

SUPPLEMENTARY RESULTS

Supplementary Figure Legends

Figure S1. Comparison of Tube-Gel digestion of myoglobin in the presence of (Blue) and absence (Red) of 2% SDS. (A). Base peak chromatography of digestion products of 26 ng (~1.4 pico-moles) myoglobin using the above two digestion protocols. Mass spectra of two representative peptides are shown. **(B).** VEADIAGHGQEVLR (536.26, 2+). **(C).** HGTVVLTALGGILK (689.69, 2+). It is evident that the Tube-Gel digestion protocol produced more detectable peptides with greater intensity in mass spectra.

Figure S2. Comparison of Tube-Gel digestion of Bacteriorhodopsin in the presence (Blue) and absence (Red) of 2% SDS. (A). Base peak chromatography of digestion products of 20 ng (~ 700 femto-moles) of bacteriorhodopsin using the above two protocols. Mass spectra of two representative peptides are shown in panels B and C. **(B).** AIFGEAEAPEPSAGDGAAATS (950.91, 2+). **(C).** VGFGILLR (494.31, 2+). More peptides were detected with great intensity in mass spectra when the sample was prepared by Tube-Gel digestion protocol in the presence of 2% SDS.

Supplementary Table S1. Proteins identified in the membrane fraction of PC-3 cells.

Method A: Tube-Gel digestion followed by one LC-MS/MS analysis.

Method B: SDS-PAGE followed by 20 LC-MS/MS analysis.

| | Protein | Accession # | # of TMDs | Method A: Seq. coverage, % / peptide # | Method B: Seq. coverage, % / peptide # |
|----|---|--------------------|------------------|---|---|
| 1 | 4F2 heavy chain antigen | AAA35489 | 1 | 33% / 15 | 32% / 14 |
| 2 | ACTB protein | AAH12854 | 0 | 43% / 11 | 20% / 6 |
| 3 | Acyl-CoA synthetase long-chain family member 3 | AAH41692 | 1 | 15% / 8 | 11% / 7 |
| 4 | ADP-ribosylation factor-like 10C | NP_080287 | 0 | 17% / 4 | 15% / 4 |
| 5 | alpha-actinin 1 | FAHUAA | 0 | 5% / 5 | 7% / 6 |
| 6 | androgen-regulated short-chain dehydrogenase/reductase 1 | AAF89632 | 0 | 15% / 4 | 30% / 8 |
| 7 | ATPase, Ca ⁺⁺ transporting, cardiac muscle, slow twitch 2, isoform 1 | AAH35588 | 8 | 24% / 20 | 19% / 15 |
| 8 | B-cell receptor associated protein | AAC51639 | 2 | 25% / 4 | 18% / 4 |
| 9 | B-ind1 protein | CAB69070 | 5 | 9% / 4 | 5% / 2 |
| 10 | BiP protein | AAF13605 | 0 | 39% / 20 | 56% / 40 |
| 11 | CANX protein | AAH42843 | 1 | 43% / 20 | 35% / 23 |
| 12 | carnitine palmitoyltransferase 1A | NP_001867 | 2 | 5% / 3 | 4% / 4 |
| 13 | Cation-independent mannose-6-phosphate receptor precursor | P11717 | 1 | 7% / 18 | 5% / 13 |
| 14 | Chromosome 10 open reading frame 69 | AAH31791 | 1 | 9% / 3 | 9% / 2 |
| 15 | cytochrome P450 reductase | AAB21814 | 1 | 19% / 10 | 11% / 7 |
| 16 | cytoskeleton-associated protein 4 | NP_006816 | 1 | 33% / 16 | 59% / 28 |
| 17 | DHCR7 protein | AAH00054 | 6 | 17% / 7 | 12% / 5 |
| 18 | dihydrolipoamide S-acetyltransferase | XXHU | 0 | 6% / 3 | 5% / 3 |
| 19 | DKFZP564J0863 protein | AAH77727 | 2 | 23% / 7 | 20% / 10 |
| 20 | dolichyl-diphosphooligosaccharide-protein glycosyltransferase | BAB93478 | 2 | 22% / 8 | 7% / 3 |
| 21 | EMMPRIN | BAB88938 | 2 | 24% / 7 | 20% / 5 |
| 22 | Ephrin receptor EphA2 | AAH37166 | 1 | 14% / 13 | 6% / 5 |
| 23 | epican | CAA47271 | 1 | 11% / 8 | 5% / 3 |
| 24 | epidermal growth factor receptor precursor | GQHUE | 2 | 14% / 17 | 12% / 14 |
| 25 | GANAB protein | AAH65266 | 0 | 8% / 5 | 13% / 12 |
| 26 | GK001 protein | NP_064583 | 0 | 16% / 8 | 6% / 3 |
| 27 | GLG1 protein | AAH60822 | 1 | 9% / 9 | 3% / 5 |
| 28 | guanine nucleotide binding protein (G protein), beta polypeptide 1 | AAP35969 | 0 | 9% / 2 | 15% / 6 |
| 29 | guanine nucleotide-binding regulatory protein | AAA52556 | 0 | 23% / 6 | 2% / 2 |
| 30 | H4 histone family, member M | NP_003486 | 0 | 29% / 3 | 21% / 2 |

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|----|---|-----------|----|----------|----------|
| 31 | Heat shock 70kDa protein 8, isoform 1 | AAH16660 | 0 | 34% / 15 | 36% / 20 |
| 32 | heat shock protein 90-beta | HHHU84 | 0 | 12% / 10 | 19% / 16 |
| 33 | hexokinase 1 isoform HKI-ta/tb; brain form hexokinase | NP_277033 | 0 | 10% / 11 | 16% / 14 |
| 34 | hnRNP U protein | CAA46472 | 0 | 12% / 9 | 9% / 5 |
| 35 | hypothetical protein | CAB66585 | 0 | 20% / 4 | 11% / 2 |
| 36 | hypothetical protein DKFZp564E1962.1 | T12471 | 3 | 16% / 5 | 22% / 8 |
| 37 | Hypothetical protein MGC5508 | AAH01309 | 5 | 4% / 1 | 16% / 5 |
| 38 | Inner membrane protein, mitochondrial; motor protein;mitofilin, | NP_006830 | 0 | 6% / 4 | 20% / 14 |
| 39 | integrin beta 1 isoform 1A precursor | NP_002202 | 1 | 28% / 18 | 18% / 14 |
| 40 | integrin beta 4 | CAB61345 | 1 | 6% / 11 | 4% / 6 |
| 41 | integrin, alpha 2 (CD49B, alpha 2 subunit of VLA-2 receptor) | AAM34795 | 2 | 16% / 15 | 22% / 20 |
| 42 | KIAA0152 gene product | AAH16297 | 1 | 16% / 8 | 22% / 6 |
| 43 | KIAA0253 | BAA13383 | 1 | 7% / 4 | 12% / 5 |
| 44 | kinectin 1 - human | S32763 | 1 | 34% / 37 | 27% / 30 |
| 45 | Lectin, mannose-binding 2 | AAH17263 | 1 | 28% / 9 | 9% / 3 |
| 46 | low density lipoprotein receptor precursor | NP_000518 | 1 | 5% / 5 | 8% / 7 |
| 47 | LYRIC/3D3 | AAH45642 | 1 | 12% / 5 | 44% / 21 |
| 48 | lysosomal integral membrane protein II | A56525 | 2 | 14% / 4 | 5% / 3 |
| 49 | MBC2 protein | AAH13880 | 0 | 10% / 7 | 5% / 5 |
| 50 | Melanoma cell adhesion molecule | AAH56418 | 1 | 15% / 9 | 23% / 14 |
| 51 | Membrane alanine aminopeptidase, precursor | AAH58928 | 1 | 17% / 13 | 18% / 19 |
| 52 | MEMD protein | CAA71256 | 1 | 26% / 10 | 13% / 9 |
| 53 | MHC class I antigen | AAT27438 | 0 | 29% / 6 | 20% / 3 |
| 54 | MSTP065 | AAQ13585 | 1 | 7% / 1 | 14% / 1 |
| 55 | MSTP086 | AAQ13609 | 6 | 11% / 5 | 4% / 3 |
| 56 | myoferlin | AAF27177 | 1 | 10% / 18 | 11% / 20 |
| 57 | Na+/K+ -ATPase alpha 1 subunit | AAH50359 | 10 | 28% / 24 | 16% / 9 |
| 58 | neutral amino acid transporter | AAD09814 | 9 | 7% / 3 | 14% / 7 |
| 59 | Nicalin | AAH13283 | 2 | 17% / 8 | 15% / 7 |
| 60 | Niemann-Pick disease, type C1 | NP_000262 | 12 | 2% / 3 | 4% / 5 |
| 61 | NSEP1 protein | AAH00064 | 0 | 31% / 5 | 10% / 2 |
| 62 | nucleolin | NP_005372 | 0 | 9% / 6 | 6% / 3 |
| 63 | p120 catenin isoform 2B | AAC39810 | 0 | 7% / 6 | 7% / 6 |
| 64 | p25 | AAL35268 | 1 | 32% / 7 | 25% / 7 |
| 65 | p76 | AAB38973 | 9 | 13% / 7 | 6% / 6 |
| 66 | PCYOX1 protein | AAH07029 | 0 | 3% / 1 | 13% / 5 |
| 67 | peroxisomal membrane protein, 70K | S20313 | 3 | 9% / 6 | 23% / 13 |
| 68 | pituitary tumor-transforming gene protein binding factor | AAF73770 | 0 | 10% / 1 | 6% / 1 |
| 69 | pM5 (3' partial) | AAC15783 | 0 | 4% / 4 | 14% / 15 |
| 70 | porin | AAA60145 | 0 | 29% / 7 | 33% / 10 |
| 71 | Porin 31HM | AAB20246 | 0 | 38% / 8 | 35% / 9 |
| 72 | prohibitin | NP_002625 | 0 | 34% / 7 | 54% / 16 |
| 73 | pro-ubiquitin | AAA36788 | 0 | 36% / 5 | 24% / 4 |
| 74 | putative 40-9-1 protein | CAC51434 | 9 | 4% / 1 | 10% / 3 |

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|-----|---|-----------|---|----------|----------|
| 75 | rab1B | AAP97212 | 0 | 43% / 7 | 66% / 13 |
| 76 | RAB6A, member RAS oncogene family, isoform a | AAH03617 | 0 | 39% / 8 | 32% / 9 |
| 77 | RAB7 protein | AAH08721 | 0 | 44% / 8 | 56% / 11 |
| 78 | reductase,NADH cytochrome b5 related RAS viral (r-ras) oncogene homolog | 1203280A | 0 | 29% / 5 | 24% / 9 |
| 79 | homolog | AAP35451 | 0 | 17% / 2 | 10% / 2 |
| 80 | RER1 protein | AAF67490 | 3 | 22% / 4 | 13% / 3 |
| 81 | Ribophorin I | AAH10839 | 1 | 37% / 18 | 50% / 29 |
| 82 | ribophorin II precursor | B26168 | 4 | 19% / 10 | 10% / 6 |
| 83 | ribosomal protein L7 | CAA41027 | 0 | 18% / 4 | 26% / 9 |
| 84 | ribosomal protein L7a; 60S ribosomal protein L7a | NP_000963 | 0 | 26% / 6 | 32% / 9 |
| 85 | ribosomal protein L9, cytosolic | S65792 | 0 | 18% / 2 | 5% / 1 |
| 86 | ribosomal protein S2; 40S ribosomal protein S2 | NP_002943 | 6 | 18% / 4 | 14% / 5 |
| 87 | scar protein | AAA36597 | 0 | 32% / 8 | 7% / 2 |
| 88 | scribble | AAL38976 | 0 | 4% / 5 | 3% / 5 |
| 89 | signal recognition particle receptor beta subunit | AAP97144 | 1 | 15% / 3 | 38% / 8 |
| 90 | signal sequence receptor, alpha; TRAP alpha | NP_003135 | 1 | 13% / 5 | 9% / 2 |
| 91 | Similar to AFG3 ATPase family gene 3-like 2 (yeast) | AAH24282 | 2 | 5% / 4 | 16% / 15 |
| 92 | similar to vesicle trafficking protein sec22b | XP_227499 | 1 | 46% / 8 | 20% / 5 |
| 93 | SLC25A3 protein | AAH15379 | 2 | 21% / 8 | 16% / 5 |
| 94 | Solute carrier family 25 (mitochondrial carrier; oxoglutarate carrier), member 11 | AAH06519 | 0 | 8% / 2 | 9% / 2 |
| 95 | Solute carrier family 25, member 5 | AAH56160 | 2 | 54% / 16 | 33% / 13 |
| 96 | Steroid dehydrogenase homolog | AAH12043 | 3 | 32% / 6 | 34% / 10 |
| 97 | surface 4 integral membrane protein | CAA75099 | 5 | 9% / 3 | 7% / 2 |
| 98 | syntaxin 7 | AAC51851 | 1 | 25% / 7 | 24% / 5 |
| 99 | transferrin receptor | NP_003225 | 1 | 39% / 26 | 31% / 21 |
| 100 | transforming protein rap2b | TVHUR2 | 0 | 10% / 2 | 12% / 2 |
| 101 | translation elongation factor 1 alpha 1-like 14 | AAK93966 | 0 | 24% / 7 | 7% / 3 |
| 102 | translocating chain-associating membrane protein | AAP36023 | 8 | 12% / 4 | 9% / 3 |
| 103 | Transmembrane trafficking protein | AAH01825 | 2 | 21% / 5 | 13% / 3 |
| 104 | tubulin alpha | CAA25855 | 0 | 16% / 6 | 8% / 3 |
| 105 | tubulin Beta 5 | AAH20946 | 0 | 15% / 6 | 2% / 1 |
| 106 | Tumor-associated calcium signal transducer 1 precursor | P16422 | 1 | 14% / 3 | 10% / 4 |
| 107 | Ubiquinol-cytochrome-c reductase complex core protein I | P31930 | 0 | 6% / 2 | 3% / 1 |
| 108 | unknown | AAQ96872 | 1 | 19% / 4 | 7% / 2 |
| 109 | unnamed protein product | CAA68486 | 0 | 24% / 8 | 7% / 4 |
| 110 | unnamed protein product | BAA91764 | 0 | 18% / 11 | 25% / 17 |
| 111 | VAMP-associated 33 kDa protein | AAF67013 | 1 | 13% / 4 | 14% / 4 |

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|-----|--|-----------|----|----------|---------|
| 112 | WS beta-transducin repeats protein | AAD28083 | 0 | 14% / 6 | 7% / 3 |
| 113 | YPT3 | CAA56176 | 0 | 20% / 5 | 15% / 3 |
| 114 | glycoprotein, synaptic 2 | AAP35843 | 4 | 16% / 5 | 21% / 8 |
| | lysosomal-associated membrane | | | | |
| 115 | glycoprotein-1 | AAF66141 | 1 | 7% / 3 | 18% / 7 |
| 116 | 60S ribosomal protein L15 | AAG44837 | 0 | 39% / 8 | N/A |
| 117 | Annexin A2, isoform 2 | AAH23990 | 0 | 28% / 8 | N/A |
| | Asparagine-linked glycosylation 3 | | | | |
| 118 | homolog | AAH02839 | 7 | 10% / 4 | N/A |
| | ATP synthase, H+ transporting, | | | | |
| 119 | mitochondrial F0 complex, subunit f | NP_004880 | 1 | 25% / 2 | N/A |
| 120 | B-cell receptor-associated protein 31 | AAH14323 | 2 | 26% / 5 | N/A |
| 121 | calumenin | AAB97725 | 0 | 13% / 4 | N/A |
| | catechol-O-methyltransferase isoform | | | | |
| 122 | MB-COMT | NP_000745 | 1 | 16% / 3 | N/A |
| 123 | caveolin 1 | AAR16246 | 1 | 34% / 4 | N/A |
| | Chain A, Crystal Structure Of Protein | | | | |
| 124 | Tyrosine Phosphatase 1b | 1C86A | 0 | 6% / 2 | N/A |
| 125 | Coated vesicle membrane protein | AAH25957 | 2 | 21% / 4 | N/A |
| | Cytochrome b5 outer mitochondrial | | | | |
| 126 | membrane isoform precursor | O43169 | 1 | 30% / 2 | N/A |
| | Dehydrogenase/reductase (SDR family) | | | | |
| 127 | member 7 | AAH00637 | 1 | 38% / 13 | N/A |
| 128 | differentiation-dependent A4 protein | AAA35499 | 4 | 9% / 1 | N/A |
| 129 | hypothetical protein PRO1855 | NP_060979 | 1 | 53% / 16 | N/A |
| 130 | integrin alpha 3 isoform b, precursor | NP_005492 | 2 | 2% / 4 | N/A |
| | interleukin 1 receptor-like 1 ligand | | | | |
| 131 | precursor | NP_006849 | 1 | 3% / 1 | N/A |
| 132 | junction adhesion molecule | AAD43794 | 1 | 12% / 4 | N/A |
| 133 | KIAA0573 protein | BAA25499 | 0 | 10% / 4 | N/A |
| 134 | KIAA0887 protein | BAA74910 | 0 | 8% / 3 | N/A |
| 135 | KIAA1363 protein | BAA92601 | 0 | 11% / 5 | N/A |
| | LAG1 longevity assurance homolog 2, | | | | |
| 136 | isoform 1 | AAH10032 | 5 | 9% / 2 | N/A |
| 137 | laminin receptor homolog | AAB22173 | 0 | 25% / 3 | N/A |
| | lysosome-associated membrane | | | | |
| 138 | protein-3 variant | AAM34259 | 3 | 9% / 2 | N/A |
| 139 | Mal, T-cell differentiation protein 2 | AAH12367 | 4 | 6% / 1 | N/A |
| 140 | MBC3205 | AAQ89308 | 4 | 20% / 3 | N/A |
| | mel transforming oncogene (derived | | | | |
| 141 | from cell line NK14)- RAB8 homolog | AAP35848 | 0 | 17% / 3 | N/A |
| | MHC class I histocompatibility antigen | | | | |
| 142 | HLA-A28 alpha chain | HLHU28 | 0 | 9% / 3 | N/A |
| 143 | microsomal glutathione S-transferase 1 | AAQ55111 | 1 | 27% / 4 | N/A |
| 144 | moesin | NP_002435 | 0 | 16% / 11 | N/A |
| 145 | Monocarboxylate transporter 4 | O15427 | 12 | 4% / 2 | N/A |
| 146 | multidrug resistance protein | AAA50612 | 0 | 16% / 3 | N/A |
| 147 | Nogo-A protein | CAB99248 | 2 | 5% / 5 | N/A |
| 148 | Phosphatidylserine synthase 1 | AAH04390 | 9 | 2% / 1 | N/A |
| 149 | Prion protein | AAB59442 | 0 | 9% / 2 | N/A |

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|-----|---|-----------|----|---------|--------|
| 150 | Progesterone membrane binding protein | AAH16692 | 1 | 22% / 2 | N/A |
| 151 | protein disulfide isomerase-related protein 5 | AAB50217 | 0 | 8% / 3 | N/A |
| 152 | protein tyrosine phosphatase, receptor type, F isoform 1 precursor | NP_002831 | 1 | 5% / 9 | N/A |
| 153 | ras-like protein | AAA36544 | 0 | 30% / 5 | N/A |
| 154 | reticulon 3-A | AAR02474 | 3 | 2% / 3 | N/A |
| 155 | retroviral receptor | S29685 | 14 | 5% / 3 | N/A |
| 156 | ribosomal protein L12; 60S ribosomal protein L12 | NP_000967 | 0 | 14% / 2 | N/A |
| 157 | ribosomal protein L18a; 60S ribosomal protein L18a | NP_000971 | 0 | 17% / 3 | N/A |
| 158 | ribosomal protein L3; 60S ribosomal protein L3; HIV-1 TAR RNA-binding protein B | NP_000958 | 0 | 26% / 9 | N/A |
| 159 | ribosomal protein L4; 60S ribosomal protein L4; homologue of Xenopus ribosomal protein L1 | NP_000959 | 0 | 28% / 9 | N/A |
| 160 | Ribosomal protein L6 | AAH31009 | 0 | 29% / 6 | N/A |
| 161 | ribosomal protein S17; 40S ribosomal protein S17 | NP_001012 | 0 | 16% / 1 | N/A |
| 162 | ribosomal protein S5 | BAA25815 | 0 | 47% / 2 | N/A |
| 163 | S100 calcium binding protein A14 | AAH05019 | 0 | 25% / 2 | N/A |
| 164 | S100 calcium binding protein A16 | AAH19099 | 0 | 15% / 2 | N/A |
| 165 | sarco-/endoplasmic reticulum Ca-ATPase 3 | AAC24525 | 8 | 6% / 7 | N/A |
| 166 | signal sequence receptor gamma subunit | NP_009038 | 4 | 20% / 3 | N/A |
| 167 | signal sequence receptor, delta; translocon-associated protein delta | NP_006271 | 0 | 31% / 4 | N/A |
| 168 | specific 116-kDa vacuolar proton pump subunit | AAA97878 | 8 | 9% / 6 | N/A |
| 169 | TIRAP3b | AAQ97433 | 0 | 17% / 5 | N/A |
| 170 | Transmembrane 9 superfamily protein member 4 | AAH21107 | 9 | 6% / 3 | N/A |
| 171 | ubiquinol-cytochrome-c reductase (EC 1.10.2.2) cytochrome c1 precursor | S00680 | 0 | 16% / 4 | N/A |
| 172 | Unknown (protein for IMAGE:3543815) | AAH20169 | 0 | 25% / 5 | N/A |
| 173 | Unknown (protein for MGC:71373) | AAH63378 | 0 | 24% / 6 | N/A |
| 174 | unnamed protein product | BAB14065 | 0 | 6% / 2 | N/A |
| 175 | unnamed protein product | BAB55370 | 0 | 10% / 3 | N/A |
| 176 | unnamed protein product | BAB71043 | 0 | 8% / 3 | N/A |
| 177 | VDAC3, Voltage-dependent anion channel 3 | AAH56870 | 0 | 22% / 6 | N/A |
| 178 | Vesicle-associated membrane protein-associated protein A, isoform 2 | AAH02992 | 1 | 48% / 9 | N/A |
| 179 | 2-oxoglutarate carrier | CAA46905 | 0 | N/A | 7% / 2 |
| 180 | 30 kDa protein | AAH22807 | 2 | N/A | 6% / 1 |
| 181 | 3-phosphoglycerate dehydrogenase | AAB88664 | 0 | N/A | 9% / 5 |
| 182 | 5'-nucleotidase | CAA39271 | 1 | N/A | 9% / 4 |

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|-----|--|-----------|----|-----|----------|
| 183 | 5T4 oncofetal trophoblast glycoprotein | AAH37161 | 1 | N/A | 9% / 3 |
| 184 | aldehyde dehydrogenase 3A2 | NP_000373 | 1 | N/A | 9% / 4 |
| 185 | Alpha-1,6-mannosyl-glycoprotein beta-1,2-N-acetylglucosaminyltransferase | AAH06390 | 1 | N/A | 4% / 2 |
| 186 | antigen CD9 | AAA51958 | 0 | N/A | 33% / 1 |
| 187 | aralar2 | CAB62206 | 0 | N/A | 21% / 13 |
| 188 | aspartyl(asparaginy)l-beta-hydroxylase | AAB50779 | 1 | N/A | 14% / 11 |
| 189 | ATP synthase, H ⁺ transporting, mitochondrial F1 complex | NP_005165 | 0 | N/A | 8% / 3 |
| 190 | ATPase, Na ⁺ /K ⁺ transporting, beta 1 polypeptide | AAP88789 | 1 | N/A | 17% / 6 |
| 191 | bA217H1.1 (similar to N33 protein) | CAC36035 | 4 | N/A | 9% / 2 |
| 192 | brain-selective and closely mapped on the counter allele of CMAP in cystatin cluster | BAB11885 | 1 | N/A | 4% / 2 |
| 193 | bullous pemphigoid antigen | AAA35606 | 0 | N/A | 2% / 5 |
| 194 | C-1-tetrahydrofolate synthase, cytoplasmic (C1-THF synthase) | P11586 | 0 | N/A | 8% / 7 |
| 195 | Ca ATPase SERCA1 | 2204260A | 7 | N/A | 2% / 3 |
| 196 | Calcium-binding protein p22 (Calcium-binding protein CHP) | Q99653 | 0 | N/A | 25% / 4 |
| 197 | calnexin | I53260 | 1 | N/A | 6% / 3 |
| 198 | calreticulin precursor | NP_004334 | 0 | N/A | 23% / 9 |
| 199 | carboxypeptidase D | AAC51775 | 2 | N/A | 6% / 8 |
| 200 | catenin (cadherin-associated protein), beta 1, 88kDa | NP_001895 | 0 | N/A | 4% / 3 |
| 201 | CD81 antigen | AAH02978 | 4 | N/A | 8% / 1 |
| 202 | CD97 | AAB36682 | 7 | N/A | 9% / 6 |
| 203 | cell surface glycoprotein P1H12 precursor | AAD17799 | 1 | N/A | 6% / 4 |
| 204 | cellular apoptosis susceptibility protein | AAC35008 | 0 | N/A | 3% / 4 |
| 205 | CGI-08 protein | AAD27717 | 6 | N/A | 5% / 2 |
| 206 | CGI-49 protein | AAD34044 | 1 | N/A | 10% / 3 |
| 207 | Chain A, Human Rap1a, Residues 1-167, Double Mutant (E30d,K31e) | 1GUAA | 0 | N/A | 13% / 2 |
| 208 | CKAP4 protein | AAH67357 | 1 | N/A | 57% / 32 |
| 209 | Clathrin heavy chain 1 | AAH54489 | 0 | N/A | 12% / 18 |
| 210 | CLIC1 | AAD18073 | 0 | N/A | 29% / 6 |
| 211 | CTL2 protein | CAB75542 | 10 | N/A | 5% / 3 |
| 212 | CUB domain containing protein 1 | AAK02058 | 1 | N/A | 3% / 3 |
| 213 | cytochrome C oxidase II subunit | CAA39187 | 1 | N/A | 9% / 2 |
| 214 | Cytochrome c oxidase subunit Va, precursor | AAH24240 | 0 | N/A | 6% / 1 |
| 215 | cytochrome-c oxidase (EC 1.9.3.1) chain Vb precursor | OTHU5B | 0 | N/A | 19% / 4 |
| 216 | E-cadherin | CAA79356 | 1 | N/A | 3% / 3 |
| 217 | Elongation factor 2 (EF-2) | P13639 | 0 | N/A | 4% / 5 |
| 218 | endobrevin | AAC08434 | 1 | N/A | 18% / 2 |
| 219 | endothelial and smooth muscle cell-derived neuropilin-like protein | AAL30178 | 1 | N/A | 4% / 3 |

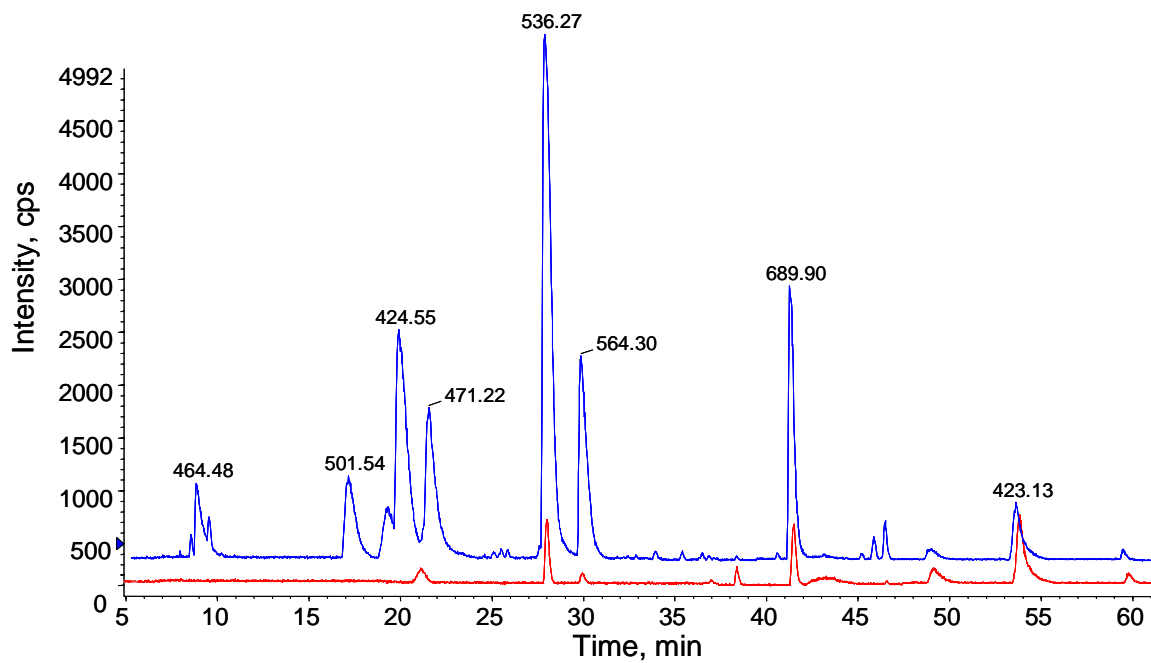
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|-----|---|-----------|----|-----|----------|
| 220 | fatty acid transport protein | AAD11623 | 2 | N/A | 10% / 6 |
| 221 | galactose-specific lectin | AAA88086 | 0 | N/A | 14% / 3 |
| 222 | GIQT3049 | AAQ89385 | 1 | N/A | 12% / 3 |
| 223 | glucosidase I | CAD19636 | 1 | N/A | 14% / 11 |
| 224 | golgi antigen gcp372 | CAD19636 | 1 | N/A | 0% / 3 |
| 225 | Golgi autoantigen, golgin subfamily a, 5 | AAH23021 | 1 | N/A | 12% / 9 |
| 226 | Golgi phosphoprotein 2 | AAH01740 | 1 | N/A | 15% / 7 |
| 227 | golgi phosphoprotein 4; type II Golgi membrane protein | NP_055313 | 1 | N/A | 3% / 2 |
| 228 | GOSR1 protein | AAH12620 | 2 | N/A | 12% / 2 |
| 229 | GTP-binding protein Rab2 | B34323 | 0 | N/A | 12% / 2 |
| 230 | heat shock 70kDa protein 1A | NP_005336 | 0 | N/A | 18% / 12 |
| 231 | heat shock protein 90-alpha | HHHU86 | 0 | N/A | 14% / 11 |
| 232 | heat shock protein gp96 precursor | AAK74072 | 0 | N/A | 17% / 12 |
| 233 | HNRPU protein | AAH15782 | 0 | N/A | 12% / 9 |
| 234 | HSPC041 protein | AAD39919 | 0 | N/A | 10% / 1 |
| 235 | hypothetical protein | CAD39032 | 1 | N/A | 5% / 2 |
| 236 | hypothetical protein | CAD39094 | 0 | N/A | 18% / 8 |
| 237 | integral nuclear envelope inner membrane protein | AAA59495 | 8 | N/A | 10% / 5 |
| 238 | integrin alpha 6 | AAD48469 | 1 | N/A | 12% / 11 |
| 239 | intercellular adhesion molecule 1 (CD54) | AAP35500 | 1 | N/A | 18% / 9 |
| 240 | ITGB2 protein | AAH05861 | 1 | N/A | 13% / 8 |
| 241 | KIAA0118 | BAA07682 | 0 | N/A | 18% / 2 |
| 242 | KIAA0315 | BAA21571 | 0 | N/A | 5% / 12 |
| 243 | KIAA0747 protein | AAH04998 | 2 | N/A | 28% / 26 |
| 244 | KIAA0761 protein | BAA34481 | 3 | N/A | 7% / 4 |
| 245 | KIAA0792 protein | BAA34512 | 11 | N/A | 3% / 3 |
| 246 | KIAA1228 protein | EAL23931 | 1 | N/A | 8% / 6 |
| 247 | KIAA1708 | BAB21799 | 0 | N/A | 2% / 6 |
| 248 | KIAA1715 protein | BAB21806 | 2 | N/A | 10% / 4 |
| 249 | lanosterol 14-alpha demethylase | AAC50951 | 1 | N/A | 20% / 10 |
| 250 | Leucine zipper-EF-hand containing transmembrane protein 1 | AAH21208 | 1 | N/A | 6% / 5 |
| 251 | leucine-rich PPR motif-containing protein | AAP41922 | 0 | N/A | 3% / 6 |
| 252 | Leukocyte surface antigen CD47 precursor | Q08722 | 6 | N/A | 5% / 2 |
| 253 | low-Mr GTP-binding protein Rab32 | AAB02833 | 0 | N/A | 10% / 2 |
| 254 | lysosomal membrane glycoprotein-2 | AAA60383 | 1 | N/A | 4% / 2 |
| 255 | Mesenchymal stem cell protein DSCD75 | AAH01311 | 1 | N/A | 9% / 2 |
| 256 | Microsomal signal peptidase 25 kDa subunit | Q15005 | 2 | N/A | 19% / 5 |
| 257 | mitochondrial carrier homolog 2; 2310034D24Rik | NP_055157 | 0 | N/A | 7% / 3 |
| 258 | My009 protein | AAG43122 | 2 | N/A | 13% / 6 |
| 259 | MYO1C protein | AAH44891 | 0 | N/A | 16% / 15 |
| 260 | myosin IB; myosin-I alpha | NP_036355 | 0 | N/A | 21% / 20 |

| | | | | | |
|-----|--|-----------|----|-----|----------|
| 261 | myristoylated alanine-rich C-kinase substrate | AAA59555 | 0 | N/A | 24% / 4 |
| 262 | Neural cell adhesion molecule L1 neuroblastoma RAS viral (v-ras) | CAA42508 | 1 | N/A | 1% / 1 |
| 263 | oncogene homolog | NP_002515 | 0 | N/A | 12% / 2 |
| 264 | neuropathy target esterase | AAH38229 | 1 | N/A | 4% / 5 |
| 265 | neuropilin | AAC51759 | 1 | N/A | 9% / 7 |
| 266 | neutrophil lipocalin | AAD14168 | 0 | N/A | 30% / 5 |
| 267 | nucleoporin 210; nuclear pore membrane glycoprotein 210 | NP_079199 | 2 | N/A | 4% / 7 |
| 268 | Oligosaccharyl transferase STT3 subunit homolog (B5) (Integral membrane protein 1) | P46977 | 13 | N/A | 6% / 5 |
| 269 | oxytocinase splice variant 2 | AAB66673 | 1 | N/A | 9% / 10 |
| 270 | p53 inducible protein | NP_055191 | 0 | N/A | 2% / 3 |
| 271 | PAI-RBP1 protein | AAH08045 | 0 | N/A | 9% / 4 |
| 272 | phosphatidylinositol glycan class S plasma membrane calcium ATPase isoform 1 | AAD09925 | 7 | N/A | 10% / 8 |
| 274 | Podocalyxin-like protein 1 precursor | O00592 | 1 | N/A | 3% / 2 |
| 275 | polypeptide N-acetylgalactosaminyltransferase 2 | NP_004472 | 1 | N/A | 21% / 10 |
| 276 | polypeptide N-acetylgalactosaminyltransferase 3 | NP_004473 | 1 | N/A | 12% / 6 |
| 277 | progesterone receptor membrane component 1 | NP_006658 | 1 | N/A | 16% / 5 |
| 278 | Prolyl 4-hydroxylase, beta subunit | AAH71892 | 0 | N/A | 18% / 12 |
| 279 | protein disulfide-isomerase (EC 5.3.4.1) ER60 precursor | S55507 | 0 | N/A | 29% / 17 |
| 280 | protein ERGIC-53 | 1919261A | 1 | N/A | 6% / 5 |
| 281 | Protein kinase C substrate, 80 kDa protein, heavy chain (PKCSH) (80K-H protein) | P14314 | 0 | N/A | 7% / 4 |
| 282 | RAB18, member RAS oncogene family | AAP88842 | 0 | N/A | 16% / 3 |
| 283 | RAB34 protein | AAH16841 | 0 | N/A | 8% / 2 |
| 284 | RAB5A, member RAS oncogene family | AAH18288 | 0 | N/A | 26% / 4 |
| 285 | Ras-GTPase-activating protein SH3-domain-binding protein | AAH06997 | 0 | N/A | 9% / 3 |
| 286 | Receptor protein-tyrosine kinase erbB-4 precursor (p180erbB4) | Q15303 | 2 | N/A | 2% / 3 |
| 287 | repressor of estrogen receptor activity | AAP86652 | 0 | N/A | 32% / 9 |
| 288 | retinoic acid induced 3; retinoic acid responsive gene | NP_003970 | 7 | N/A | 3% / 1 |
| 289 | ribosomal protein homologous to yeast S24 | CAA44568 | 0 | N/A | 14% / 2 |
| 290 | ribosomal protein L10a | BAC16802 | 0 | N/A | 15% / 5 |
| 291 | ribosomal protein L18; 60S ribosomal protein L18 | NP_000970 | 0 | N/A | 28% / 5 |
| 292 | ribosomal protein L24; 60S ribosomal protein L24 | NP_000977 | 0 | N/A | 26% / 5 |

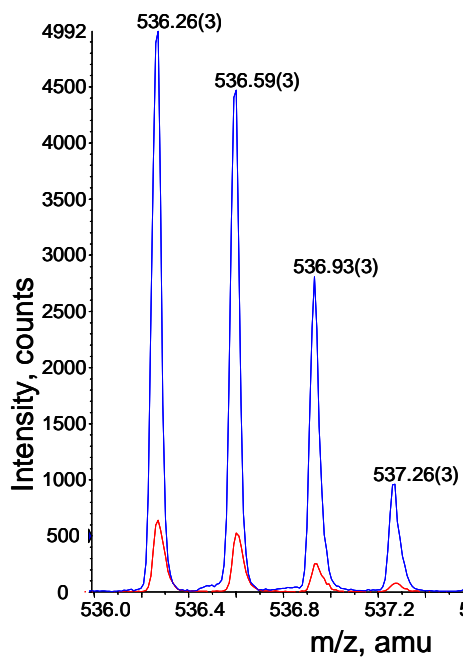
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|-----|--|-----------|----|-----|----------|
| 293 | ribosomal protein L35a; 60S ribosomal protein L35a | NP_000987 | 0 | N/A | 16% / 3 |
| 294 | ribosomal protein L8; 60S ribosomal protein L8 | NP_150644 | 0 | N/A | 15% / 4 |
| 295 | ribosomal protein S26 | CAA49345 | 0 | N/A | 20% / 2 |
| 296 | ribosomal protein S3 | AAA18095 | 0 | N/A | 37% / 3 |
| 297 | Ribosomal protein S6 | AAH13296 | 0 | N/A | 32% / 12 |
| 298 | ribosomal protein S8; 40S ribosomal protein S8 | NP_001003 | 0 | N/A | 13% / 2 |
| 299 | ribosomal protein S9, cytosolic | S55917 | 0 | N/A | 14% / 3 |
| 300 | RRBP1 protein | AAH00099 | 0 | N/A | 5% / 3 |
| 301 | ryanodine receptor 1 (skeletal) | NP_000531 | 6 | N/A | 0% / 6 |
| 302 | sarcolectin | CAB41416 | 0 | N/A | 16% / 8 |
| 303 | scavenger receptor class B type III | AAQ08185 | 1 | N/A | 8% / 4 |
| 304 | SDIG243 | AAQ89177 | 5 | N/A | 9% / 3 |
| 305 | secretory carrier membrane protein | AAB62724 | 4 | N/A | 12% / 3 |
| 306 | Sel-1 homolog precursor (Suppressor of lin-12-like protein) (Sel-1L) | Q9UBV2 | 1 | N/A | 10% / 6 |
| 307 | serine palmitoyltransferase subunit 1 isoform a | NP_006406 | 2 | N/A | 5% / 2 |
| 308 | serine protease TADG15 [Homo sapiens] | AAG15395 | 1 | N/A | 3% / 2 |
| 309 | SLC38A1 protein | AAH10620 | 11 | N/A | 5% / 3 |
| 310 | small GTP binding protein Rab7 | AAA86640 | 0 | N/A | 21% / 4 |
| 311 | Solute carrier family 2, facilitated glucose transporter, member 1 | P11166 | 12 | N/A | 6% / 5 |
| 312 | sphingosine-1-phosphate lyase | CAA09590 | 0 | N/A | 24% / 14 |
| 313 | synaptophysin homolog | S20316 | 1 | N/A | 7% / 1 |
| 314 | syntaxin 10 | JC5922 | 1 | N/A | 10% / 2 |
| 315 | syntaxin 8 | AAD20831 | 1 | N/A | 7% / 2 |
| 316 | TGN46 | CAA64002 | 1 | N/A | 3% / 3 |
| 317 | thioredoxin peroxidase | NP_006397 | 0 | N/A | 4% / 1 |
| 318 | Thrombospondin 1 precursor | P07996 | 0 | N/A | 4% / 5 |
| 319 | transcriptional coactivator ALY | AAD09608 | 0 | N/A | 4% / 1 |
| 320 | transmembrane glycoprotein | CAB61878 | 1 | N/A | 8% / 5 |
| 321 | transmembrane protein 33 | NP_060596 | 1 | N/A | 18% / 5 |
| 322 | transmembrane protein TM9SF3 | AAF98159 | 9 | N/A | 3% / 3 |
| 323 | tumor-associated calcium signal transducer 2 | AAP35919 | 1 | N/A | 8% / 2 |
| 324 | unknown | AAC25388 | 2 | N/A | 19% / 5 |
| 325 | unnamed protein product | BAC04810 | 1 | N/A | 5% / 6 |
| 326 | unnamed protein product | BAC11702 | 0 | N/A | 16% / 14 |
| 327 | unnamed protein product | CAA25086 | 0 | N/A | 9% / 2 |
| 328 | vacuolar protein sorting | CAB40417 | 0 | N/A | 7% / 5 |
| 329 | Vacuolar proton translocating ATPase 116 kDa subunit a isoform 2 | Q9Y487 | 6 | N/A | 11% / 10 |
| 330 | vacuolar sorting protein 35 | AAF89953 | 0 | N/A | 5% / 4 |
| 331 | Villin 2 | AAH68458 | 0 | N/A | 18% / 13 |

Supplementary Figure S1

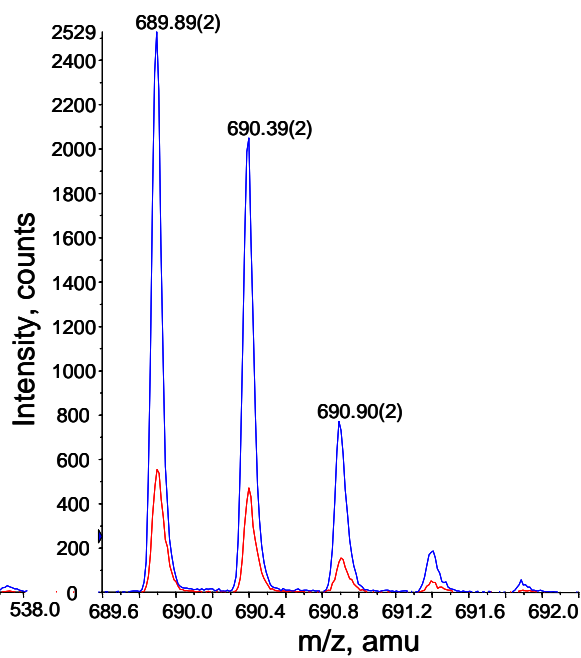
(A)



(B)

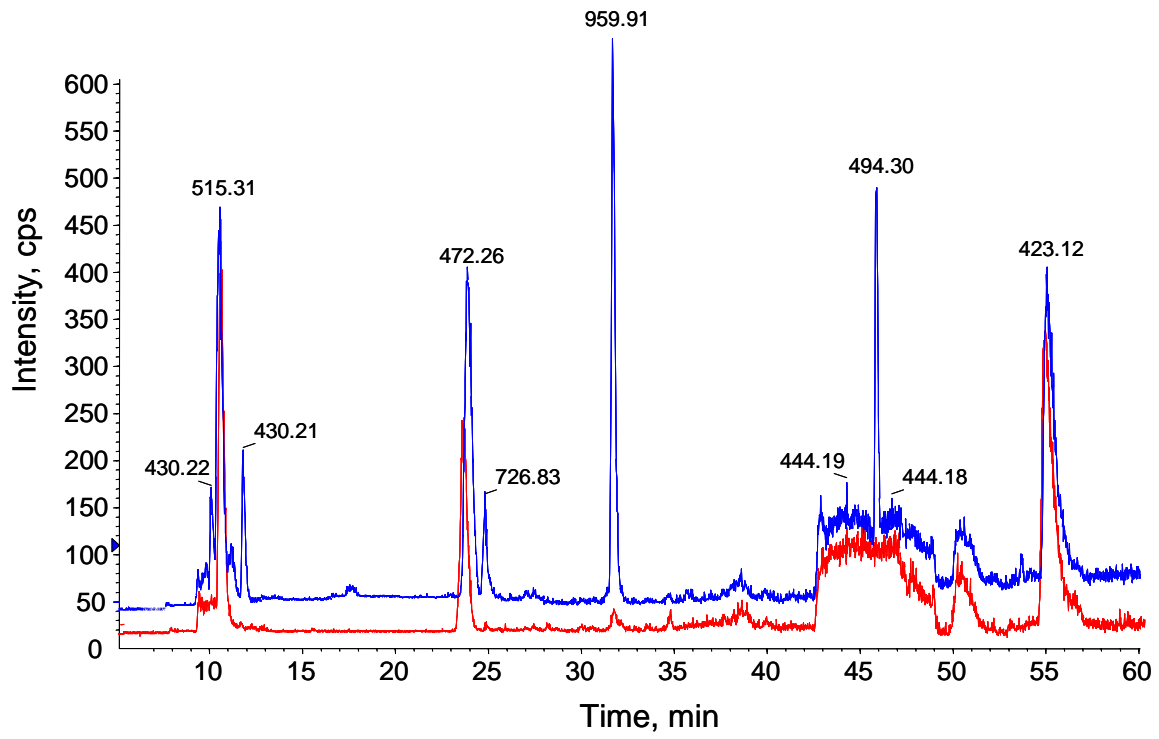


(C)

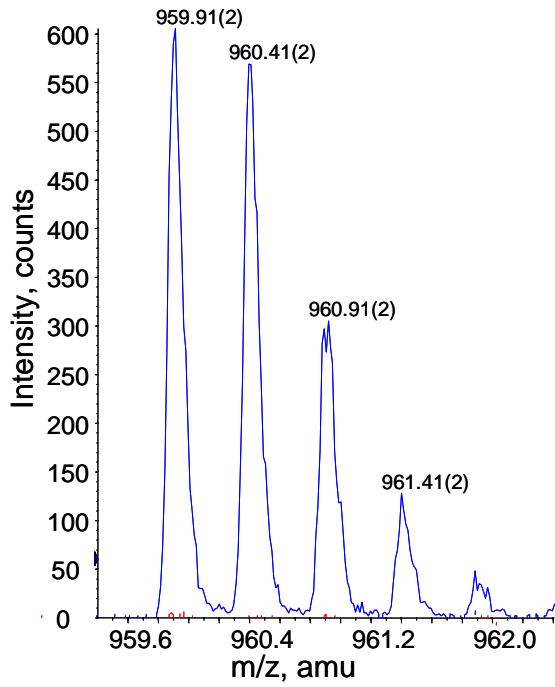


Supplementary Figure S2

(A)



(B)



(C)

