P02749	7.14	7
Antithrombin-III	P01008	7.07	7
14-3-3 protein epsilon	P62258	7.10	7
Tubulin alpha-1A chain	Q71U36	6.69	6

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Syntaxin-binding protein 2	Q15833	6.64	6
Synaptic vesicle membrane protein VAT-1 homolog	Q99536	6.58	6
Ras-related protein Rab-1B	Q9H0U4	7.12	6
Ras-related C3 botulinum toxin substrate 1	P63000	7.09	6
Profilin-1	P07737	7.77	6
Pro-epidermal growth factor	P01133	6.51	6
Peroxiredoxin-5, mitochondrial	P30044	6.68	6
Peroxiredoxin-2	P32119	6.92	6
Neutrophil gelatinase-associated lipocalin	P80188	7.26	6
Myeloblastin	P24158	7.27	6
Matrilin-3	O15232	6.83	6
Histone H4	P62805	7.87	6
Histone H2B type 1-C/E/F/G/I	P62807	7.64	6
Golgi-associated plant pathogenesis-related protein 1	Q9H4G4	7.07	6
Glycogen phosphorylase, liver form	P06737	6.05	6
Dipeptidyl peptidase 1	P53634	6.78	6
Dihydropyrimidinase-related protein 3	Q14195	6.53	6
Cystatin-C	P01034	8.05	6
Cathepsin G	P08311	7.28	6
Catalase	P04040	6.54	6
Annexin A1	P04083	6.55	6
ADP-ribosylation factor 1	P84077	6.87	6
60S ribosomal protein L13	P26373	6.64	6
4-trimethylaminobutyraldehyde dehydrogenase	P49189	6.96	6
40S ribosomal protein S3	P23396	6.61	6

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Sclerostin domain-containing protein 1	Q6X4U4	7.29	5
Ras-related protein Rab-7a	P51149	6.75	5
Prothrombin	P00734	6.56	5
Protein S100-A9	P06702	7.53	5
Protein S100-A11	P31949	7.23	5
Prostasin	Q16651	6.78	5
Pigment epithelium-derived factor	P36955	6.44	5
Parathyroid hormone-related protein	P12272	6.78	5
Nephronectin	Q6UXI9	6.40	5
Metalloproteinase inhibitor 1	P01033	7.26	5
Lanosterol synthase	P48449	6.62	5
Immunoglobulin kappa variable 4-1	P01625	7.48	5
Ig heavy chain V-I region 5	P01602	7.87	5
Histone H1.2	P16403	7.00	5
Heat shock protein HSP 90-beta	P08238	7.49	5
Glutathione peroxidase 3	P22352	7.34	5
Epididymal secretory protein E1	P61916	7.18	5
Dystroglycan	Q14118	6.73	5
Coronin-1A	P31146	6.71	5
Complement factor H	P08603	6.45	5
Chloride intracellular channel protein 1	O00299	6.55	5
Cell division control protein 42 homolog	P60953	7.16	5
CD59 glycoprotein	P13987	7.79	5
Azurocidin	P20160	7.22	5
Apolipoprotein A-II	P02652	7.67	5



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Annexin A2	P07355	6.73	5
Angiotensinogen	P01019	6.42	5
Adenylyl cyclase-associated protein 1	Q01518	6.65	5
Zymogen granule protein 16 homolog B	Q96DA0	7.29	4
Tumor necrosis factor ligand superfamily member 13	O75888	6.40	4
Tubulin beta-2A chain	Q13885	6.25	4
Transcobalamin-1	P20061	6.50	4
Selenoprotein P	P49908	6.37	4
Ribosome-binding protein 1	Q9P2E9	6.66	4
Rho GDP-dissociation inhibitor 1	P52565	6.77	4
Receptor of activated protein C kinase 1	P63244	6.46	4
Ras-related protein Rap-1b	P61224	6.78	4
Ras-related protein Rab-2A	P61019	6.23	4
Ras-related protein Rab-11A	P62491	6.54	4
Protein AMBP	P02760	6.46	4
Proteasome activator complex subunit 1	Q06323	6.15	4
Phosphoglycerate mutase 1	P18669	6.62	4
Peroxiredoxin-1	Q06830	6.96	4
Olfactomedin-4	Q6UX06	6.69	4
Nucleotide exchange factor SIL1	Q9H173	6.67	4
Neutrophil defensin 1	P59665	8.85	4
Immunoglobulin lambda variable 3-19	P01714	6.97	4
Histone H2A type 1-B/E	P04908	7.60	4
Guanine nucleotide-binding protein G(I)/G(S)/G(T) subunit beta-1	P62873	6.83	4

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Granulins	P28799	6.20	4
Farnesyl pyrophosphate synthase	P14324	6.30	4
Eukaryotic translation initiation factor 5A-1	P63241	6.15	4
Cystatin-B	P04080	7.28	4
CD81 antigen	P60033	7.21	4
Calmodulin	P62158	7.24	4
ATP-citrate synthase	P53396	6.61	4
Annexin A6	P08133	6.23	4
Amyloid beta A4 protein	P05067	6.57	4
Alpha-actinin-1	P12814	7.13	4
Alpha-2-antiplasmin	P08697	6.55	4
Alpha-1-acid glycoprotein 2	P19652	7.75	4
Alcohol dehydrogenase [NADP(+)]	P14550	6.76	4
Acyl-CoA-binding protein	P07108	7.42	4
60S ribosomal protein L7	P18124	6.52	4
60S ribosomal protein L15	P61313	6.18	4
40S ribosomal protein S3a	P61247	6.50	4
14-3-3 protein beta/alpha	P31946	7.33	4
WD repeat-containing protein 1	O75083	6.29	3
Ubiquitin-like modifier-activating enzyme 1	P22314	6.01	3
Transaldolase	P37837	6.25	3
Thymosin beta-4	P62328	7.45	3
Thioredoxin	P10599	6.71	3
Secreted frizzled-related protein 1	Q8N474	6.02	3
Ribonuclease 4	P34096	6.53	3

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Ras-related protein Rab-5C	P51148	6.52	3
Purine nucleoside phosphorylase	P00491	6.21	3
Protein-arginine deiminase type-2	Q9Y2J8	6.06	3
Protein S100-A8	P05109	7.72	3
Protein S100-A6	P06703	6.90	3
Protein S100-A1	P23297	6.63	3
Protein deglycase DJ-1	Q99497	6.71	3
Programmed cell death 6-interacting protein	Q8WUM4	6.17	3
Polyadenylate-binding protein 1	P11940	5.97	3
Peptidoglycan recognition protein 1	O75594	6.21	3
Nucleoside diphosphate kinase A	P15531	6.91	3
Non-specific lipid-transfer protein	P22307	5.94	3
N(G),N(G)-dimethylarginine dimethylaminohydrolase 1	O94760	6.09	3
Myristoylated alanine-rich C-kinase substrate	P29966	6.24	3
Myosin light polypeptide 6	P60660	6.63	3
Matrix metalloproteinase-9	P14780	6.02	3
Mannose-1-phosphate guanyltransferase beta	Q9Y5P6	6.04	3
Macrophage-capping protein	P40121	6.41	3
Long-chain-fatty-acid--CoA ligase 4	O60488	6.11	3
Leukotriene A-4 hydrolase	P09960	6.16	3
Lactotransferrin	E7ER44	10.77	3
Kunitz-type protease inhibitor 1	O43278	6.68	3
Inter-alpha-trypsin inhibitor heavy chain H4	Q14624	5.98	3
Inorganic pyrophosphatase	Q15181	5.96	3
Immunoglobulin kappa variable 2D-28	P01617	7.62	3

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Immunoglobulin heavy variable 3-7	P01781	7.26	3
Immunoglobulin heavy variable 3-53	P01767	7.59	3
Immunoglobulin heavy variable 3-23	P01776	7.48	3
Ig lambda chain V-I region WAH	P04208	7.54	3
Ig kappa chain V-I region Scw	P01609	7.58	3
Ig heavy chain V-II region ARH-77	P06331	6.96	3
Ig gamma-3 chain C region	P01860	8.17	3
HLA class I histocompatibility antigen, B-7 alpha chain	P01889	6.29	3
Histone H3.1t	Q16695	7.27	3
Histone H1.5	P16401	6.62	3
Hemoglobin subunit beta	P68871	6.19	3
Heme-binding protein 1	Q9NRV9	6.43	3
Guanine nucleotide-binding protein subunit alpha-11	P29992	6.45	3
Guanine nucleotide-binding protein G(I)/G(S)/G(O) subunit gamma-12	Q9UBI6	6.42	3
Glutathione S-transferase P	P09211	6.64	3
Glucose-6-phosphate isomerase	P06744	6.38	3
Glucose-6-phosphate 1-dehydrogenase	P11413	5.99	3
Gamma-glutamyltranspeptidase 1	P19440	6.72	3
Fructose-1,6-bisphosphatase 1	P09467	6.00	3
Eukaryotic initiation factor 4A-I	P60842	6.18	3
Eosinophil cationic protein	P12724	6.69	3
Elongation factor 1-delta	P29692	6.12	3
Ectonucleoside triphosphate diphosphohydrolase 3	O75355	5.87	3
Dihydropyrimidinase-related protein 2	Q16555	6.21	3

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Dehydrogenase/reductase SDR family member 1	Q96LJ7	6.13	3
Cytochrome b5	P00167	6.35	3
C-type lectin domain family 11 member A	Q9Y240	7.33	3
Complement component C9	P02748	6.23	3
Complement C1q tumor necrosis factor-related protein 1	Q9BXJ1	6.44	3
Clathrin heavy chain 1	Q00610	6.16	3
Cathepsin D	P07339	6.04	3
Cathelicidin antimicrobial peptide	P49913	6.35	3
Brain acid soluble protein 1	P80723	6.14	3
Beta-hexosaminidase subunit beta	P07686	5.85	3
Afamin	P43652	6.03	3
Actin-related protein 2/3 complex subunit 4	P59998	6.23	3
Actin-related protein 2/3 complex subunit 2	O15144	6.05	3
Acid sphingomyelinase-like phosphodiesterase 3b	Q92485	6.30	3
60S ribosomal protein L6	Q02878	6.47	3
60S ribosomal protein L4	P36578	6.36	3
60S ribosomal protein L14	P50914	6.43	3
60S acidic ribosomal protein P0-like	Q8NHW5	6.45	3
45 kDa calcium-binding protein	Q9BRK5	6.76	3
40S ribosomal protein S9	P46781	6.36	3
40S ribosomal protein S4, X isoform	P62701	6.26	3
40S ribosomal protein S18	P62269	6.46	3
40S ribosomal protein S10	P46783	5.92	3
1-phosphatidylinositol 3-phosphate 5-kinase	Q9Y2I7	6.54	3
14-3-3 protein sigma	P31947	6.90	3

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von Willebrand factor A domain-containing protein 1	Q6PCB0	6.30	2
UMP-CMP kinase	P30085	5.60	2
Ubiquitin-fold modifier 1	P61960	5.74	2
Ubiquitin-conjugating enzyme E2 N	P61088	5.78	2
Tropomyosin alpha-1 chain	P09493	6.02	2
Transitional endoplasmic reticulum ATPase	P55072	6.22	2
Toll-like receptor 2	O60603	5.68	2
Tetranectin	P05452	5.76	2
Superoxide dismutase [Cu-Zn]	P00441	6.42	2
Sodium-dependent phosphate transport protein 2B	O95436	6.32	2
SH3 domain-binding glutamic acid-rich-like protein 3	Q9H299	6.15	2
Serum amyloid A-1 protein	P0DJI8	6.24	2
Pyridoxal kinase	O00764	6.14	2
Protein S100-P	P25815	6.62	2
Protein OS-9	Q13438	6.20	2
Protein FAM3B	P58499	5.87	2
Protein ECT2	Q9H8V3	7.73	2
Protein ABHD14B	Q96IU4	5.98	2
Proteasome subunit alpha type-6	P60900	5.56	2
Procollagen-lysine,2-oxoglutarate 5-dioxygenase 1	Q02809	5.94	2
Poly(rC)-binding protein 1	Q15365	5.95	2
Podocalyxin	O00592	6.68	2
Phospholipid hydroperoxide glutathione peroxidase	P36969	6.34	2
Peroxiredoxin-4	Q13162	6.03	2
Peptidyl-prolyl cis-trans isomerase C	P45877	5.99	2

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PDZK1-interacting protein 1	Q13113	5.94	2
Osteoclast-stimulating factor 1	Q92882	5.60	2
Myeloid cell nuclear differentiation antigen	P41218	6.12	2
Methyltransferase-like protein 7A	Q9H8H3	6.43	2
Macrophage migration inhibitory factor	P14174	6.99	2
L-xylulose reductase	Q7Z4W1	5.77	2
Long-chain-fatty-acid--CoA ligase 3	O95573	6.20	2
Long-chain-fatty-acid--CoA ligase 1	P33121	5.98	2
Inter-alpha-trypsin inhibitor heavy chain H2	P19823	7.62	2
Immunoglobulin lambda variable 3-21	P80748	7.70	2
Immunoglobulin kappa variable 3-15	P04207	7.67	2
Immunoglobulin heavy variable 3-11	P01762	7.75	2
Ig mu heavy chain disease protein	P04220	8.38	2
Ig lambda chain V-IV region Hil	P01717	7.07	2
Ig lambda chain V-II region TRO	P01707	6.89	2
Ig kappa chain V-III region VG	P04433	7.49	2
Ig kappa chain V-III region NG9	P01621	7.64	2
Ig kappa chain V-I region Ni	P01613	6.26	2
Ig kappa chain V-I region EU	P01598	7.28	2
Ig heavy chain V-I region Mot	P06326	7.86	2
Ig gamma-4 chain C region	P01861	8.11	2
HLA class II histocompatibility antigen, DR alpha chain	P01903	5.99	2
Histone H2B type 1-B	P33778	7.49	2
Heterogeneous nuclear ribonucleoprotein K	P61978	5.77	2
Guanine nucleotide-binding protein subunit alpha-13	Q14344	7.91	2

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Guanine nucleotide-binding protein G(s) subunit alpha isoforms XLas	Q5JWF2	5.91	2
GTP-binding protein SAR1a	Q9NR31	6.74	2
G-protein coupled receptor family C group 5 member B	Q9NZH0	6.70	2
Golgi membrane protein 1	Q8NBJ4	6.39	2
Glutamine--fructose-6-phosphate aminotransferase [isomerizing] 1	Q06210	6.40	2
Ganglioside GM2 activator	P17900	6.18	2
Galectin-7	P47929	6.18	2
F-actin-capping protein subunit beta	P47756	5.60	2
Epithelial discoidin domain-containing receptor 1	Q08345	6.06	2
Dolichol-phosphate mannosyltransferase subunit 3	Q9P2X0	6.17	2
Di-N-acetylchitobiase	Q01459	6.20	2
Dextrin	P60981	6.10	2
Cellular retinoic acid-binding protein 2	P29373	6.41	2
C-C motif chemokine 28	Q9NRJ3	6.79	2
Cathepsin B	P07858	6.44	2
Carbonic anhydrase 2	P00918	6.12	2
Calnexin	P27824	6.12	2
Calcium and integrin-binding protein 1	Q99828	5.90	2
Apolipoprotein C-III	P02656	6.36	2
Annexin A3	P12429	5.76	2
Aminopeptidase N	P15144	5.89	2
Alpha-aminoadipic semialdehyde dehydrogenase	P49419	5.69	2
Aflatoxin B1 aldehyde reductase member 2	O43488	5.92	2



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ADP-ribosylation factor 4	P18085	6.55	2
Adenine phosphoribosyltransferase	P07741	6.03	2
Actin-related protein 2/3 complex subunit 3	O15145	6.07	2
Actin-related protein 2	P61160	6.16	2
60S ribosomal protein L3	P39023	6.30	2
60S ribosomal protein L27	P61353	6.18	2
60S ribosomal protein L23a	P62750	6.10	2
60S ribosomal protein L22	P35268	6.33	2
60S ribosomal protein L18	Q07020	6.37	2
60S ribosomal protein L11	P62913	6.00	2
60S acidic ribosomal protein P1	P05386	6.35	2
40S ribosomal protein S8	P62241	6.34	2
40S ribosomal protein S7	P62081	5.80	2
40S ribosomal protein S25	P62851	6.34	2
40S ribosomal protein S2	P15880	5.84	2
40S ribosomal protein S16	P62249	6.16	2
40S ribosomal protein S15a	P62244	6.20	2
40S ribosomal protein S12	P25398	6.18	2
14-3-3 protein eta	Q04917	6.87	2
Zinc finger RNA-binding protein	Q96KR1	5.42	1
Zinc finger protein with KRAB and SCAN domains 1	E9PC66	6.00	1
WW domain-binding protein 2	Q969T9	5.73	1
V-type proton ATPase subunit S1	Q15904	5.66	1
Vasodilator-stimulated phosphoprotein	P50552	5.05	1
Tumor necrosis factor ligand superfamily member 10	P50591	5.91	1

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Tryptophan--tRNA ligase	P23381	5.63	1
Tripeptidyl-peptidase 1	O14773	6.01	1
Transthyretin	P02766	6.11	1
Transmembrane protein 198	Q66K66	5.77	1
Transmembrane emp24 domain-containing protein 10	P49755	5.69	1
Transmembrane channel-like protein 4	Q7Z404	5.61	1
Trans-Golgi network integral membrane protein 2	O43493	5.36	1
Transgelin-2	P37802	5.19	1
Tissue alpha-L-fucosidase	P04066	5.56	1
Thymosin beta-10	P63313	6.07	1
Thy-1 membrane glycoprotein	P04216	6.32	1
Thioredoxin domain-containing protein 5	Q8NBS9	5.41	1
T-complex protein 10A homolog	Q12799	6.19	1
T-complex protein 1 subunit beta	P78371	5.40	1
T-complex protein 1 subunit alpha	P17987	5.13	1
Syntaxin-4	Q12846	5.70	1
Syntaxin-3	Q13277	5.78	1
Synaptosomal-associated protein 23	O00161	5.26	1
Synaptopodin-2	Q9UMS6	5.56	1
Synaptobrevin homolog YKT6	O15498	5.32	1
Staphylococcal nuclease domain-containing protein 1	Q7KZF4	5.84	1
Spindle and centriole-associated protein 1	Q8N0Z3	5.66	1
Sorting nexin-16	P57768	6.27	1
Sodium/glucose cotransporter 1	P13866	5.62	1

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Sodium- and chloride-dependent neutral and basic amino acid transporter B(0+)	Q9UN76	6.01	1
Small proline-rich protein 2A	P35326	6.26	1
Sialate O-acetyltransferase	Q9HAT2	5.72	1
SH3 domain-binding glutamic acid-rich-like protein	O75368	5.50	1
Serum amyloid A-4 protein	P35542	5.55	1
S-acyl fatty acid synthase thioesterase, medium chain	Q9NV23	5.93	1
Ribose-phosphate pyrophosphokinase 1	P60891	5.92	1
Ribonuclease T2	O00584	5.91	1
Ribonuclease inhibitor	P13489	5.23	1
Retinoid-inducible serine carboxypeptidase	Q9HB40	6.28	1
Retinal dehydrogenase 1	P00352	5.66	1
Ras-related protein Ral-B	P11234	5.46	1
Ras-related protein Ral-A	P11233	5.42	1
Ras-related protein Rab-8B	Q92930	6.92	1
Ras-related protein Rab-6A	P20340	6.80	1
Ras-related protein Rab-5A	P20339	6.49	1
Ras-related protein Rab-21	Q9UL25	5.64	1
Ras-related C3 botulinum toxin substrate 2	P15153	6.95	1
Ras GTPase-activating-like protein IQGAP1	P46940	4.94	1
Radixin	P35241	7.14	1
Rab GTPase-activating protein 1	Q9Y3P9	6.13	1
Putative zinc-alpha-2-glycoprotein-like 1	A8MT79	7.89	1
Putative sodium-coupled neutral amino acid transporter 10	Q9HBR0	5.53	1

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Putative RNA-binding protein Luc7-like 2	Q9Y383	6.21	1
Protein transport protein Sec61 subunit beta	P60468	5.64	1
Protein spinster homolog 2	Q8IVW8	6.78	1
Protein S100-A7	P31151	5.62	1
Protein S100-A14	Q9HCY8	5.25	1
Protein S100-A12	P80511	6.82	1
Protein lifeguard 3	Q969X1	5.90	1
Protein FAM3C	Q92520	5.65	1
Protein disulfide-isomerase A6	Q15084	5.60	1
Protein disulfide-isomerase A4	P13667	5.41	1
Proteasome subunit beta type-8	P28062	5.49	1
Proteasome subunit beta type-2	P49721	5.33	1
Proteasome subunit beta type-1	P20618	5.59	1
Proteasome subunit alpha type-7-like	Q8TAA3	5.94	1
Proteasome subunit alpha type-5	P28066	5.04	1
Proteasome subunit alpha type-3	P25788	5.50	1
Proteasome subunit alpha type-2	P25787	5.01	1
Proteasome activator complex subunit 2	Q9UL46	5.41	1
Proliferation-associated protein 2G4	Q9UQ80	5.27	1
Programmed cell death protein 10	Q9BUL8	5.62	1
Platelet-derived growth factor subunit B	P01127	5.86	1
Phospholipid transfer protein	P55058	5.88	1
Phosphoglucomutase-2	Q96G03	5.59	1
Phosphatidylserine synthase 2	Q9BVG9	5.90	1
Phosphatidylinositol 3,4,5-trisphosphate-dependent	Q70Z35	5.90	1

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Rac exchanger 2 protein

Peptidyl-prolyl cis-trans isomerase FKBP1A	P62942	6.33	1
Parkin coregulated gene protein	Q96M98	5.99	1
Nucleoside diphosphate kinase B	P22392	6.91	1
Nuclear receptor ROR-beta	Q92753	5.77	1
Non-histone chromosomal protein HMG-17	P05204	4.79	1
Neurofilament light polypeptide	P07196	6.84	1
NACHT, LRR and PYD domains-containing protein 6	P59044	6.36	1
Myosin regulatory light chain 12A	P19105	5.47	1
Myeloid-associated differentiation marker	Q96S97	5.21	1
Mucin-like protein 1	Q96DR8	6.95	1
Metalloreductase STEAP4	Q687X5	5.20	1
Metalloreductase STEAP2	Q8NFT2	5.43	1
MARCKS-related protein	P49006	6.13	1
Macrophage colony-stimulating factor 1	P09603	6.02	1
Lysosome-associated membrane glycoprotein 2	P13473	5.20	1
L-lactate dehydrogenase A-like 6A	Q6ZMR3	7.14	1
Leukocyte surface antigen CD47	Q08722	5.94	1
Leukocyte elastase inhibitor	P30740	5.69	1
Leucine-rich repeat-containing protein 52	Q8N7C0	7.84	1
Intraflagellar transport protein 172 homolog	Q9UG01	5.89	1
Integrin alpha-7	G3V2C6	6.76	1
Immunoglobulin lambda-like polypeptide 1	P15814	5.29	1
Immunoglobulin kappa variable 2-30	P06310	7.51	1
Immunoglobulin kappa variable 1D-33	P01593	7.57	1

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Immunoglobulin kappa variable 1D-12	P01611	6.44	1
Immunoglobulin kappa variable 1-5	P01596	7.14	1
Immunoglobulin heavy variable 3-48	P01763	7.56	1
Immunoglobulin heavy variable 1-46	P01743	6.99	1
Ig lambda-2 chain C regions	P0CG05	8.97	1
Ig lambda chain V-I region NIG-64	P01702	6.29	1
Ig lambda chain V-I region NEWM	P01703	7.19	1
Ig lambda chain V-I region NEW	P01701	7.01	1
Ig lambda chain V region 4A	P04211	6.53	1
Ig kappa chain V-IV region	P06312	7.34	1
Ig kappa chain V-III region HAH	P18135	7.73	1
Ig kappa chain V-III region GOL	P04206	7.81	1
Ig kappa chain V-I region WEA	P01610	7.61	1
Ig kappa chain V-I region Rei	P01607	7.57	1
Ig kappa chain V-I region DEE	P01597	7.59	1
Ig kappa chain V-I region BAN	P04430	6.65	1
Ig kappa chain V-I region AU	P01594	7.57	1
Ig heavy chain V-III region CAM	P01768	7.32	1
Ig heavy chain V-II region OU	P01814	6.50	1
Hypoxia up-regulated protein 1	Q9Y4L1	5.91	1
Hydroxyacylglutathione hydrolase, mitochondrial	Q16775	6.50	1
Hydrocephalus-inducing protein homolog	Q4G0P3	5.98	1
Hyaluronan and proteoglycan link protein 4	Q86UW8	6.65	1
HLA class II histocompatibility antigen, DRB1-3 chain	P01912	5.26	1

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HLA class II histocompatibility antigen, DRB1-1 beta chain	P04229	5.74	1
Histone H1.4	P10412	7.00	1
Histidine triad nucleotide-binding protein 1	P49773	5.50	1
Heterogeneous nuclear ribonucleoproteins A2/B1	P22626	5.69	1
Heparin cofactor 2	P05546	4.91	1
Hemoglobin subunit alpha	P69905	5.46	1
Hematopoietic lineage cell-specific protein	P14317	5.39	1
Guanine nucleotide-binding protein subunit alpha-12	Q03113	5.77	1
Grancalcin	P28676	5.43	1
G-protein coupled receptor 126	Q86SQ4	5.62	1
GPI inositol-deacylase	Q75T13	6.71	1
Glycerol kinase 2	Q14410	5.92	1
Glutathione synthetase	P48637	5.56	1
Glutathione S-transferase omega-1	P78417	5.42	1
Glia maturation factor beta	P60983	5.66	1
Filamin-B	O75369	5.25	1
Filamin-A	P21333	4.93	1
Ferritin heavy chain	P02794	5.60	1
F-actin-capping protein subunit alpha-1	P52907	5.83	1
Eukaryotic translation initiation factor 3 subunit A	Q14152	5.79	1
Endoplasmic reticulum resident protein 44	Q9BS26	5.87	1
Endoplasmic reticulum aminopeptidase 1	Q9NZ08	5.54	1
Elongation factor 1-gamma	P26641	6.02	1
Elongation factor 1-beta	P24534	5.68	1

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EGF-containing fibulin-like extracellular matrix protein 1	Q12805	5.60	1
EF-hand calcium-binding domain-containing protein 3	Q8N7B9	6.25	1
Dynein heavy chain 9, axonemal	Q9NYC9	6.53	1
Dynein heavy chain 5, axonemal	Q8TE73	5.29	1
DNA repair protein RAD50	Q92878	5.37	1
Disintegrin and metalloproteinase domain-containing protein 10	O14672	5.69	1
Disco-interacting protein 2 homolog B	Q9P265	5.89	1
Desmocollin-2	Q02487	5.58	1
Dermcidin	P81605	4.99	1
Deoxynucleoside triphosphate triphosphohydrolase SAMHD1	Q9Y3Z3	6.16	1
D-dopachrome decarboxylase-like protein	A6NHG4	5.14	1
Costars family protein ABRACL	Q9P1F3	5.26	1
Copine-6	O95741	5.77	1
Complement decay-accelerating factor	P08174	5.53	1
Complement component C7	P10643	5.52	1
Complement C4-B	A2BHY4	8.74	1
Complement C1r subcomponent-like protein	Q9NZP8	5.68	1
Collagen alpha-1(XIII) chain	Q5TAT6	6.05	1
Coiled-coil domain-containing protein 168	Q8NDH2	6.13	1
Coatomer subunit alpha	P53621	5.64	1
Coactosin-like protein	Q14019	5.51	1
CMP-N-acetylneuraminase-beta-galactosamide-alpha-2,3-sialyltransferase 4	Q11206	5.55	1



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Chitinase-3-like protein 2	Q15782	5.57	1
Chitinase domain-containing protein 1	Q9BWS9	5.84	1
cDNA FLJ55146, highly similar to Complement C4-B	B4DDH0	8.02	1
CD9 antigen	P21926	6.37	1
CD63 antigen	P08962	6.05	1
Carboxypeptidase Q	Q9Y646	5.42	1
Carboxylesterase 3	Q6UWW8	5.62	1
Calpain-1 catalytic subunit	P07384	5.91	1
Calpain small subunit 1	P04632	6.01	1
Calcineurin B homologous protein 1	Q99653	5.71	1
Cadherin-1	P12830	5.91	1
Bone marrow stromal antigen 2	Q10589	5.53	1
Biotinidase	P43251	5.56	1
Bifunctional epoxide hydrolase 2	P34913	6.62	1
Basigin	P35613	5.64	1
Attractin	O75882	5.36	1
AT-rich interactive domain-containing protein 4B	Q4LE39	6.75	1
ATP synthase subunit alpha, mitochondrial	P25705	5.10	1
Aspartate--tRNA ligase, cytoplasmic	P14868	5.40	1
Albumin, isoform CRA_k	C9JKR2	10.19	1
A-kinase anchor protein 3	O75969	5.39	1
Agrin	O00468	7.38	1
Adenosylhomocysteinase	P23526	5.55	1
Actin-related protein 3B	Q9P1U1	5.55	1
Actin-related protein 2/3 complex subunit 5	O15511	6.05	1

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Actin-related protein 2/3 complex subunit 1B	O15143	5.73	1
Actin, cytoplasmic 2	P63261	8.95	1
Actin, alpha cardiac muscle 1	P68032	8.78	1
Acetyl-CoA carboxylase 2	O00763	5.68	1
60S ribosomal protein L8	P62917	5.85	1
60S ribosomal protein L7a	P62424	5.44	1
60S ribosomal protein L5	P46777	5.44	1
60S ribosomal protein L38	P63173	5.50	1
60S ribosomal protein L36	Q9Y3U8	5.90	1
60S ribosomal protein L35	P42766	5.99	1
60S ribosomal protein L32	P62910	5.40	1
60S ribosomal protein L30	P62888	5.65	1
60S ribosomal protein L29	P47914	6.01	1
60S ribosomal protein L28	P46779	5.15	1
60S ribosomal protein L27a	P46776	6.00	1
60S ribosomal protein L26-like 1	Q9UNX3	5.68	1
60S ribosomal protein L18a	Q02543	5.83	1
60S ribosomal protein L17	P18621	5.91	1
60S ribosomal protein L10a	P62906	6.14	1
40S ribosomal protein SA	P08865	5.41	1
40S ribosomal protein S6	P62753	5.90	1
40S ribosomal protein S29	P62273	5.90	1
40S ribosomal protein S28	P62857	5.80	1
40S ribosomal protein S24	P62847	5.30	1
40S ribosomal protein S20	P60866	5.96	1

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40S ribosomal protein S19	P39019	5.76	1
40S ribosomal protein S17	P0CW22	5.44	1
40S ribosomal protein S13	P62277	5.86	1
2-methoxy-6-polyprenyl-1,4-benzoquinol methylase	Q5HYK3	7.40	1
2',3'-cyclic-nucleotide 3'-phosphodiesterase	P09543	5.16	1
14-3-3 protein theta	P27348	7.21	1
14-3-3 protein gamma	P61981	6.95	1

**Supplemental Table 2.** MRM transitions used to quantitate peptides using UPLC/QqQ-MS and LOQ of the peptides<sup>1</sup>.

Protein	Peptide	Precursor ion (m/z)	Product ion (m/z)	Retention time (min)	Collision energy (eV)	LOQ (fmol)
Beta casein	SPTIPFFDPQIPK	496.3	697.4	4.4	9	10
		496.3	582.4	4.4	9	
Beta casein	VLPIPQQVVPYQQR	545.3	660.3	3.6	11	5
		545.3	606.3	3.6	11	
Kappa casein	RPAIAINNPYVPR	494.3	631.4	2.8	12	2
		494.3	534.3	2.8	12	
Kappa casein	TYANPAVVRPHAQIPQ	521.3	827.5	2.3	13	2
		521.3	734.9	2.3	13	
Alpha casein	CAEQFCR	485.7	739.3	1.7	15	12
		485.7	204.1	1.7	15	
Alpha casein	NNVMLQW	904.4	700.3	4.1	25	60
		904.4	572.3	4.1	25	
Osteopontin	GDSVYGLR	483.3	607.4	2.6	12	1
		483.3	508.3	2.6	12	

<sup>1</sup> LOQ, limit of quantitation; MRM, multiple reaction monitoring; UPLC/QqQ-MS, ultraperformance liquid chromatography / triple quadrupole – mass spectrometry.

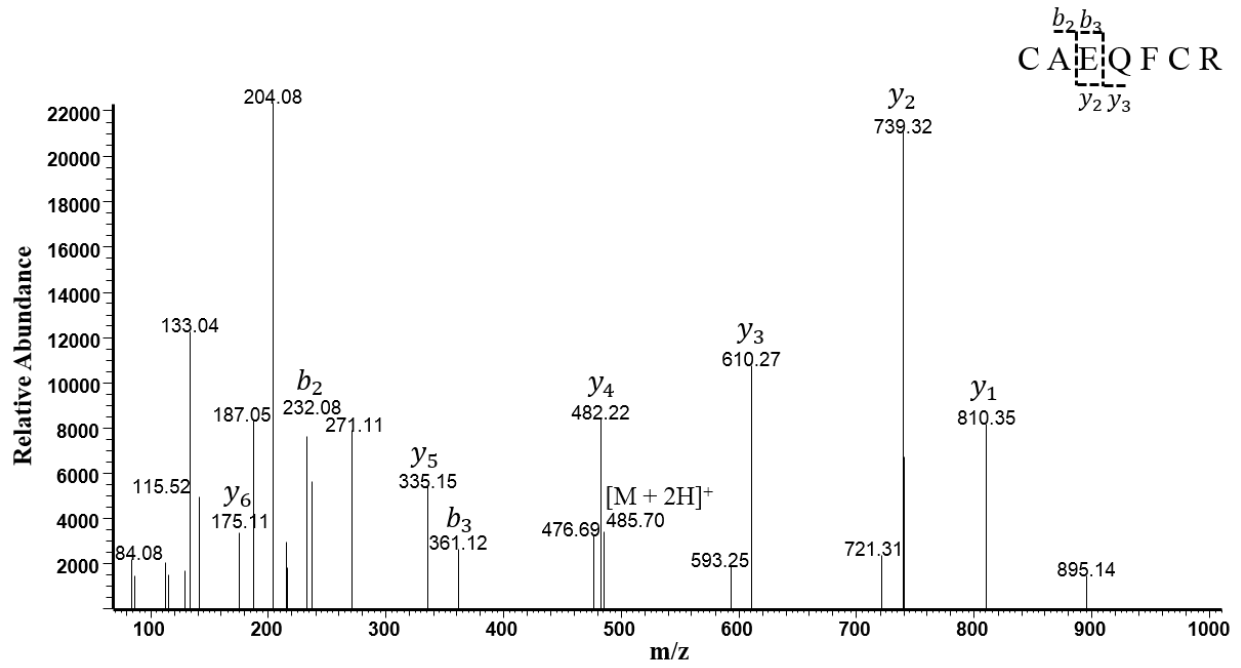
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**Supplemental Table 3.** Milk protein concentrations across lactation. Protein concentrations are mean  $\pm$  SDs,  $n=33$ <sup>1</sup>.

	$\alpha$ -lactalbumin (g/L)	Lactoferrin (g/L)	$\beta$ -casein (g/L)	$\kappa$ -casein (g/L)	$\alpha$ -casein (g/L)	IgA (g/L)	Osteopontin (g/L)	IgM (g/L)	IgG (g/L)	$\alpha$ -antitrypsin (g/L)	Lysozyme (g/L)
<b>Colostrum</b>	4.37 $\pm$ 1.33	2.85 $\pm$ 0.93	2.25 $\pm$ 0.86	1.33 $\pm$ 0.44	1.25 $\pm$ 0.07	0.93 $\pm$ 1.02	0.18 $\pm$ 0.13	0.22 $\pm$ 0.34	0.07 $\pm$ 0.05	0.09 $\pm$ 0.10	0.08 $\pm$ 0.07
<b>Week 2</b>	6.41 $\pm$ 0.72	2.73 $\pm$ 0.63	2.59 $\pm$ 0.78	1.60 $\pm$ 0.39	0.74 $\pm$ 0.14	0.55 $\pm$ 0.23	0.33 $\pm$ 0.21	0.07 $\pm$ 0.04	0.06 $\pm$ 0.03	0.11 $\pm$ 0.04	0.10 $\pm$ 0.11
<b>Week 5</b>	6.45 $\pm$ 0.99	2.28 $\pm$ 0.62	2.58 $\pm$ 0.74	1.60 $\pm$ 0.39	0.68 $\pm$ 0.01	0.46 $\pm$ 0.20	0.30 $\pm$ 0.13	0.04 $\pm$ 0.02	0.06 $\pm$ 0.02	0.08 $\pm$ 0.02	0.11 $\pm$ 0.13
<b>Week 10</b>	6.05 $\pm$ 0.95	1.80 $\pm$ 0.51	2.46 $\pm$ 0.70	1.15 $\pm$ 0.27	0.57 $\pm$ 0.03	0.42 $\pm$ 0.17	0.26 $\pm$ 0.04	0.04 $\pm$ 0.02	0.06 $\pm$ 0.03	0.06 $\pm$ 0.02	0.13 $\pm$ 0.12
<b>Week 13</b>	6.12 $\pm$ 0.89	1.78 $\pm$ 0.53	2.55 $\pm$ 0.64	1.16 $\pm$ 0.32	0.50 $\pm$ 0.11	0.44 $\pm$ 0.20	0.19 $\pm$ 0.03	0.03 $\pm$ 0.02	0.06 $\pm$ 0.03	0.07 $\pm$ 0.02	0.15 $\pm$ 0.12
<b>Week 17</b>	5.73 $\pm$ 0.92	1.61 $\pm$ 0.44	2.46 $\pm$ 0.63	1.07 $\pm$ 0.31	0.54 $\pm$ 0.09	0.39 $\pm$ 0.17	0.20 $\pm$ 0.07	0.03 $\pm$ 0.02	0.06 $\pm$ 0.03	0.06 $\pm$ 0.02	0.15 $\pm$ 0.10
<b>Week 24</b>	5.75 $\pm$ 0.92	1.63 $\pm$ 0.52	2.40 $\pm$ 0.69	1.08 $\pm$ 0.35	0.44 $\pm$ 0.04	0.40 $\pm$ 0.18	0.15 $\pm$ 0.09	0.03 $\pm$ 0.02	0.07 $\pm$ 0.03	0.06 $\pm$ 0.02	0.20 $\pm$ 0.13

<sup>1</sup> IgA, immunoglobulin A; IgG, immunoglobulin G; IgM, immunoglobulin M

**Supplemental Figure 1:** Tandem mass spectrum of the tryptic peptide of  $\alpha$ -casein (CAEQFCR)



**Supplemental Figure 2:** Calibration curves of peptides to used for quantifying proteins. (A)  $\beta$ -casein, (B)  $\kappa$ -casein, (C)  $\alpha$ -casein, and (D) osteopontin. Conc., concentration; Resp., response

