

Supplementary Table 1. Comparison of the estimated genome size and UniprotKb protein database entries for human, mouse and Chinese hamster (UniProt, 2012)

	Estimated Genome Size (Base pairs)	Reviewed & Unreviewed (UniprotKb)	Reviewed (SwissProt)	Unreviewed (TrEMBL)
Human	3.2Gb	249 044	25 991	223 053
Mouse	2.7Gb	84 127	16 967	67 960
Chinese hamster	2.5Gb	24 609	336	24 273

Supplementary Table 2. List of 495 common proteins detected by LTQ Orbitrap Velos MS and the Synapt G2 HDMS

Accession	Description	Molecular Weight (kDa)	# Unique Peptides	Protein Score
Q9D952	Envoplakin	232	35	2862.53
G3HSL4	Elongation factor 2	97	29	2388.32
G3GVD0	Actin cytoplasmic 1	42	25	2301.50
P08238	Heat shock protein HSP 90 beta	83	25	2542.96
Q80Y52	Heat shock protein 90 alpha Cytosolic class A member 1	85	24	1690.22
B2RXL7	Kidins220 protein	186	23	1343.24
E9Q1U1	Coiled coil domain containing protein 171	152	23	1233.38
G3HPT8	Suprabasin	64	23	1171.87
P07900	Heat shock protein HSP 90 alpha	85	23	1560.17
B2RQG2	PHD finger protein 3	226	22	1216.58
G3IAQ0	Alpha enolase	47	22	1653.39
B2RRX1	Actin beta	42	21	1355.68
G3GR64	Inter alpha trypsin inhibitor heavy chain H5	102	21	1121.76
G3H8F4	Dystroglycan	97	21	1274.18
G3HHR3	Vimentin	54	21	1207.76
Q58FF7	Putative heat shock protein HSP 90 beta 3	68	21	1383.35
E9Q607	Actin cytoplasmic 2 N terminally processed	43	20	3355.68
Q3UBQ4	Putative uncharacterized protein	42	20	2988.63
C1KG51	Truncated profilaggrin filaggrin flaky tail mutant form	205	19	1124.14
P63267	Actin gamma enteric smooth muscle	42	19	1586.99
Q5FW97	Enolase 1 alpha non neuron	47	19	1521.92
Q61276	A X actin	42	19	3172.41
Q62240	Lysine specific demethylase 5D	177	19	1275.16
P11021	78 kDa glucose regulated protein	72	18	1333.44
Q544G5	Dystroglycan 1	97	18	1141.08
Q9QZ83	Gamma actin like protein	44	18	2950.76
A0PJ91	Hsp90aa1 protein Fragment	66	17	1515.75
B1AXW7	MCG19655	22	17	1242.45
B2RX09	Nrxn2 protein	163	17	1106.79
E9Q9Z5	Protein Nrxn2	163	17	1106.79
G3H4Z8	Heat shock related 70 kDa protein 2	70	17	2241.76

G3HQY2	Actin aortic smooth muscle	49	17	1877.94
G3IH96	Eukaryotic translation initiation factor 4B	70	17	1160.94
O09053	Werner syndrome ATP dependent helicase homolog	157	17	1115.46
P04075	Fructose biphosphate aldolase A	39	17	1451.72
P20357	Microtubule associated protein 2	199	17	1264.53
Q71LX8	Heat shock protein 84b	83	17	1426.34
A6ZI46	Fructose biphosphate aldolase	45	16	1279.69
B1AXW5	Peroxiredoxin 1 Fragment	19	16	1242.45
B2KGT6	Microtubule associated protein	199	16	1164.53
D3YZY0	Actin gamma enteric smooth muscle Fragment	30	16	1582.02
E9Q944	Protein Kank1 Fragment	126	16	1188.74
G3H5Q0	Actin alpha cardiac muscle 1	42	16	1875.21
G3HQP8	Tubulin beta 7 chain	50	16	1783.76
P14618	Pyruvate kinase isozymes M1 M2	58	16	1423.07
P26041	Moesin	68	16	1199.06
Q3UJ36	Actin gamma 2 smooth muscle enteric isoform CRA a	42	16	1583.61
Q497E4	Actin alpha cardiac	42	16	1583.61
Q5RKM8	Hspg2 protein Fragment	118	16	1193.56
Q5VTE0	Putative elongation factor 1 alpha like 3	50	16	1828.22
Q61852	Smooth muscle gamma actin	43	16	1553.67
B7ZNJ1	Fn1 protein	240	15	1115.66
G3GYP9	Peroxiredoxin 1	22	15	1119.33
P17066	Heat shock 70 kDa protein 6	71	15	11191.01
Q3UDS0	Putative uncharacterized protein Fragment	61	15	930.39
Q61275	Alpha actin AA 27 375 Fragment	39	15	1400.34
Q6P9L9	Eef2 protein Fragment	94	15	248.00
Q9ESQ1	Type IV collagen alpha 6 chain	164	15	161.87
B1AVK5	Procollagen type IV alpha 6	164	14	152.99
B7U582	Heat shock protein 70 2	70	14	644.09
D3YWI1	Fructose biphosphate aldolase Fragment	26	14	768.69
E9Q606	Actin cytoplasmic 1 N terminally processed Fragment	17	14	1647.27
G3H3Q1	Pyruvate kinase	52	14	1225.33
G3HWE4	Nidogen 1	79	14	1212.55
H3BK79	Nucleobindin 1 Fragment	32	14	1148.22
Q01853	Transitional endoplasmic reticulum ATPase	89	14	1116.65

Q3UAI1	Peptidyl prolyl cis trans isomerase	18	14	949.80
Q52KP9	Kidins220 protein Fragment	74	14	1141.18
Q60454	Beta tubulin	50	14	1778.76
Q61272	Alpha actin Aa 40 375 Fragment	38	14	1199.33
Q80YR7	Claspin	147	14	1110.70
B9EHN0	Ubiquitin activating enzyme E1 Chr X	118	13	868.98
D9IFT4	Alpha dystroglycan Fragment	47	13	136.05
F6U106	Heterogeneous nuclear ribonucleoproteins A2 B1	37	13	872.75
H7BXA6	Receptor type tyrosine protein phosphatase S	207	13	164.62
Q61264	Skeletal muscle alpha actin mRNA Fragment	38	13	1184.12
Q71V06	Y box transcription factor Fragment	34	13	719.93
Q8NC51	Plasminogen activator inhibitor 1 RNA binding protein	45	13	170.34
Q91Z81	ERP57 protein	57	13	211.93
B7ZP22	Heterogeneous nuclear ribonucleoprotein A2 B1	36	12	172.75
E9Q1F2	Actin cytoplasmic 1 N terminally processed	33	12	4472.70
G3H6V7	Lipoprotein lipase	51	12	323.90
G3HCL2	Tubulin beta 4 chain	50	12	1371.44
G3HTE5	Lysosomal alpha glucosidase	106	12	243.68
G3HZE7	Heat shock 70 kDa protein 1L	71	12	301.64
G3IG44	Tubulin beta 2C chain	42	12	888.41
P07437	Tubulin beta chain	50	12	789.20
P62937	Peptidyl prolyl cis trans isomerase A	18	12	855.49
Q60951	MYB 1b	36	12	686.20
Q6NS79	Diap1 protein	136	12	129.87
Q810K5	Y box protein 1	36	12	686.20
Q91V38	Heat shock protein 90 beta Grp94 member 1	92	12	100.93
Q99LF4	tRNA splicing ligase RtcB homolog	55	12	110.29
Q9BUF5	Tubulin beta 6 chain	50	12	252.81
A1E2B8	Inducible heat shock protein 70	70	11	1055.55
A2AUF6	Heat shock 70kD protein 5 Glucose regulated protein	72	11	240.20
A6NKZ8	Putative tubulin beta chain like protein ENSP00000290377	42	11	232.67
B1ATY0	Actin gamma cytoplasmic 1	33	11	4423.19
E9PUE7	Active breakpoint cluster region related protein	92	11	67.36
F6XZJ7	Sterile alpha motif domain containing protein 15	70	11	61.52
F8VPN3	Peptidyl prolyl cis trans isomerase Fragment	19	11	916.32

G3GZ08	Tubulin beta 2 chain	47	11	1183.52
G3HPV6	Histone H2A type 1	28	11	1743.23
G3HZE5	Heat shock 70 kDa protein 1A	70	11	587.17
G3I4M1	Transducin like enhancer protein 4	66	11	152.15
G3INA2	Tubulin alpha chain nucleomorph	43	11	1559.93
G3UW54	MCG127770	22	11	1228.98
O88990	Alpha actinin 3	103	11	26.04
P08113	Endoplasmin	92	11	91.36
P67809	Nuclease sensitive element binding protein 1	36	11	236.74
P68363	Tubulin alpha 1B chain	50	11	761.20
Q3KQJ4	Hspa8 protein Fragment	62	11	356.10
Q3UAD6	Heat shock protein 90kDa beta Grp94 member 1	92	11	91.36
Q4FZL1	Eif4a1 protein Fragment	46	11	234.78
Q5F2A7	Eukaryotic translation initiation factor 4A1	46	11	234.78
Q61274	Alpha cardiac actin Fragment	17	11	1413.92
Q71U36	Tubulin alpha 1A chain	50	11	761.20
Q80ZV2	Tubb5 protein Fragment	21	11	496.00
Q811H6	Hsp90ab1 protein Fragment	44	11	2120.19
Q9JL35	High mobility group nucleosome binding domain containing protein 5	45	11	150.61
A2AEP4	ATP binding cassette sub family A ABC1 member 5	186	10	153.32
A2BGG7	Nuclease sensitive element binding protein 1 Fragment	25	10	686.20
B8JKX8	Novel protein similar to zinc finger and SCAN domain containing 4F Zscan4f	58	10	75.82
D3YUV0	Glyceraldehyde 3 phosphate dehydrogenase	36	10	4159.42
F6ZTY5	Protein Kank1	101	10	98.50
F8VQ11	Rho GTPase activating protein 23	139	10	38.87
G3GTH2	Na H exchange regulatory cofactor NHE RF1	39	10	244.42
G3GUU5	Transketolase	68	10	137.89
G3HHV3	Fibrous sheath interacting protein 1	29	10	121.35
G3HZE6	Heat shock 70 kDa protein 1A 1B	70	10	461.63
P00558	Phosphoglycerate kinase 1	45	10	97.16
P34931	Heat shock 70 kDa protein 1 like	70	10	217.78
P99024	Tubulin beta 5 chain	50	10	2298.04
Q3U379	Glypican 1 isoform CRA c	61	10	655.72
Q4F888	Class V beta tubulin	50	10	354.70
Q4KML7	Ezrin	69	10	74.66

Q5NCY0	Lysine specific demethylase 6B	176	10	111.81
Q6GQT3	2010300C02Rik protein	89	10	146.84
Q6NS69	APC membrane recruitment protein 3	83	10	89.86
Q80U69	MKIAA0172 protein Fragment	101	10	98.50
Q8K448	ATP binding cassette sub family A member 5	186	10	153.32
Q9Y536	Peptidyl prolyl cis trans isomerase A like 4A B C	18	10	800.96
A2AKB4	FERM and PDZ domain containing protein 1	169	9	65.22
B2RSN3	MCG1395	50	9	2210.14
B2RXM2	EG627828 protein	37	9	482.19
B2RY18	FERM and PDZ domain containing 1	169	9	65.22
E9Q3L4	Protein AI607873	110	9	71.68
E9Q4M2	Hormone sensitive lipase	117	9	197.17
E9Q4P0	Ubiquitin 60S ribosomal protein L40 Fragment	22	9	5347.73
E9QNP0	Ubiquitin 60S ribosomal protein L40	27	9	5347.73
F6YPY4	Uncharacterized protein	33	9	88.19
F8VQE9	Arf GAP with GTPase ANK repeat and PH domain containing protein 3	98	9	86.87
G3H3B2	Cysteine rich protein 2	23	9	739.15
G3HDT6	Histone H2A	34	9	521.77
G3HZX6	Nucleobindin 1	14	9	617.92
P20941	Phosducin	28	9	119.59
P60174	Triosephosphate isomerase	31	9	110.84
P68371	Tubulin beta 4B chain	50	9	219.98
Q15056	Eukaryotic translation initiation factor 4H	27	9	157.32
Q3ZCM7	Tubulin beta 8 chain	50	9	708.10
Q52L87	Tubulin alpha 1C	50	9	5519.43
Q58FF8	Putative heat shock protein HSP 90 beta 2	44	9	382.12
Q5FW91	MCG129425	50	9	241.01
Q5SQB7	MCG68069	33	9	1064.20
Q5U438	Nucleophosmin 1	33	9	1064.20
Q60456	Beta tubulin Fragment	41	9	354.70
Q61570	Filaggrin Fragment	27	9	88.99
Q9H7P9	Pleckstrin homology domain containing family G member 2	148	9	94.03
Q9JK98	Clusterin	43	9	428.67
A1L347	Heat shock protein 1 like	71	8	1054.20
A2AEP5	ATP binding cassette sub family A member 5 Fragment	135	8	153.32

B0QZL1	Enolase Fragment	24	8	505.99
B1AQJ2	Ubiquitin carboxyl terminal hydrolase 36	120	8	74.56
B9EJA3	Protein tyrosine phosphatase receptor type D	170	8	159.52
E9Q2G2	Clusterin Fragment	24	8	1449.80
E9Q511	Protein Col4a6	106	8	124.80
G3H217	Pentraxin related protein PTX3	42	8	189.19
G3H2T7	Histone H3	30	8	4631.64
G3H3E4	Galectin 3 binding protein	64	8	109.32
G3HC39	Farnesyl pyrophosphate synthetase	43	8	155.95
G3HPM7	Actin cytoplasmic 3	14	8	938.70
G3I3H2	60S acidic ribosomal protein P2	12	8	1248.24
G3I4W7	Cathepsin D	44	8	131.17
G3IJ77	Putative surface exposed virulence protein bigA	23	8	238.60
G3UYU6	Receptor type tyrosine protein phosphatase delta	168	8	159.52
G3UZ34	116 kDa U5 small nuclear ribonucleoprotein component	108	8	128.69
P17879	Heat shock 70 kDa protein 1B	70	8	1055.55
P20933	N 4 beta N acetylglucosaminyl L asparaginase	37	8	158.01
Q3TSJ4	Eukaryotic initiation factor 4A I	25	8	231.25
Q3TU85	Heat shock protein 1B	70	8	1055.55
Q4U1Z0	Protein tyrosine phosphatase Fragment	67	8	178.19
Q5EBP8	Heterogeneous nuclear ribonucleoprotein A1	39	8	144.49
Q6PFB1	Col4a6 protein	107	8	124.80
Q7TMX4	Elongation factor Tu GTP binding domain containing 2	109	8	128.69
Q8VIJ6	Splicing factor proline and glutamine rich	75	8	177.93
Q91VK2	Eef1d protein	31	8	1464.37
Q9BVA1	Tubulin beta 2B chain	50	8	715.30
Q9DAY9	Nucleophosmin	28	8	1064.20
A2AL12	Heterogeneous nuclear ribonucleoprotein A3	34	7	468.06
A2AQA5	Actin alpha cardiac Fragment	5	7	3559.10
B2CSK2	Heat shock protein 1 like protein	71	7	1053.03
E9PZF0	Nucleoside diphosphate kinase	30	7	624.00
E9Q3D6	Heat shock protein HSP 90 beta Fragment	22	7	513.25
E9Q6X5	TBC1 domain family member 14	68	7	69.35
F6WX90	Actin alpha cardiac muscle 1 Fragment	5	7	3559.10
G3GR73	Rab GDP dissociation inhibitor beta	51	7	185.13

G3GRQ1	Tubulin beta 3 chain	85	7	2016.18
G3GUN6	COP9 signalosome complex subunit 7a	30	7	194.96
G3H7I6	Sulfhydryl oxidase 1	70	7	125.14
G3HGP4	Acetyl CoA acetyltransferase cytosolic	41	7	143.11
G3HGV7	UPF0027 protein C22orf28 like	48	7	131.48
G3HJV4	Myosin light polypeptide 6	17	7	140.14
G3HM99	Phosphoglycerate mutase	29	7	1233.57
G3HNY5	Phosphoglycerate kinase	26	7	143.29
G3HZF4	Chloride intracellular channel protein 1	27	7	142.49
G3IHP6	Elongation factor 1 alpha 1	28	7	1295.26
Q05639	Elongation factor 1 alpha 2	50	7	450.62
Q05CS5	Diap1 protein Fragment	84	7	125.11
Q3U367	4 trimethylaminobutyraldehyde dehydrogenase	56	7	123.53
Q5NCI4	Phosphoglycerate mutase 2	29	7	726.40
Q6GQV1	Protein FAM196B	59	7	79.89
Q6P6I7	Hnrpa3 protein	34	7	468.06
Q6PEY2	Tubulin alpha 3E chain	50	7	206.81
Q80TG4	MKIAA1261 protein Fragment	78	7	119.19
Q810T9	Kank1 protein	33	7	106.42
Q8CFJ8	Par 6 partitioning defective 6 homolog gamma C elegans	42	7	114.47
Q8K2L8	Trafficking protein particle complex subunit 12	88	7	78.65
A0JNS9	Histone H2B	14	6	273.28
A2A9M4	Dedicator of cytokinesis 7 Fragment	83	6	83.28
A2AS33	MACRO domain containing 2	46	6	63.48
A5JUZ1	Ubiquitin subunit 1 Fragment	9	6	5318.86
A7VL18	Gamma aminobutyraldehyde dehydrogenase	54	6	123.53
B1ARR7	Enolase 1 alpha non neuron Fragment	13	6	96.63
D3YU49	Protein Gm8994	47	6	222.77
D3YW43	Heat shock cognate 71 kDa protein	17	6	693.05
D3Z5E2	Heat shock cognate 71 kDa protein Fragment	13	6	693.05
E9Q0Z8	Polyubiquitin B	17	6	5318.86
E9Q5F6	Polyubiquitin C Fragment	23	6	5318.86
E9QQ17	Proteoglycan 4	111	6	19.32
F7BHA7	Partitioning defective 6 homolog gamma	40	6	114.47
G3H2R2	Protein GPR89	35	6	105.67

G3H3C6	Tubulin alpha 3 chain	46	6	166.92
G3HB04	Protein disulfide isomerase A6	28	6	206.44
G3HS40	H 2 class II histocompatibility antigen gamma chain	36	6	109.87
G3ILG2	THUMP domain containing protein 1	40	6	103.38
G3IM04	Uncharacterized protein C9orf171	13	6	204.96
G3UZV6	Microtubule associated protein Fragment	42	6	61.06
P04350	Tubulin beta 4A chain	50	6	213.56
P13929	Beta enolase	47	6	169.29
P18669	Phosphoglycerate mutase 1	29	6	442.11
P28661	Septin 4	55	6	76.94
P35052	Glypican 1	62	6	342.71
P62263	40S ribosomal protein S14	16	6	223.26
Q3TG71	CNDP dipeptidase 2 Metallopeptidase M20 family isoform CRA a	37	6	235.83
Q3U0V1	Far upstream element binding protein 2	77	6	87.39
Q3U7Z6	MCG113582	29	6	519.39
Q3UMM1	Tubulin beta 6	50	6	121.41
Q3UYG8	O acetyl ADP ribose deacetylase MACROD2	52	6	74.84
Q58E39	Hnrpa3 protein Fragment	26	6	468.06
Q58FF6	Putative heat shock protein HSP 90 beta 4	58	6	323.65
Q58FG1	Putative heat shock protein HSP 90 alpha A4	48	6	106.84
Q5SQP1	HORMA domain containing protein 2	35	6	67.97
Q5SX22	Polyubiquitin B Fragment	27	6	5318.86
Q5U224	Tbc1d14 protein	68	6	69.35
Q66JP1	MCG23116 isoform CRA a	15	6	5318.86
Q6N WV5	Pgam1 protein Fragment	22	6	519.39
Q6NZC5	Ubiquitin B	34	6	5318.86
Q78XY9	MCG23377 isoform CRA a	34	6	5318.86
Q8CI43	Myosin light chain 6B	23	6	391.48
Q8R169	Ptprd protein	86	6	155.14
Q8R1D1	Zinc finger protein 426	63	6	267.36
Q8VC46	Polyubiquitin C	74	6	5318.86
Q8VH51	RNA binding protein 39	59	6	68.21
Q91XV3	Brain acid soluble protein 1	22	6	605.16
Q91Y62	Ezrin binding protein 50 Fragment	14	6	215.10
Q922B0	Ubc protein	23	6	5318.86

Q99536	Synaptic vesicle membrane protein VAT 1 homolog	42	6	216.50
Q9BQE3	Tubulin alpha 1C chain	50	6	734.25
Q9JHH6	Carboxypeptidase B2	49	6	84.28
Q9NY65	Tubulin alpha 8 chain	50	6	89.55
A2AL13	Heterogeneous nuclear ribonucleoprotein A3 Fragment	18	5	468.06
A2AQE4	COP9 Constitutive photomorphogenic homolog subunit 2 Arabidopsis thaliana	47	5	60.79
A6QRH4	RNA binding motif protein 39 Fragment	34	5	68.21
B2CY77	Laminin receptor Fragment	33	5	173.58
D3YTT7	MCG2650	33	5	173.58
E9PV04	Protein Gm5576	47	5	208.57
E9Q133	T complex protein 1 subunit gamma	57	5	400.58
E9Q729	Cyclic AMP dependent transcription factor ATF 4	42	5	106.63
E9QPG3	Cyclin dependent kinase like 3	66	5	128.99
F6YP65	Heat shock protein 75 kDa mitochondrial	80	5	72.69
F7AA45	RNA binding protein 39 Fragment	34	5	68.21
F7AR97	Interleukin 17 receptor C Fragment	64	5	96.33
G3GXB0	Rho GDP dissociation inhibitor 1	23	5	250.29
G3H215	40S ribosomal protein SA	37	5	728.62
G3H9Z7	Ras GTPase activating protein SynGAP	17	5	145.40
G3HE84	Microtubule associated protein RP EB family member 1	30	5	233.87
G3HH30	Aldose reductase	36	5	248.52
G3HHY0	Protein FAM170A	20	5	166.43
G3HMK9	La related protein 1B	48	5	113.15
G3HMP4	60S ribosomal protein L7a	16	5	436.19
G3I4F6	Germ cell specific gene 1 like protein	17	5	233.81
G3UXJ6	Heterogeneous nuclear ribonucleoprotein Q	50	5	66.45
G3X9C0	Interleukin 17 receptor C isoform CRA c	74	5	96.33
O89052	Alpha tubulin Fragment	11	5	2576.64
P09972	Fructose biphosphate aldolase C	39	5	129.18
P15531	Nucleoside diphosphate kinase A	17	5	731.00
P19426	Negative elongation factor E	43	5	115.20
P53702	Cytochrome c type heme lyase	31	5	80.17
P61202	COP9 signalosome complex subunit 2	52	5	60.79
P62827	GTP binding nuclear protein Ran	24	5	164.54
P68368	Tubulin alpha 4A chain	50	5	103.40

Q14B13	Klra21 protein	31	5	230.03
Q4Z8P5	Killer cell lectin like receptor subfamily A member 21	31	5	230.03
Q52KC1	Eukaryotic translation initiation factor 4A2	46	5	206.17
Q5DTX9	MKIAA1435 protein Fragment	46	5	227.95
Q5SRF8	Sprouty protein with EVH 1 domain 2 related sequence	50	5	108.49
Q61328	Activating transcription factor 4	42	5	106.63
Q6UDR4	EMO2	50	5	30.64
Q7TQN0	Glutaminase Fragment	19	5	120.00
Q810V5	Sfpq protein Fragment	30	5	175.84
Q811C0	4 1G protein Fragment	53	5	203.69
Q8R167	Evpl protein Fragment	32	5	140.77
Q91Z46	Dual specificity protein phosphatase 7	45	5	379.77
Q922Z3	Trap1 protein Fragment	80	5	72.69
Q924S7	Sprouty related EVH1 domain containing protein 2	47	5	108.49
Q9JHV1	Lectin related NK cell receptor LY49U	31	5	228.90
A2A5N2	Tyrosine 3 monooxygenase tryptophan 5 monooxygenase activation protein beta	28	4	86.75
A2AFK7	Eukaryotic initiation factor 4A III Fragment	34	4	120.53
B0LAA8	Nucleoside diphosphate kinase Fragment	16	4	591.98
B0V3P4	AP 4 complex subunit beta 1	80	4	65.79
B7STB7	Annexin	39	4	85.93
D3YUQ9	Elongation factor 1 delta Fragment	22	4	652.06
D3YWH0	Procollagen C endopeptidase enhancer 1 Fragment	13	4	1789.42
D3YYJ7	MCG120048	25	4	53.53
E0CXA1	Proteoglycan 4 Fragment	19	4	88.96
E9Q844	Protein Gm4454	70	4	70.97
F6Q609	T complex protein 1 subunit gamma Fragment	34	4	400.58
F6QBW6	Complement C1r A subcomponent light chain	75	4	208.45
F6U7J7	Uncharacterized protein Fragment	22	4	129.73
G3GX66	Actin cytoplasmic 2	27	4	1107.17
G3H5W5	LIM and SH3 domain protein 1	26	4	637.65
G3HG69	Hepatoma derived growth factor	23	4	159.54
G3HJR3	Spermatid specific linker histone H1 like protein	19	4	130.58
G3HLS2	14 3 3 protein beta alpha	28	4	146.43
G3HPV7	Histone H4	22	4	301.39
G3HS86	Suppressor of cytokine signaling 2	22	4	95.94

G3HX01	Actin related protein 2 3 complex subunit 1A	20	4	128.54
G3I0D8	NADH cytochrome b5 reductase 3	34	4	102.75
G3I6W4	Ral guanine nucleotide dissociation stimulator like 2	36	4	172.29
G3X9T3	MCG1026354 isoform CRA a	94	4	70.97
H3BLB7	Insulin like growth factor binding protein 4	18	4	2142.46
O70569	Ribosomal protein S14	16	4	115.97
P10107	Annexin A1	39	4	85.93
P14148	60S ribosomal protein L7	31	4	670.57
P48741	Putative heat shock 70 kDa protein 7	40	4	159.34
P70315	Wiskott Aldrich syndrome protein homolog	54	4	53.21
Q3KQQ1	Nsfl1c protein Fragment	41	4	91.75
Q3TKX1	V type proton ATPase subunit S1	46	4	339.90
Q3TWN7	ATPase H transporting lysosomal accessory protein 1 isoform CRA b	51	4	339.90
Q3UVN5	NSFL1 P97 cofactor P47	41	4	91.75
Q3V0A6	Uncharacterized protein C2orf78 homolog	94	4	53.64
Q4FJU3	Crip2 protein	23	4	119.62
Q4FK53	Sp100 protein	55	4	58.44
Q4FZE5	Eef1a1 protein Fragment	12	4	529.91
Q53WY0	Wiskott Aldrich syndrome homolog Human	54	4	53.21
Q566I6	Complement component 1 r subcomponent	80	4	208.45
Q571E2	MFLJ00383 protein Fragment	54	4	339.90
Q5M9N8	Ribosomal protein L7	31	4	670.57
Q5NC79	Expressed in non metastatic cells 1 protein	13	4	1051.53
Q61509	Elongation factor 2 Fragment	30	4	84.33
Q7M0E4	Actin 1 Fragments	4	4	1637.03
Q7TMS3	Ap4b1 protein	83	4	65.79
Q7TND3	Adaptor related protein complex AP 4 beta 1	83	4	65.79
Q80T06	Elongation factor 1 delta	31	4	652.06
Q8BL82	Calreticulin 3	31	4	121.82
Q8BTU6	Eukaryotic initiation factor 4A II	41	4	204.62
Q8N0Y7	Probable phosphoglycerate mutase 4	29	4	77.83
Q8R4B4	Down syndrome cell adhesion molecule like protein Fragment	40	4	584.97
Q99497	Protein DJ 1	20	4	439.98
Q99LB4	Capping protein Actin filament gelsolin like	39	4	97.46
Q99LT4	Ttc15 protein Fragment	17	4	68.97

Q9CZ44	NSFL1 cofactor p47	41	4	91.75
B7FAU3	ATPase H transporting lysosomal accessory protein Fragment	24	3	536.44
B7ZC50	Heat shock protein 90kDa alpha Cytosolic class A member 1 Fragment	22	3	420.37
B8JLB5	Novel killer cell lectin like receptor subfamily A protein	30	3	207.30
C7SF18	Ly49C	31	3	207.30
D3Z6N4	MCG18633	31	3	664.50
D6RH40	Nuclear factor of activated T cells 5	8	3	167.28
E9PY60	Protein Vmn1r78	36	3	97.48
E9PZG8	Protein Gm6337	24	3	82.79
E9Q5F0	Protein Klra10	31	3	212.25
E9Q7X9	Ecotropic viral integration site 5 protein Fragment	25	3	199.32
F2Z459	Protein Acat3	26	3	115.86
F6RBI5	Cyclin dependent kinase like 3 Fragment	25	3	128.99
F7AAT1	Uncharacterized protein C2orf62 homolog Fragment	30	3	78.56
F8WGM8	Actin cytoplasmic 2 N terminally processed Fragment	12	3	1018.41
F8WH01	Protein arginine N methyltransferase 1	41	3	69.51
F8WHL5	Complement C1r B subcomponent heavy chain	80	3	207.52
G3H6Y9	Poly RC binding protein 2	32	3	161.58
G3H889	Dual specificity protein phosphatase	35	3	133.74
G3HDS7	Histone H1 3	21	3	188.98
G3HKH1	Lipopolysaccharide responsive and beige like anchor protein	16	3	149.17
G3HN89	Palmitoyl protein thioesterase 1	35	3	133.93
G3HNU9	Uncharacterized protein C9orf85 like	16	3	184.99
G3I4D4	Ribonuclease T2	30	3	203.93
G3I4E8	Fatty acid binding protein adipocyte	15	3	230.17
G3ID81	Beta actin like protein 2	42	3	516.04
G3IFP0	ORM1 like protein 1	17	3	142.19
G3INP1	GTPase ERas	17	3	86.70
G3UY39	Negative elongation factor E Fragment	26	3	112.14
O75531	Barrier to autointegration factor	10	3	740.65
P10412	Histone H1 4	22	3	204.61
P16403	Histone H1 2	21	3	204.61
P22392	Nucleoside diphosphate kinase B	17	3	495.19
P40855	Peroxisomal biogenesis factor 19	33	3	88.92
Q2M3D2	Exocyst complex component 3 like protein 2	46	3	105.63

Q3KNN4	V1rg7 protein	36	3	97.48
Q4FJY3	MCG129299	38	3	68.38
Q5SZA3	Histone 1 H1c	21	3	105.49
Q62313	Trans Golgi network integral membrane protein 1	38	3	68.38
Q642K0	MCG140959 isoform CRA a	17	3	408.57
Q64426	Histone H2A Fragment	15	3	1195.51
Q6IWE2	Beta actin Fragment	9	3	2357.78
Q7TPP0	Dock7 protein Fragment	37	3	81.84
Q8BH25	RIKEN cDNA 9630028B13	18	3	61.14
Q8CFG9	Complement C1r B subcomponent	80	3	207.52
Q8CH63	Protocadherin 11 Fragment	48	3	70.05
Q8NC54	Keratinocyte associated transmembrane protein 2	29	3	210.66
Q8R288	Vomer nasal 1 receptor G7	36	3	97.48
Q99NC5	Beta actin FE 3 Fragment	15	3	346.04
Q9D7J9	Enoyl CoA hydratase domain containing protein 3 mitochondrial	32	3	68.30
Q9DAK4	Fatty acid binding protein 12	15	3	170.35
Q9R071	B4 integrin interactor homolog	27	3	79.86
Q9R1G6	Ly49J protein	31	3	212.25
Q9R2A1	Spermatid specific heat shock protein 70 Fragment	12	3	1053.03
Q9UHV9	Prefoldin subunit 2	17	3	265.22
Q9Y584	Mitochondrial import inner membrane translocase subunit Tim22	20	3	120.54
A2AK24	Coiled coil domain containing 141	13	2	143.90
A2AR43	Enoyl Coenzyme A hydratase domain containing 3	19	2	68.30
B2RT20	Acrosomal protein SP 10	28	2	71.47
D3YWM7	TBC1 domain family member 14 Fragment	15	2	69.35
D3YZU8	E3 ubiquitin protein ligase RBBP6 Fragment	9	2	118.20
D6RI26	General transcription factor II I repeat domain containing protein 2	4	2	225.87
E9PWG3	Lysyl oxidase homolog 1	47	2	108.03
E9Q037	Inhibitor of nuclear factor kappa B kinase subunit beta	23	2	137.18
E9Q4W4	Protein Epb4 1I2	24	2	185.26
E9Q8C8	Protein Zfp426 Fragment	8	2	266.36
E9Q9D9	Protein Zfp426	5	2	266.36
E9QMD2	Ubiquitin conjugating enzyme E2Q like protein 1	33	2	208.73
F6Q404	Thioredoxin Fragment	14	2	269.33
F6Z2C0	Filamin A Fragment	30	2	90.44

F8VQJ2	Proline rich membrane anchor 1	17	2	56.10
G3GTY5	60S ribosomal protein L23a	8	2	341.23
G3GVL0	Ubiquitin	17	2	552.80
G3GWD2	MORF4 family associated protein 1	14	2	160.22
G3GX23	Actin alpha skeletal muscle	21	2	195.10
G3HC24	Protein S100 A1	11	2	142.06
G3HEI9	CD276 antigen	34	2	171.83
G3HF38	Basigin	48	2	179.59
G3HF77	40S ribosomal protein S15	13	2	753.44
G3ID63	Vascular cell adhesion protein 1	24	2	250.81
G3IDW9	Transcription factor MafF	17	2	105.74
G3IP23	Tyrosine protein phosphatase non receptor type substrate 1 Fragment	14	2	284.81
G3UZR1	Tubulin beta 5 chain Fragment	7	2	1097.81
G3XA10	Heterogeneous nuclear ribonucleoprotein U	87	2	150.40
H3BKV6	Active breakpoint cluster region related protein Fragment	18	2	58.47
O35080	Polyubiquitin	117	2	552.80
O60361	Putative nucleoside diphosphate kinase	16	2	490.10
O88360	Natural killer cell receptor Fragment	7	2	203.74
P16104	Histone H2A x	15	2	456.30
P40205	N cym protein	12	2	177.02
P46108	Adapter molecule crk	34	2	287.97
Q149Z9	Histone cluster 1 H1d	22	2	105.49
Q4VBD1	Gapdh protein	15	2	698.30
Q542H7	Fabp4 protein	15	2	220.35
Q5ND09	Septin 4 Fragment	32	2	65.69
Q61462	Cytochrome b 245 light chain	21	2	91.16
Q6IWE3	Glyceraldehyde 3 phosphate dehydrogenase Fragment	10	2	102.98
Q6LCY9	Hormone sensitive lipase Fragment	5	2	191.82
Q6T340	MAGEA3	36	2	76.03
Q7TPV0	General transcription factor II H polypeptide 2	45	2	62.72
Q8K0Z1	Jmjd3 protein Fragment	16	2	104.70
Q8R3L7	Dusp7 protein Fragment	16	2	368.41
Q8R4N7	Ly49i1 Fragment	10	2	203.74
Q8VDE3	Translation elongation factor Fragment	18	2	69.30
Q91W33	ENSMUSG00000060559 protein Fragment	21	2	62.13

Q91YN8	General transcription factor II H polypeptide 2 isoform CRA a	45	2	62.72
Q99KA2	Tuba1b protein Fragment	39	2	62.78
Q99PA3	Basigin Fragment	27	2	179.59
Q9BVW5	TIMELESS interacting protein	35	2	105.06
Q9DAD3	Protein Wdfy1	21	2	226.08
Q9ET43	Claudin 12	27	2	75.06
Q9H4B7	Tubulin beta 1 chain	50	2	177.87
Q9JHN9	MHC class I recognition receptor Ly49I	31	2	212.25
Q9JIB4	General transcription factor IIH subunit 2	45	2	62.72

Supplementary Table 3. Secreted proteins affecting cell growth, apoptosis and product quality identified by shot-gun LC-MS in the supernatant of the CHO-K1 cell-line

Accession	Description	Gene Name	# Unique Peptides	Protein Score	SecretomeP ^a	SignalP ^b	GO Biological Process ^c
Cell Proliferation							
Q99NV6	Brain-derived neurotrophic factor	BDNF	2	3.88	0.833		growth factor, anti-apoptosis
G3HXU8	Fibroblast growth factor 8	FGF8	3	5.41	0.632		growth factor, anti-apoptosis
G3I473	Growth regulated alpha protein	CXCL1	2	4.12	0.819	Signalp(1.0)	growth factor, cytokine/chemokine
G3HPQ5	Hepatocyte growth factor	HGF	2	3.77	0.438	Signalp(1.0)	growth factor, anti-apoptosis
G3HG69	Hepatoma-derived growth factor	HDGF	4	4.15	0.437		growth factor
G3I136	Leukemia inhibitory factor	LIF	2	7.11	0.448		growth factor, cytokine/chemokine
G3IHR6	Macrophage colony-stimulating factor 1	CSF1	4	4.00	0.375	Signalp(1.0)	growth factor, cytokine/chemokine
G3HGL6	Vascular endothelial growth factor C	VEGFC	2	3.46	0.623		growth factor
Growth Inhibition							
G3HJG6	Decorin	DCN	18	178.32	0.59	Signalp(1.0)	growth inhibition, developmental protein
G3IJ34	Growth differentiation factor 8	MSTN	2	5.66	0.373	Signalp(1.0)	growth inhibition
G3I5N6	Insulin-like growth factor-binding protein 4	IGFBP4	2	4.77	0.841	Signalp(1.0)	growth inhibition, developmental protein
G3IBH0	Metalloproteinase inhibitor 1	TIMP1	3	13.25	0.745	Signalp(1.0)	growth inhibition, protease/protease inhibitor
G3H3E6	Metalloproteinase inhibitor 2	TIMP2	3	15.55	0.78		growth inhibition, protease/protease inhibitor
G3IKX2	Pigment epithelium-derived factor	SERPINF1	2	31.16	0.359		growth inhibition, apoptosis
G3H584	SPARC	SPARC	2	3.79	0.929	Signalp(1.0)	growth inhibition, apoptosis
G3HHV4	Thrombospondin-1	THBS1	3	10.98	0.43		growth inhibition, apoptosis, cell adhesion
P04202	Transforming growth factor β -1	TGFB1	2	12.12	0.812	Signalp(1.0)	growth inhibition, apoptosis
Anti-Apoptosis							
G3GZB2	Acid ceramidase	ASAH1	3	10.90	0.792	Signalp(1.0)	anti-apoptosis, lipid metabolism/transport
G3I5R0	Angiopoietin-related protein 4	ANGPTL4	2	8.20	0.673	Signalp(1.0)	anti-apoptosis, developmental protein
Q99NV6	Brain-derived neurotrophic factor	BDNF	2	3.88	0.833		anti-apoptosis, growth factor
G3GTT2	C-C motif chemokine 2	CCL2	2	4.99	0.766	Signalp(1.0)	anti-apoptosis, cytokine/chemokine
G3HNI3	Clusterin	CLU	14	197.08	0.574	Signalp(1.0)	anti-apoptosis, response to oxidative stress
G3HXU8	Fibroblast growth factor 8	FGF8	2	5.41	0.632		anti-apoptosis, growth factor
G3HPQ5	Hepatocyte growth factor	HGF	2	3.77	0.438	Signalp(1.0)	anti-apoptosis, growth factor
Apoptosis							
G3I4W7	Cathepsin D	CTSD	6	32.93	0.301	Signalp(1.0)	apoptosis, protease/protease inhibitor
G3HJG6	Decorin	DCN	18	178.32	0.59	Signalp(1.0)	apoptosis, growth inhibition
P48538	Galectin-1	LGALS1	2	8.73	0.402		apoptosis
G3GZS9	Interleukin-19	IL19	2	8.41	0.767	Signalp(1.0)	apoptosis

G3IKX2	Pigment epithelium-derived factor	SERPINF 1	2	31.16	0.359		apoptosis, growth inhibition
G3H584	SPARC	SPARC	2	3.79	0.929	Signalp(1.0)	apoptosis, growth inhibition
G3HHV4	Thrombospondin-1	THBS1	3	10.98	0.43		apoptosis, growth inhibition, cell adhesion
P04202	Transforming growth factor β -1	TGFB1	2	12.12	0.812	Signalp(1.0)	apoptosis, growth inhibition
G3HCL3	TNF ligand superfamily member 9	TNFSF9	3	21.55	0.917		apoptosis
Product Degradation							
G3GUR0	Calcium-dependent serine proteinase	PRCA	13	123.55	0.76	Signalp(1.0)	protease/protease inhibitor
G3H0L9	Cathepsin B	CTSB	3	19.03	0.799	Signalp(1.0)	protease/protease inhibitor
G3I4W7	Cathepsin D	CTSD	8	32.93	0.301	Signalp(1.0)	protease/protease inhibitor, apoptosis
G3I4K2	Cathepsin F	CTSF	2	4.08	0.71	Signalp(1.0)	protease/protease inhibitor
G3INC5	Cathepsin L1	CTSL1	2	8.30	0.505	Signalp(1.0)	protease/protease inhibitor
Q9EPP7	Cathepsin Z	CTSZ	2	10.85	0.751	Signalp(1.0)	protease/protease inhibitor
G3I1H5	Legumain	LGMN	9	112.29	0.714	Signalp(1.0)	protease/protease inhibitor
G3GUV3	Macrophage metalloelastase	MMP12	2	4.65	0.563	Signalp(1.0)	protease/protease inhibitor
G3HRK9	Matrix metalloproteinase-19	MMP19	10	65.14	0.686	Signalp(1.0)	protease/protease inhibitor
G3H8V1	Matrix metalloproteinase-9	MMP9	7	67.14	0.629	Signalp(1.0)	protease/protease inhibitor
G3IBH0	Metalloproteinase inhibitor 1	TIMP1	3	13.25	0.745	Signalp(1.0)	protease/protease inhibitor, growth inhibition
G3H3E6	Metalloproteinase inhibitor 2	TIMP2	3	15.55	0.78		protease/protease inhibitor, growth inhibition
G3HA54	Plasminogen activator inhibitor 1	SERPINE 1	2	12.78	0.62		protease/protease inhibitor
G3I2U1	Serine protease 27	PRSS27	2	3.37	0.749	Signalp(1.0)	protease/protease inhibitor
G3HY12	Stromelysin-3	MMP11	2	3.83	0.57		protease/protease inhibitor
Protein Glycosylation							
G3H559	Alpha-mannosidase 2	MAN2A1	4	17.62	0.575	Signalp(1.0)	carbohydrate metabolic process
G3IG18	Alpha-mannosidase 2x	MAN2A2	2	4.36	0.575	Signalp(1.0)	carbohydrate metabolic process
G3HLX3	Alpha-N-acetylglucosaminidase	NAGLU	5	19.65	0.656	Signalp(1.0)	carbohydrate metabolic process
G3IDU7	Beta-glucuronidase	GUSB	2	8.67	0.553	Signalp(1.0)	carbohydrate metabolic process
G3GWD3	Epididymis-specific alpha-mannosidase	MAN2B2	3	12.32	0.527		carbohydrate metabolic process
G3HTE5	Lysosomal alpha-glucosidase	GAA	11	113.64	0.757	Signalp(1.0)	carbohydrate metabolic process
G3HCV4	Lysosomal alpha-mannosidase	MAN2B1	6	32.10	0.614	Signalp(1.0)	carbohydrate metabolic process
G3I064	Neutral alpha-glucosidase AB	GANAB	8	39.23	0.649	Signalp(1.0)	carbohydrate metabolic process
G3IIB1	Sialate O-acetyltransferase	SIAE	2	4.52	0.753	Signalp(1.0)	carbohydrate metabolic process
G3HZE3	Sialidase-1	NEU1	2	4.45	0.758		carbohydrate metabolic process
G3HMV7	Tissue alpha-L-fucosidase	FUCA1	5	29.62	0.733	Signalp(1.0)	carbohydrate metabolic process

a. Secretion prediction according to SecretomeP server. Proteins with NN score ≥ 0.5 are predicted as secreted by non-classical secretory pathway. b. Secretion prediction according to SignalP server. Numbers in parenthesis indicate the signal peptide probability. c. Biological functions of secreted proteins were extracted from Gene Ontology and UniprotKb.

Supplementary Table 4. ELISA detection of FGF-8, HGF, VEGF-C and LIF in the bioreactor culture supernatant

	FGF-8 (pg/ml)	HGF (pg/ml)	VEGF-C (pg/ml)	LIF (pg/ml)
Day2	114 ± 16	54 ± 12	20 ± 3	86 ± 9
Day3	171 ± 10	129 ± 18	28 ± 2	282 ± 7
Day4	172 ± 9	179 ± 11	29 ± 2	419 ± 15
Day5	180 ± 10	173 ± 15	29 ± 3	541 ± 20

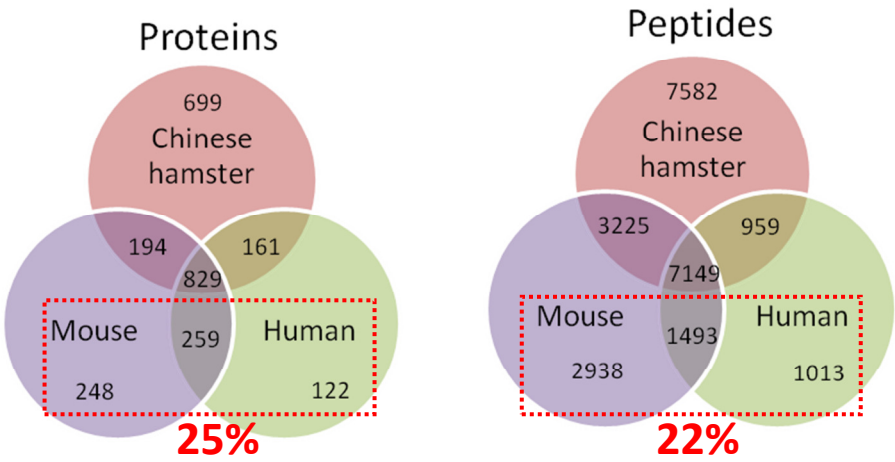
List of Supplementary Figures

Supplementary Figure 1. Total number of proteins and peptides identified from combined MS data matched against the UniprotKb Chinese hamster, human and mouse protein database separately.

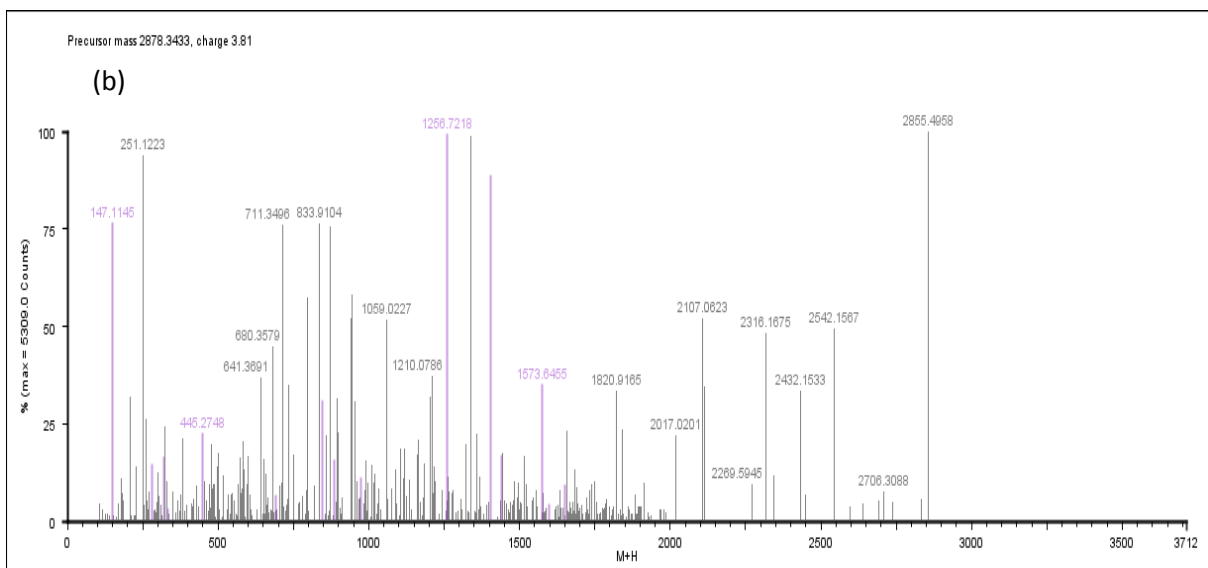
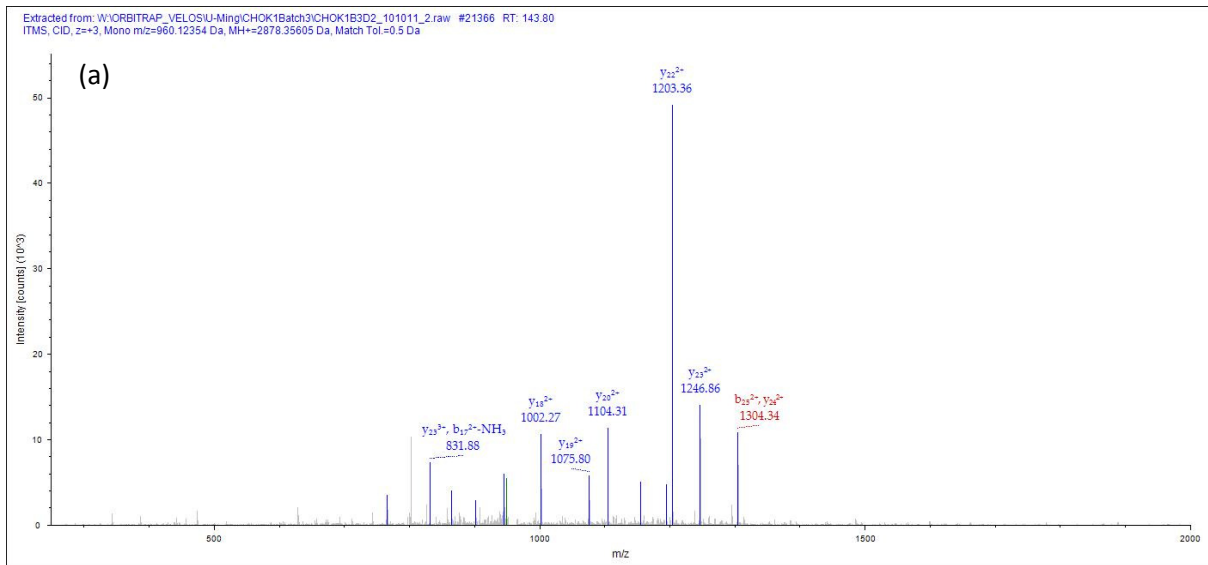
Supplementary Figure 2. DDA and MS^E product ion spectra for the Fibronectin (FN) tryptic peptide TGLDSPTGFDSSDITANSFTVHWVAPR. The spectra were generated during (a) DDA LC-MS/MS and (b) LC-MS^E analysis. Sequest searching of (a) was assigned to Fibronectin, whereas (b) did not return a match to any protein by PLGS search algorithm.

Supplementary Figure 3. Western blot analyses of protein expression and phosphorylation of ERK1/2 in CHO-K1 cells cultured in protein-free media supplemented with 100ng/ml FGF8, 10ng/ml HGF and 100ng/ml VEGF-C for up to 30 min.

Supplementary Figure 1.



Supplementary Figure 2.



Supplementary Figure 3.

