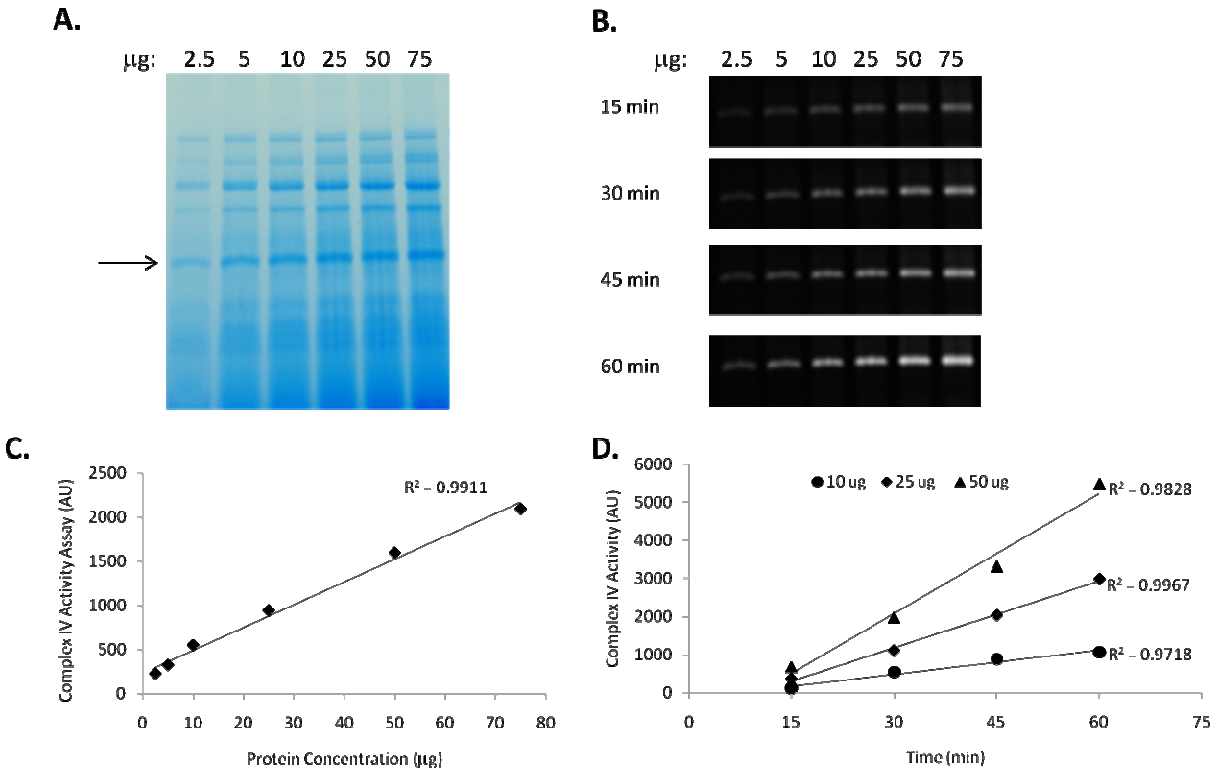
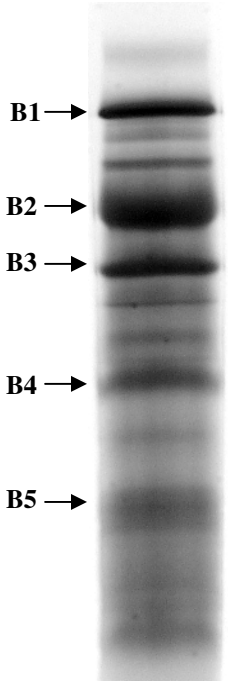
Supplemental Information

Supplemental Figure 1: Linearity of Complex IV In-Gel Activity Assay. Panel A shows a BN-PAGE gel of porcine heart mitochondria with increasing protein concentrations from 2.5 to 75 mg; the arrow marks the location of Complex IV. Panel B shows the development of Complex IV activity (for this gel) at 15, 30, 45 and 60 min. The corresponding plot of Complex IV activity versus protein concentration at 30 min is provided in Panel C. Complex IV activity for 10, 25 and 50 mg of protein at 15, 30, 45, and 60 min is shown in Panel D. The slopes of the 10, 25, and 50 mg lines are 21.13, 58.54, and 104.74, respectively.



Supplemental Figure 2: 1D BN PAGE of porcine heart mitochondria**.** Mass spectrometry protein identifications for pig blue native gel bands (B1-B5) are provided in supplemental Table 1.



Supplemental Table 1 (Corresponds to Supplemental Figure 1).

Supplemental Table 1: Mass spectrometry identifications for pig 1D BN-PAGE.

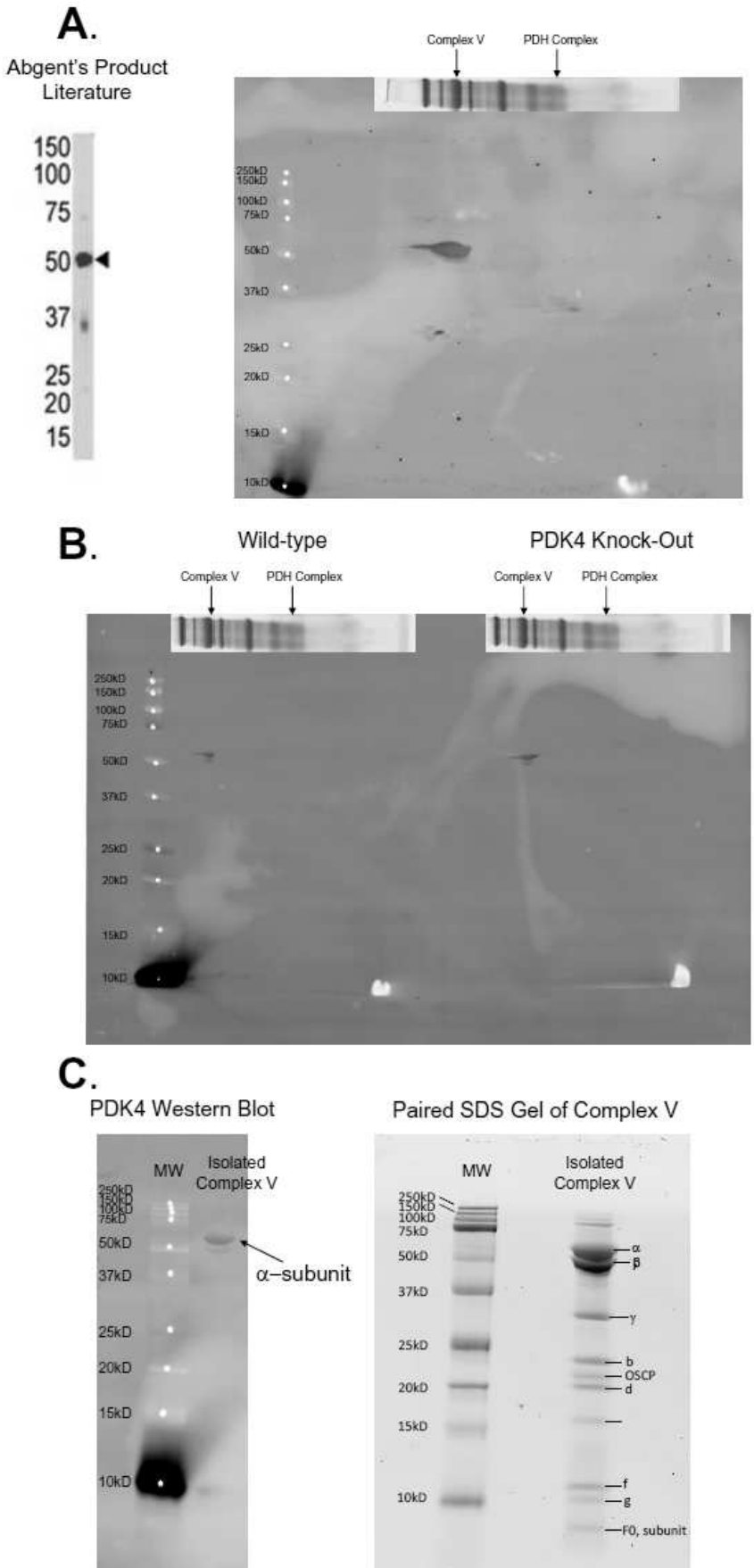
	Accession Number
Complex I (B1)	
NADH dehydrogenase [ubiquinone] 1 alpha subcomplex subunit 2	Q02370
NADH dehydrogenase [ubiquinone] 1 alpha subcomplex subunit 3	Q02371
NADH dehydrogenase [ubiquinone] 1 alpha subcomplex subunit 4	O00483
NADH dehydrogenase [ubiquinone] 1 alpha subcomplex subunit 5	P23935
NADH dehydrogenase [ubiquinone] 1 alpha subcomplex subunit 6	Q02366
NADH dehydrogenase [ubiquinone] 1 alpha subcomplex subunit 7	Q05752
NADH dehydrogenase [ubiquinone] 1 alpha subcomplex subunit 8	P42029
NADH dehydrogenase [ubiquinone] 1 alpha subcomplex subunit 9	P34943
NADH dehydrogenase [ubiquinone] 1 alpha subcomplex subunit 10	P34942
NADH dehydrogenase [ubiquinone] 1 alpha subcomplex subunit 11	Q8HXG6
NADH dehydrogenase [ubiquinone] 1 alpha subcomplex subunit 12	O97725
NADH dehydrogenase [ubiquinone] 1 alpha subcomplex subunit 13	Q9P0J0
NADH dehydrogenase [ubiquinone] 1 beta subcomplex subunit 2	Q02374

NADH dehydrogenase [ubiquinone] 1 beta subcomplex subunit 3	Q02365
NADH dehydrogenase [ubiquinone] 1 beta subcomplex subunit 4	O95168
NADH dehydrogenase [ubiquinone] 1 beta subcomplex subunit 5	Q02380
NADH dehydrogenase [ubiquinone] 1 beta subcomplex subunit 6	Q29259
NADH dehydrogenase [ubiquinone] 1 beta subcomplex subunit 7	Q02368
NADH dehydrogenase [ubiquinone] 1 beta subcomplex subunit 8	O95169
NADH dehydrogenase [ubiquinone] 1 beta subcomplex subunit 9	Q02369
NADH dehydrogenase [ubiquinone] 1 beta subcomplex subunit 10	Q02373
NADH dehydrogenase [ubiquinone] 1 subunit C2	O95298
NADH-ubiquinone oxidoreductase 75 kDa subunit	P15690
NADH dehydrogenase [ubiquinone] iron-sulfur protein 2	P17694
NADH dehydrogenase [ubiquinone] iron-sulfur protein 3	P23709
NADH dehydrogenase [ubiquinone] iron-sulfur protein 3	O75489
NADH dehydrogenase [ubiquinone] iron-sulfur protein 4	Q02375
NADH dehydrogenase [ubiquinone] iron-sulfur protein 5	Q02379
NADH dehydrogenase [ubiquinone] iron-sulfur protein 6	P23934
NADH dehydrogenase [ubiquinone] iron-sulfur protein 7	O75251
NADH dehydrogenase [ubiquinone] iron-sulfur protein 8	P42028
NADH dehydrogenase [ubiquinone] flavoprotein 1	P25708

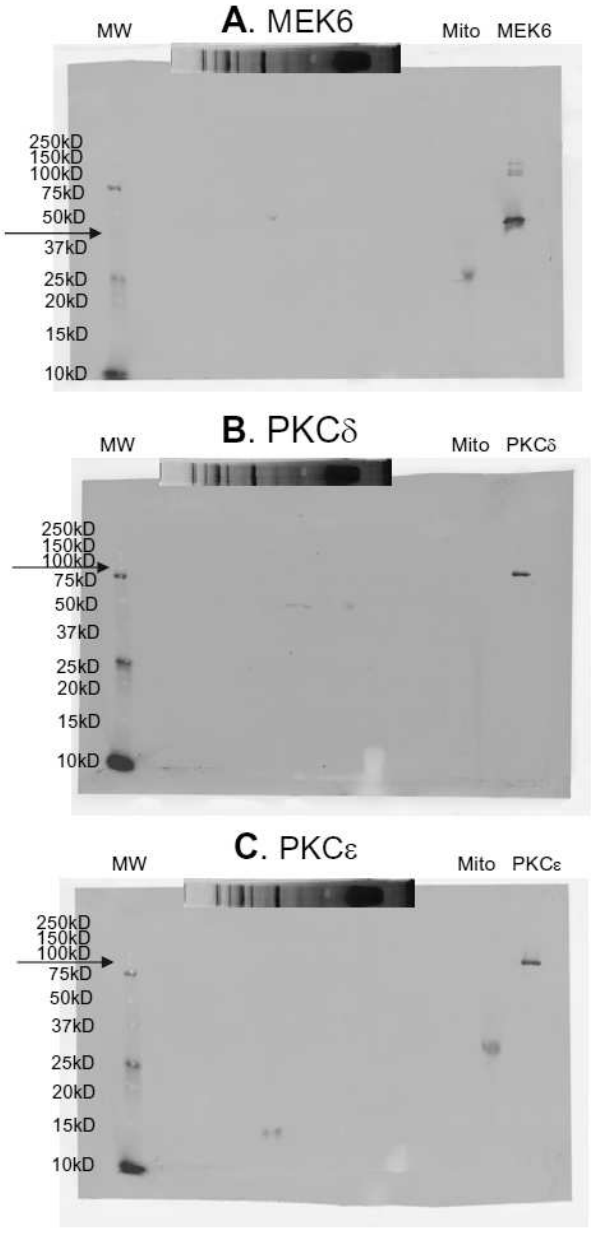
NADH dehydrogenase [ubiquinone] flavoprotein 2	P04394
NADH dehydrogenase [ubiquinone] flavoprotein 3	P56181
NADH-ubiquinone oxidoreductase chain 1	O79874
NADH-ubiquinone oxidoreductase chain 2	O79875
NADH-ubiquinone oxidoreductase chain 3	O79880
NADH-ubiquinone oxidoreductase chain 4	O79881
NADH-ubiquinone oxidoreductase chain 5	Q9TDR1
Complex V (B2)	
ATP synthase subunit alpha	P19483
ATP synthase subunit beta	P00829
ATP synthase subunit delta	P05630
ATP synthase subunit gamma	P05631
ATP synthase subunit b	P13619
ATP synthase lipid-binding protein	P32876
ATP synthase subunit epsilon	P05632
ATP synthase subunit d	P13620
ATP synthase subunit g	Q28852
ATP synthase subunit f	Q95339
ATP synthase subunit e	Q9MYT8
ATP synthase subunit a	Q35915
ATP synthase protein 8	Q35914
ATP synthase subunit O	Q2EN81
ATP synthase-coupling factor 6	P13618
Complex III (B3)	
Cytochrome b-c1 complex subunit 1	P31800
Cytochrome b-c1 complex subunit 2	P23004
Cytochrome b-c1 complex subunit 3	P24964
Cytochrome b-c1 complex subunit 7	P00129
Cytochrome b-c1 complex subunit 8	P13271

Cytochrome b-c1 complex subunit 9	P00130
Cytochrome b-c1 complex subunit 10	P07552
Cytochrome b-c1 complex subunit Rieske	P13272
Cytochrome c1, heme protein	P00125
Complex IV (B4)	
Cytochrome c oxidase subunit 1	O79876
Cytochrome c oxidase subunit 2	P50667
Cytochrome c oxidase subunit 3	Q35916
Cytochrome c oxidase subunit 4 isoform 1	Q95283
Cytochrome c oxidase subunit 5A	P00426
Cytochrome c oxidase subunit 5B	Q5S3G4
Cytochrome c oxidase subunit 6A2	P07471
Cytochrome c oxidase subunit 6B1	P00429
Cytochrome c oxidase subunit 6C	A1XQT2
Cytochrome c oxidase subunit 7A1	Q8SPJ9
Cytochrome c oxidase subunit 7B	P13183
Cytochrome c oxidase subunit 7C	Q1W0Y2
Complex II (B5)	
Succinate dehydrogenase [ubiquinone] flavoprotein subunit	Q0QF01
Succinate dehydrogenase [ubiquinone] iron-sulfur subunit	Q007T0
Succinate dehydrogenase [ubiquinone] cytochrome b small subunit	Q95123

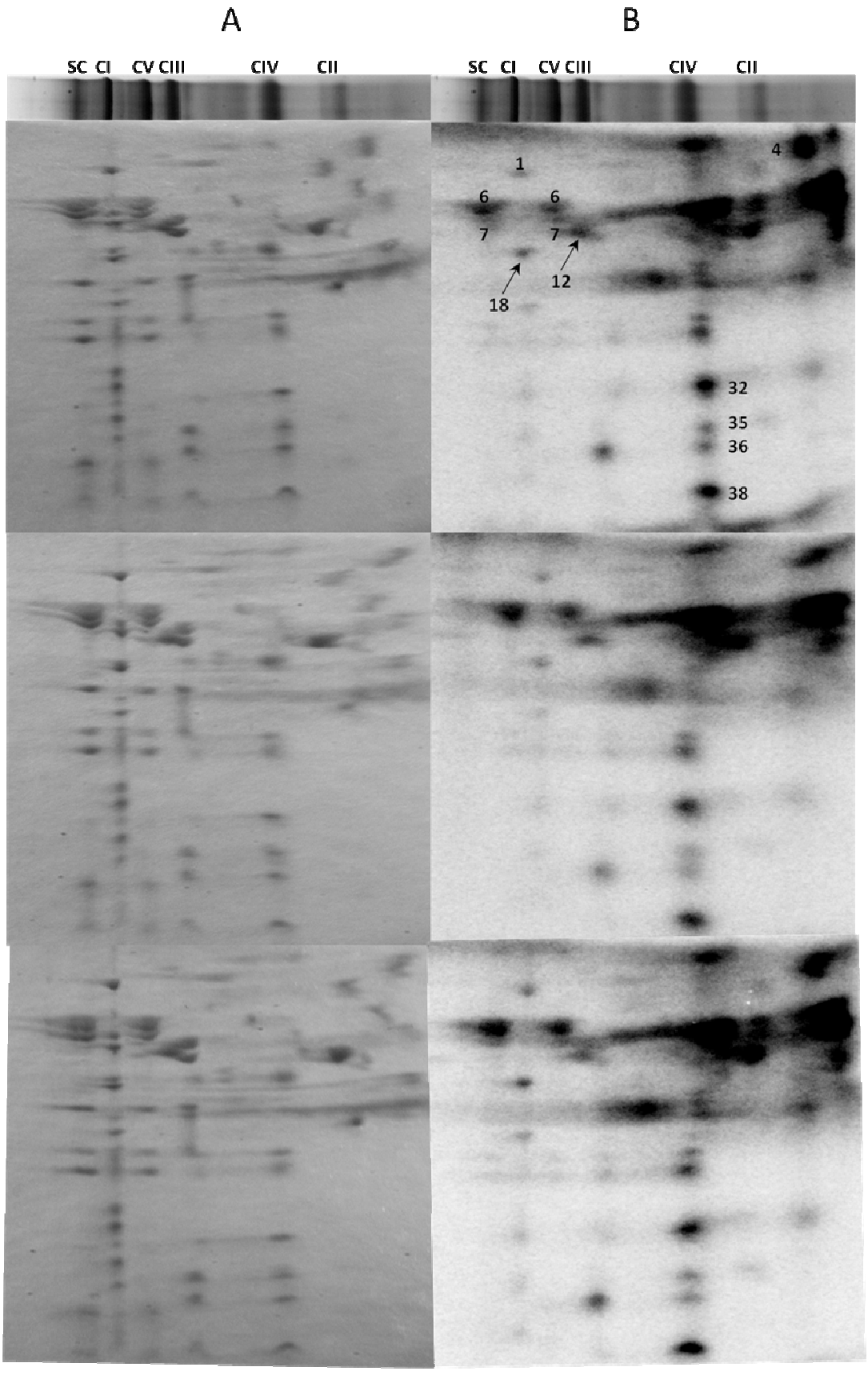
Supplemental Figure S3: Demonstration that Abgent's pyruvate dehydrogenase kinase 4 antibody (catalog #AP7041b) primarily detects the α-subunit of Complex V, not PDK4. As shown in Abgent's product literature, we also observed a specific band at ~50kD (A). However, we became skeptical of this result for several reasons. One, the actual molecular weight of PDK4 is between 43 and 46.5kD, not 50kD. More notably, the PDK4 antibody labeled a portion of the 2D BN-PAGE gel associated with Complex V, not the PDH complex. Initially, we were excited about this result, hypothesizing that PDK4 may be associated with other mitochondrial protein complexes. To test this hypothesis, we performed western blots on mouse heart mitochondria from wild-type and PDK4 knock-out animals (B). As these western blots are identical, this result revealed that the PDK4 antibody was detecting a protein other than PDK4. An additional western blot was performed on purified Complex V (C), which showed that the PDK4 antibody was detecting the Complex V's ?-subunit.


A.
Abgent's Product Literature
150
100
75
50
37
25
20
15
Complex V
PDH Complex
250kD
150kD
100kD
75kD
50kD
37kD
25kD
20kD
15kD
10kD
B.
Wild-type
PDK4 Knock-Out
Complex V
PDH Complex
Complex V
PDH Complex
250kD
150kD
100kD
75kD
50kD
37kD
25kD
20kD
15kD
10kD
C.
PDK4 Western Blot
MW
Isolated Complex V
250kD
150kD
100kD
75kD
50kD
37kD
25kD
20kD
15kD
10kD
α–subunit
Paired SDS Gel of Complex V
MW
Isolated Complex V
250kD
150kD
100kD
75kD
50kD
37kD
25kD
20kD
15kD
10kD
α
β
γ
b
OSCP
d
f
g
F0, subunit

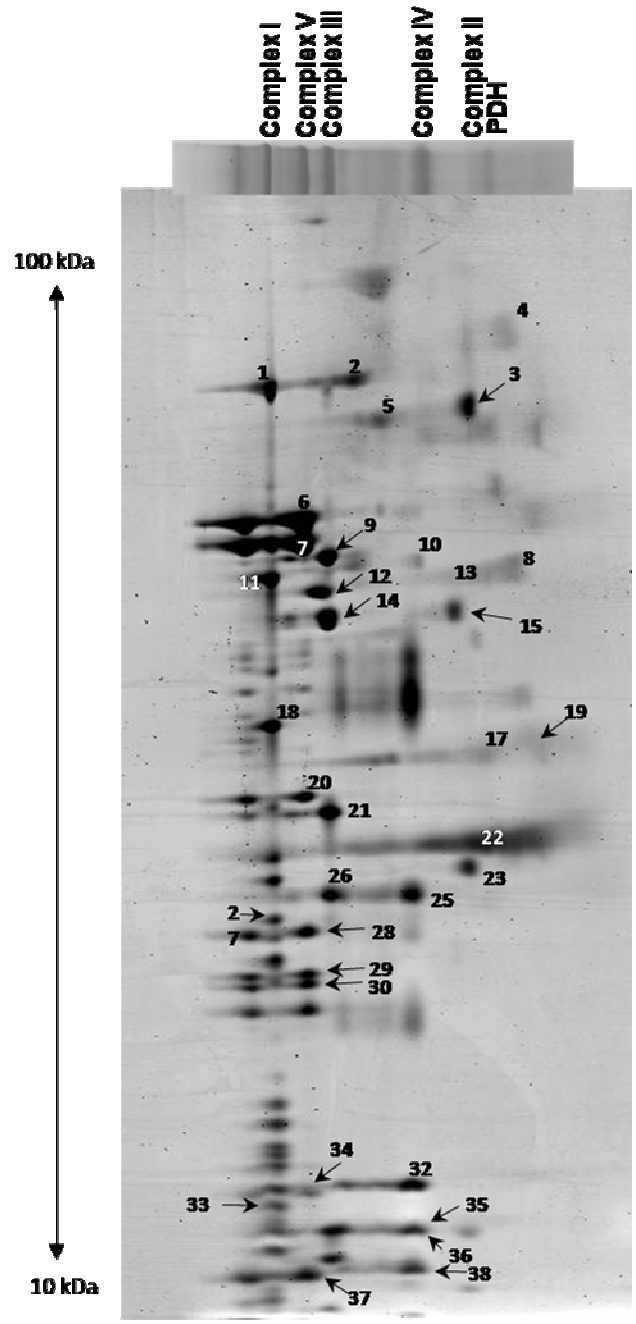
Supplemental Figure S4: Western blots, probing for MEK6, PKCδ and PKCε on 2D BN-PAGE gels, with 100 μg of isolated mitochondria and 0.05 μg of purified kinase as controls.



Supplemental Figure S5. 2D PAGE of rat heart mitochondrial proteins following incubation of 1D BN-PAGE slices with γ-^{32}P-ATP. The Coomassie blue stained gel (Panel A) and the γ-^{32}P-ATP-labeled gel (Panel B) from three different γ-^{32}P-ATP-labeling experiments are shown. Figure abbreviations correspond to Table SX as follows: CI, 75 kDa, protein #1; Aconitase, protein #4; SC (supercomplex) and CV, α, protein #6; SC (supercomplex) and CV, β, protein #7; CK, protein #12; CI, 39 kDa, protein #18; CIV, subunit IV, protein #32; CIV, Va, protein #35; CIV, Vb, protein #36; and CIV, VIc, protein #38. All protein assignments were made by direct picks from the Coomassie gels. Overlays were performed using 4 fiduciary markers.


A
B
SC CI CV CIII CIV CII
SC CI CV CIII CIV CII
1
4
6
6
7
7
12
18
32
35
36
38

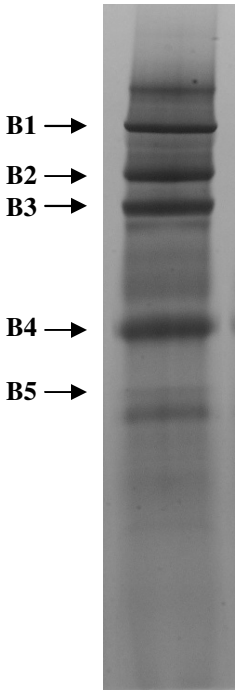
Supplemental Figure S6: Mitochondrial complex identifications for 2D BN-PAGE gel. Numbers in panel refer to the individual subunit identifications identified in supplemental Table S2.



Supplemental Table S2. 2D BN-PAGE protein identifications (rat), corresponding to Supplemental Figure S6.			
2D BN-PAGE Spot Number	**Protein Annotation**	**Protein Accesion Number**	
1	NADH dehydrogenase (ubiquinone) Fe-S protein 1, 75kDa	Q66HF1	
2	Trifunctional enzyme, alpha subunit	Q3KR86	
3	Complex II, flavoprotein subunit	Q920L2	
4	Aconitase	Q9ER34	
5	Mitochondrial inner membrane	Q3KR86	
6	Complex V, alpha subunit	P15999	
7	Complex V, beta subunit	P10719	
8	Citrate synthase	Q8VHF5	
9	Ubiquinol-cytochrome c reductase core protein 1	Q68FY0	
10	Fumarase	P14408	
11	NADH dehydrogenase (ubiquinone) Fe-S protein 2, 49kDa	Q641Y2	
12	Creatine kinase	P09605	
13	Pyruvate dehydrogenase, E1 alpha subunit	P26284	
14	Ubiquinol-cytochrome c reductase core protein II	P32551	
15	Long-chain specific acyl Coenzyme A dehydrogenase	P15650	
17	VDAC-1	Q9Z2L0	
18	NADH dehydrogenase (ubiquinone) 1 alpha subcomplex, 9, 39kDa	Q5BK63	
19	Malate dehydrogenase	P04636	

20	ATP synthase F1 complex, gamma subunit	P35435	
21	Ubiquinol-cytochrome c reductase, heme protein	Q9D0M3	
22	ADP/ATP translocase 1	Q05962	
23	Succinate dehydrogenase complex, subunit B	P21913	
25	Cytochrome c oxidase subunit II	P00406	
26	Ubiquinol-cytochrome c reductase, iron-sulfur subunit	P20788	
27	NADH dehydrogenase (ubiquinone) flavoprotein 2, 24kDa	P19234	
28	Complex V, subunit b	P19511	
29	Complex V, subunit o	Q2EN81	
30	Complex V, subunit d	AAI04565	
32	Cytochrome c oxidase subunit IV	P10888	
33	NADH dehydrogenase (ubiquinone) 1 alpha subcomplex,6	O9CQZ5	
34	Complex V, delta subunit	P35434	
35	Cytochrome c oxidase subunit Va	P11240	
36	Cytochrome c oxidase subunit Vb	P12075	
37	Complex V, ATPase subunit e	P29419	
38	Cytochrome c oxidase subunit VIc-2	P11951	

Supplemental Figure S7: Mass spectrometry protein identifications for rat blue native gel bands (B1-B5) are provided in supplemental Table S3-S9.



Supplemental Table S3. Complex 1 band chymotrypsin digestion

Accession	Coverage	Peptides	# AAs	MW [kDa]	calc. pI	Score	Description
QCR2_RAT	24.12	7	452	48.4	9.14	303.85	(P32551) Cytochrome b-c1 complex subunit 2, mitochondrial
ATPA_RAT	29.48	18	553	59.7	9.19	585.59	(P15999) ATP synthase subunit alpha, mitochondrial
ECHA_RAT	21.76	18	763	82.6	9.06	583.92	(Q64428) Trifunctional enzyme subunit alpha, mitochondrial
KCRS_RAT	12.41	5	419	47.4	8.51	221.36	(P09605) Creatine kinase S-type, mitochondrial
COX7B_RAT	16.25	3	80	9.0	10.11	87.19	(P80431) Cytochrome c oxidase subunit 7B, mitochondrial
ECHB_RAT	18.32	8	475	51.4	9.47	268.83	(Q60587) Trifunctional enzyme subunit beta, mitochondrial
ATPG_RAT	25.27	12	273	30.2	8.84	461.50	(P35435) ATP synthase subunit gamma, mitochondrial
PCCA_RAT	25.71	16	704	77.7	6.77	603.20	(P14882) Propionyl-CoA carboxylase alpha chain, mitochondrial
NDUS1_RAT	40.99	59	727	79.4	5.90	2265.32	(Q66HF1) NADH-ubiquinone oxidoreductase 75 kDa subunit, mitochondrial
NDUAA_RAT	49.86	27	355	40.5	7.80	886.21	(Q561S0) NADH dehydrogenase [ubiquinone] 1 alpha

							subcomplex subunit 10, mitochondrial
NDUS2_RAT	38.01	30	463	52.5	6.99	913.58	(Q641Y2) NADH dehydrogenase [ubiquinone] iron-sulfur protein 2, mitochondrial
QCR1_RAT	21.88	6	480	52.8	5.88	287.05	(Q68FY0) Cytochrome b-c1 complex subunit 1, mitochondrial
PCCB_RAT	23.48	15	541	58.6	7.47	541.41	(P07633) Propionyl-CoA carboxylase beta chain, mitochondrial
ATPB_RAT	35.54	43	529	56.3	5.34	1574.01	(P10719) ATP synthase subunit beta, mitochondrial
ADT1_RAT	14.77	7	298	33.0	9.79	313.58	(Q05962) ADP/ATP translocase 1
ADT2_RAT	11.07	2	298	32.9	9.73	204.60	(Q09073) ADP/ATP translocase 2
VDAC1_RAT	34.28	8	283	30.7	8.54	335.17	(Q9Z2L0) Voltage-dependent anion-selective channel protein 1
VDAC2_RAT	10.85	2	295	31.7	7.49	122.07	(P81155) Voltage-dependent anion-selective channel protein 2
ATP5H_RAT	68.94	12	161	18.8	6.60	336.84	(P31399) ATP synthase subunit d, mitochondrial
ATPO_RAT	33.80	5	213	23.4	10.02	115.61	(Q06647) ATP synthase subunit O, mitochondrial
COX2_RAT	26.87	6	227	25.9	4.73	187.41	(P00406) Cytochrome c oxidase subunit 2
COX41_RAT	23.67	4	169	19.5	9.44	105.22	(P10888) Cytochrome c oxidase subunit 4 isoform 1, mitochondrial
CX6C2_RAT	43.42	4	76	8.4	10.07	176.58	(P11951) Cytochrome c

							oxidase subunit 6C-2
CTRB1_RAT	3.80	3	263	27.8	5.07	156.94	(P07338) Chymotrypsinogen B
CX6A1_RAT	13.51	2	111	12.3	9.32	116.80	(P10818) Cytochrome c oxidase subunit 6A1, mitochondrial
CX6A2_RAT	41.49	10	94	10.5	9.07	396.49	(P10817) Cytochrome c oxidase subunit 6A2, mitochondrial
MMSA_RAT	5.42	2	535	57.8	8.22	65.66	(Q02253) Methylmalonate-semialdehyde dehydrogenase [acylating], mitochondrial
NDUA5_RAT	11.21	6	116	13.4	7.43	216.47	(Q63362) NADH dehydrogenase [ubiquinone] 1 alpha subcomplex subunit 5
NDUA9_RAT	51.89	47	370	41.8	9.76	1603.55	(Q5BK63) NADH dehydrogenase [ubiquinone] 1 alpha subcomplex subunit 9, mitochondrial
NDUAB_RAT	39.01	11	141	14.8	8.09	305.41	(Q80W89) NADH dehydrogenase [ubiquinone] 1 alpha subcomplex subunit 11
NDUS4_RAT	29.14	7	175	19.7	10.14	284.46	(Q5XIF3) NADH dehydrogenase [ubiquinone] iron-sulfur protein 4, mitochondrial
NDUV2_RAT	22.58	11	248	27.4	6.68	386.71	(P19234) NADH dehydrogenase [ubiquinone] flavoprotein 2, mitochondrial
NU3M_RAT	12.17	2	115	13.1	4.44	101.86	(P05506) NADH-ubiquinone oxidoreductase

							chain 3
NU5M_RAT	5.57	3	610	68.9	9.26	140.29	(P11661) NADH-ubiquinone oxidoreductase chain 5
THIL_RAT	13.21	3	424	44.7	8.76	143.43	(P17764) Acetyl-CoA acetyltransferase, mitochondrial
UCRI_RAT	12.41	4	274	29.4	8.87	166.46	(P20788) Cytochrome b-c1 complex subunit Rieske, mitochondrial

Supplemental Table S4. Complex 1 band trypsin digestion

Accession	Coverage	Peptide	# AAs	MW [kDa]	calc. pI	Score	Description
IDHP_RAT	18.36	8	452	50.9	8.69	287.04	(P56574) Isocitrate dehydrogenase [NADP], mitochondrial
QCR2_RAT	44.25	48	452	48.4	9.14	2136.95	(P32551) Cytochrome b-c1 complex subunit 2, mitochondrial
ATPA_RAT	59.49	224	553	59.7	9.19	11357.57	(P15999) ATP synthase subunit alpha, mitochondrial
AATM_RAT	44.42	19	430	47.3	9.00	741.97	(P00507) Aspartate aminotransferase, mitochondrial
MDHM_RAT	42.01	24	338	35.7	8.68	1243.02	(P04636) Malate dehydrogenase, mitochondrial
TRY1_RAT	8.13	8	246	25.9	4.89	202.82	(P00762) RecName: Full=Anionic trypsin-1;
ECHA_RAT	47.71	57	763	82.6	9.06	2212.11	(Q64428) Trifunctional enzyme subunit alpha, mitochondrial
KCRS_RAT	41.29	26	419	47.4	8.51	1121.96	(P09605) Creatine kinase S-type, mitochondrial
ECHB_RAT	51.16	27	475	51.4	9.47	999.83	(Q60587) Trifunctional enzyme subunit beta, mitochondrial
ATPG_RAT	30.77	20	273	30.2	8.84	760.00	(P35435) ATP synthase subunit gamma, mitochondrial

K2C1_RAT	3.84	2	625	64.8	7.87	106.08	(Q6IMF3) Keratin, type II cytoskeletal 1
PCCA_RAT	52.27	172	704	77.7	6.77	6828.64	(P14882) Propionyl-CoA carboxylase alpha chain, mitochondrial
ACON_RAT	17.82	13	780	85.4	7.83	657.80	(Q9ER34) Aconitate hydratase, mitochondrial
NDUS1_RAT	73.73	346	727	79.4	5.90	14423.08	(Q66HF1) NADH-ubiquinone oxidoreductase 75 kDa subunit, mitochondrial
ODP2_RAT	12.50	6	632	67.1	8.53	233.75	(P08461) Dihydrolipoyllysine-residue acetyltransferase component of pyruvate dehydrogenase complex, mitochondrial
NDUAA_RAT	69.86	152	355	40.5	7.80	5483.83	(Q561S0) NADH dehydrogenase [ubiquinone] 1 alpha subcomplex subunit 10, mitochondrial
NDUS2_RAT	74.30	253	463	52.5	6.99	9935.37	(Q641Y2) NADH dehydrogenase [ubiquinone] iron-sulfur protein 2, mitochondrial
ACSL1_RAT	8.58	4	699	78.1	6.99	176.28	(P18163) Long-chain-fatty-acid--CoA ligase 1
QCR1_RAT	49.17	47	480	52.8	5.88	1976.07	(Q68FY0) Cytochrome b-c1 complex subunit 1, mitochondrial
PCCB_RAT	52.50	163	541	58.6	7.47	7867.57	(P07633) Propionyl-CoA carboxylase beta chain, mitochondrial
FUMH_RAT	8.28	3	507	54.4	8.95	181.68	(P14408) Fumarate hydratase, mitochondrial

PHB2_RAT	9.36	2	299	33.3	9.83	64.67	(Q5XIH7) Prohibitin-2
COX5A_RAT	54.11	17	146	16.1	6.54	643.65	(P11240) Cytochrome c oxidase subunit 5A, mitochondrial
ATPB_RAT	73.53	337	529	56.3	5.34	12840.30	(P10719) ATP synthase subunit beta, mitochondrial
ADT1_RAT	51.68	61	298	33.0	9.79	2414.02	(Q05962) ADP/ATP translocase 1
ADT2_RAT	37.58	32	298	32.9	9.73	1398.48	(Q09073) ADP/ATP translocase 2
SODM_RAT	13.06	3	222	24.7	8.81	164.74	(P07895) Superoxide dismutase [Mn], mitochondrial
VDAC1_RAT	55.48	22	283	30.7	8.54	1037.52	(Q9Z2L0) Voltage-dependent anion-selective channel protein 1
VDAC2_RAT	52.54	14	295	31.7	7.49	573.19	(P81155) Voltage-dependent anion-selective channel protein 2
VDAC3_RAT	36.40	15	283	30.8	8.70	483.43	(Q9R1Z0) Voltage-dependent anion-selective channel protein 3
MPCP_RAT	22.75	10	356	39.4	9.33	437.88	(P16036) Phosphate carrier protein, mitochondrial
ACADV_RAT	15.42	7	655	70.7	8.90	273.66	(P45953) Very long-chain specific acyl-CoA dehydrogenase, mitochondrial
APBB3_RAT	1.79	4	504	54.9	7.50	84.11	(O35827) Amyloid beta A4 precursor protein-binding family B

							member 3
AT5F1_RAT	45.31	27	256	28.9	9.36	1117.25	(P19511) ATP synthase subunit b, mitochondrial
ATP5H_RAT	68.32	31	161	18.8	6.60	1039.26	(P31399) ATP synthase subunit d, mitochondrial
ATP5I_RAT	36.62	4	71	8.2	9.35	165.27	(P29419) ATP synthase subunit e, mitochondrial
ATP8_RAT	34.33	7	67	7.6	9.32	228.03	(P11608) ATP synthase protein 8
ATPO_RAT	53.52	28	213	23.4	10.02	1024.91	(Q06647) ATP synthase subunit O, mitochondrial
BR44L_MOUSE	43.12	4	109	12.4	9.61	214.21	(P63030) Brain protein 44-like protein
COX1_RAT	8.95	3	514	56.9	6.80	69.59	(P05503) Cytochrome c oxidase subunit 1
COX2_RAT	31.72	17	227	25.9	4.73	679.05	(P00406) Cytochrome c oxidase subunit 2
COX41_RAT	37.87	25	169	19.5	9.44	725.89	(P10888) Cytochrome c oxidase subunit 4 isoform 1, mitochondrial
COX5B_RAT	48.84	7	129	13.9	7.78	247.27	(P12075) Cytochrome c oxidase subunit 5B, mitochondrial
CX6C2_RAT	31.58	8	76	8.4	10.07	280.21	(P11951) Cytochrome c oxidase subunit 6C-2
CPT1B_RAT	13.60	13	772	88.2	8.60	347.08	(Q63704) Carnitine O-palmitoyltransferase 1, muscle isoform
CX7A2_RAT	15.66	7	83	9.3	10.27	191.46	(P35171) Cytochrome c oxidase subunit 7A2, mitochondrial
GRP75_RAT	10.60	6	679	73.8	6.30	225.15	(P48721) Stress-70 protein, mitochondrial

HCD2_RAT	22.61	3	261	27.2	8.78	147.35	(O70351) 3-hydroxyacyl-CoA dehydrogenase type-2
MCCB_RAT	17.23	6	563	61.5	8.31	171.61	(Q5XIT9) Methylcrotonoyl-CoA carboxylase beta chain, mitochondrial
MMSA_RAT	24.67	14	535	57.8	8.22	366.51	(Q02253) Methylmalonate-semialdehyde dehydrogenase [acylating], mitochondrial
NDUA5_RAT	79.31	72	116	13.4	7.43	3434.65	(Q63362) NADH dehydrogenase [ubiquinone] 1 alpha subcomplex subunit 5
NDUA9_RAT	68.38	176	370	41.8	9.76	6835.79	(Q5BK63) NADH dehydrogenase [ubiquinone] 1 alpha subcomplex subunit 9, mitochondrial
NDUAB_RAT	78.72	57	141	14.8	8.09	2434.31	(Q80W89) NADH dehydrogenase [ubiquinone] 1 alpha subcomplex subunit 11
NDUS4_RAT	52.57	48	175	19.7	10.14	1903.01	(Q5XIF3) NADH dehydrogenase [ubiquinone] iron-sulfur protein 4, mitochondrial
NDUS6_RAT	21.55	4	116	12.8	9.25	114.91	(P52504) NADH dehydrogenase [ubiquinone] iron-sulfur protein 6, mitochondrial
NDUV2_RAT	52.82	59	248	27.4	6.68	2448.96	(P19234) NADH dehydrogenase [ubiquinone] flavoprotein 2,

							mitochondrial
NDUV3_RAT	19.44	2	108	11.9	9.41	70.79	(Q6PCU8) NADH dehydrogenase [ubiquinone] flavoprotein 3, mitochondrial
NU1M_RAT	6.29	5	318	36.2	6.93	110.62	(P03889) NADH-ubiquinone oxidoreductase chain 1
NU2M_RAT	6.96	2	345	38.5	9.89	79.33	(P11662) NADH-ubiquinone oxidoreductase chain 2
NU3M_RAT	13.04	11	115	13.1	4.44	656.90	(P05506) NADH-ubiquinone oxidoreductase chain 3
NU4M_RAT	19.17	28	459	51.8	9.41	1293.54	(P05508) NADH-ubiquinone oxidoreductase chain 4
NU5M_RAT	11.48	13	610	68.9	9.26	447.69	(P11661) NADH-ubiquinone oxidoreductase chain 5
ODPB_RAT	13.09	2	359	39.0	6.65	73.46	(P49432) Pyruvate dehydrogenase E1 component subunit beta, mitochondrial
PRDX3_RAT	16.34	2	257	28.3	7.55	82.46	(Q9Z0V6) Thioredoxin-dependent peroxide reductase, mitochondrial
PRDX5_RAT	19.72	3	213	22.2	8.66	87.20	(Q9R063) Peroxiredoxin-5, mitochondrial
SAM50_RAT	11.73	4	469	51.9	6.80	141.97	(Q6AXV4) Sorting and assembly machinery component 50 homolog
STA5B_RAT	0.76	3	786	90.2	6.20	76.56	(P52632) Signal transducer and activator

							of transcription 5B
SUCA_RAT	13.87	8	346	36.1	9.48	393.61	(P13086) Succinyl-CoA ligase [GDP-forming] subunit alpha, mitochondrial
THIL_RAT	16.27	6	424	44.7	8.76	210.51	(P17764) Acetyl-CoA acetyltransferase, mitochondrial
UCRI_RAT	22.99	5	274	29.4	8.87	232.08	(P20788) Cytochrome b-c1 complex subunit Rieske, mitochondrial
USMG5_RAT	44.83	7	58	6.4	9.83	428.61	(Q9JJW3) Up-regulated during skeletal muscle growth protein 5
IMMT_RAT	23.32	11	609	67.1	5.80	373.14	(Q3KR86) Mitochondrial inner membrane protein

Supplemental Table S5. Complex 2 band chymotrypsin digestion

Accession	Coverage	Peptides	# AAs	MW [kDa]	calc. pI	Score	Description
ACADL_RAT	69.53	130	430	47.8	7.74	4118.24	(P15650) Long-chain specific acyl-CoA dehydrogenase, mitochondrial
IDHP_RAT	45.58	39	452	50.9	8.69	1509.42	(P56574) Isocitrate dehydrogenase [NADP], mitochondrial
CISY_RAT	6.65	2	466	51.8	8.35	117.28	(Q8VHF5) Citrate synthase, mitochondrial
AATM_RAT	16.28	7	430	47.3	9.00	272.54	(P00507) Aspartate aminotransferase, mitochondrial
IVD_RAT	16.75	5	424	46.4	7.90	254.70	(P12007) Isovaleryl-CoA dehydrogenase, mitochondrial
MDHM_RAT	45.56	22	338	35.7	8.68	768.90	(P04636) Malate dehydrogenase, mitochondrial
THIM_RAT	78.84	121	397	41.8	7.94	5108.99	(P13437) 3-ketoacyl-CoA thiolase, mitochondrial
KCRS_RAT	8.59	2	419	47.4	8.51	117.04	(P09605) Creatine kinase S-type, mitochondrial
ODPA_RAT	15.13	6	390	43.2	8.19	283.85	(P26284) Pyruvate dehydrogenase E1 component subunit alpha, somatic form, mitochondrial

ACON_RAT	23.97	22	780	85.4	7.83	969.01	(Q9ER34) Aconitate hydratase, mitochondrial
DHSA_RAT	41.16	46	656	71.6	7.17	1637.96	(Q920L2) Succinate dehydrogenase [ubiquinone] flavoprotein subunit, mitochondrial
ACSL1_RAT	8.44	3	699	78.1	6.99	112.94	(P18163) Long-chain-fatty-acid--CoA ligase 1
ETFD_RAT	15.58	9	616	68.2	7.56	288.50	(Q6UPE1) Electron transfer flavoprotein-ubiquinone oxidoreductase, mitochondrial
3HIDH_RAT	11.94	3	335	35.3	8.47	144.94	(P29266) 3-hydroxyisobutyrate dehydrogenase, mitochondrial
ADT1_RAT	45.64	37	298	33.0	9.79	1523.94	(Q05962) ADP/ATP translocase 1
ADT2_RAT	44.63	19	298	32.9	9.73	1032.60	(Q09073) ADP/ATP translocase 2
DHSB_RAT	21.28	7	282	31.8	8.68	366.13	(P21913) Succinate dehydrogenase [ubiquinone] iron-sulfur subunit, mitochondrial
ACADV_RAT	28.09	16	655	70.7	8.90	688.71	(P45953) Very long-chain specific acyl-CoA dehydrogenase, mitochondrial
BCAT2_RAT	12.47	6	393	44.2	8.16	220.65	(O35854) Branched-chain-amino-acid aminotransferase, mitochondrial

BR44L_MOUSE	31.19	2	109	12.4	9.61	109.89	(P63030) Brain protein 44-like protein
CISD1_RAT	24.07	2	108	12.1	8.84	104.63	(B0K020) CDGSH iron sulfur domain-containing protein 1
CTRB1_RAT	4.56	4	263	27.8	5.07	144.16	(P07338) Chymotrypsinogen B
GRP75_RAT	9.28	4	679	73.8	6.30	117.71	(P48721) Stress-70 protein, mitochondrial
HCD2_RAT	10.73	2	261	27.2	8.78	62.60	(O70351) 3-hydroxyacyl-CoA dehydrogenase type-2
MMSA_RAT	10.28	2	535	57.8	8.22	119.33	(Q02253) Methylmalonate-semialdehyde dehydrogenase [acylating], mitochondrial
ODPB_RAT	13.93	6	359	39.0	6.65	317.65	(P49432) Pyruvate dehydrogenase E1 component subunit beta, mitochondrial
SCOT1_RAT	5.58	5	520	56.2	8.47	226.81	(B2GV06) Succinyl-CoA:3-ketoacid-coenzyme A transferase 1, mitochondrial
SUCA_RAT	18.79	8	346	36.1	9.48	301.57	(P13086) Succinyl-CoA ligase [GDP-forming] subunit alpha, mitochondrial
THIL_RAT	53.54	41	424	44.7	8.76	1401.32	(P17764) Acetyl-CoA acetyltransferase, mitochondrial
TRXR2_RAT	27.76	8	526	56.5	8.56	346.90	(Q9Z0J5) Thioredoxin reductase 2,

							mitochondrial

Supplemental Table S6. Complex 2 band trypsin digestion

Accession	Coverage	Peptides	# AAs	MW [kDa]	calc. pI	Score	Description
ACADL_RAT	76.74	617	430	47.8	7.74	26258.97	(P15650) Long-chain specific acyl-CoA dehydrogenase, mitochondrial
IDHP_RAT	72.57	265	452	50.9	8.69	11109.43	(P56574) Isocitrate dehydrogenase [NADP], mitochondrial
QCR2_RAT	12.83	5	452	48.4	9.14	222.71	(P32551) Cytochrome b-c1 complex subunit 2, mitochondrial
ATPA_RAT	16.64	6	553	59.7	9.19	601.41	(P15999) ATP synthase subunit alpha, mitochondrial
CISY_RAT	35.84	35	466	51.8	8.35	1251.73	(Q8VHF5) Citrate synthase, mitochondrial
AATM_RAT	51.16	28	430	47.3	9.00	771.53	(P00507) Aspartate aminotransferase, mitochondrial
IVD_RAT	61.08	80	424	46.4	7.90	3099.53	(P12007) Isovaleryl-CoA dehydrogenase, mitochondrial
MDHM_RAT	62.43	95	338	35.7	8.68	4241.19	(P04636) Malate dehydrogenase, mitochondrial
ACADS_RAT	35.68	13	412	44.7	8.28	753.85	(P15651) Short-chain specific acyl-CoA dehydrogenase, mitochondrial

TRY1_RAT	8.13	8	246	25.9	4.89	259.11	(P00762) RecName: Full=Anionic trypsin-1;
DLDH_RAT	26.52	11	509	54.0	7.87	475.05	(Q6P6R2) Dihydrolipoyl dehydrogenase, mitochondrial
THIM_RAT	86.15	832	397	41.8	7.94	40807.63	(P13437) 3-ketoacyl-CoA thiolase, mitochondrial
KCRS_RAT	37.95	20	419	47.4	8.51	1039.51	(P09605) Creatine kinase S-type, mitochondrial
ACOT2_RAT	7.95	2	453	49.7	7.83	110.78	(O55171) Acyl-coenzyme A thioesterase 2, mitochondrial
ODPA_RAT	51.28	31	390	43.2	8.19	1170.60	(P26284) Pyruvate dehydrogenase E1 component subunit alpha, somatic form, mitochondrial
ETFA_RAT	24.62	4	333	34.9	8.38	211.99	(P13803) Electron transfer flavoprotein subunit alpha, mitochondrial
K1C10_RAT	3.61	2	526	56.5	5.15	76.14	(Q6IFW6) Keratin, type I cytoskeletal 10
K1C14_RAT	4.54	2	485	52.7	5.16	111.63	(Q6IFV1) Keratin, type I cytoskeletal 14
K2C6A_RAT	3.99	2	552	59.2	7.94	112.66	(Q4FZU2) Keratin, type II cytoskeletal 6A
K2C5_RAT	3.82	2	576	61.8	7.80	81.76	(Q6P6Q2) Keratin, type II cytoskeletal 5
LPPRC_RAT	10.63	9	1392	156.6	6.61	319.19	(Q5SGE0) Leucine-rich PPR motif-containing protein, mitochondrial
K2C1_RAT	5.28	5	625	64.8	7.87	206.85	(Q6IMF3) Keratin, type II cytoskeletal 1

K2C1B_RAT	4.24	3	519	57.2	5.64	137.33	(Q6IG01) Keratin, type II cytoskeletal 1b
ACON_RAT	60.51	159	780	85.4	7.83	6776.00	(Q9ER34) Aconitate hydratase, mitochondrial
DHSA_RAT	75.61	318	656	71.6	7.17	12143.92	(Q920L2) Succinate dehydrogenase [ubiquinone] flavoprotein subunit, mitochondrial
NDUS1_RAT	29.85	23	727	79.4	5.90	961.64	(Q66HF1) NADH-ubiquinone oxidoreductase 75 kDa subunit, mitochondrial
ACSL1_RAT	42.78	38	699	78.1	6.99	1678.01	(P18163) Long-chain-fatty-acid--CoA ligase 1
ETFD_RAT	52.60	66	616	68.2	7.56	2120.48	(Q6UPE1) Electron transfer flavoprotein-ubiquinone oxidoreductase, mitochondrial
ACSF2_RAT	9.59	4	615	67.8	8.12	153.19	(Q499N5) Acyl-CoA synthetase family member 2, mitochondrial
FUMH_RAT	27.42	9	507	54.4	8.95	335.28	(P14408) Fumarate hydratase, mitochondrial
EFTU_RAT	12.17	5	452	49.5	7.56	166.27	(P85834) Elongation factor Tu, mitochondrial
CH60_MOUSE	6.98	3	573	60.9	6.18	187.14	(P63038) 60 kDa heat shock protein, mitochondrial
NFS1_RAT	6.21	3	451	50.0	8.72	121.66	(Q99P39) Cysteine desulfurase, mitochondrial
3HIDH_RAT	53.43	50	335	35.3	8.47	2511.43	(P29266) 3-hydroxyisobutyrate dehydrogenase,

							mitochondrial
ATPB_RAT	25.52	11	529	56.3	5.34	429.93	(P10719) ATP synthase subunit beta, mitochondrial
ADT1_RAT	75.50	416	298	33.0	9.79	20751.42	(Q05962) ADP/ATP translocase 1
ADT2_RAT	47.99	276	298	32.9	9.73	15013.86	(Q09073) ADP/ATP translocase 2
G3P_RAT	25.23	8	333	35.8	8.03	395.29	(P04797) Glyceraldehyde-3-phosphate dehydrogenase
CYC_MOUSE	24.76	3	105	11.6	9.58	149.46	(P62897) Cytochrome c, somatic
BR44_RAT	18.11	5	127	14.2	10.48	168.81	(P38718) Brain protein 44
ODBB_RAT	40.26	18	390	42.8	6.83	663.87	(P35738) 2-oxoisovalerate dehydrogenase subunit beta, mitochondrial
VDAC1_RAT	49.47	19	283	30.7	8.54	1083.67	(Q9Z2L0) Voltage-dependent anion-selective channel protein 1
VDAC2_RAT	8.81	3	295	31.7	7.49	224.69	(P81155) Voltage-dependent anion-selective channel protein 2
VDAC3_RAT	9.19	3	283	30.8	8.70	173.87	(Q9R1Z0) Voltage-dependent anion-selective channel protein 3
MPCP_RAT	31.18	46	356	39.4	9.33	1426.46	(P16036) Phosphate carrier protein, mitochondrial
ETFB_RAT	10.98	2	255	27.7	7.75	116.43	(Q68FU3) Electron transfer flavoprotein subunit beta

DHSB_RAT	72.70	67	282	31.8	8.68	2196.42	(P21913) Succinate dehydrogenase [ubiquinone] iron-sulfur subunit, mitochondrial
HCDH_RAT	39.17	17	314	34.4	8.76	609.33	(Q9WVK7) Hydroxyacyl-coenzyme A dehydrogenase, mitochondrial
ACADV_RAT	62.14	102	655	70.7	8.90	4923.78	(P45953) Very long-chain specific acyl-CoA dehydrogenase, mitochondrial
ACDSB_RAT	7.41	3	432	47.8	8.06	147.40	(P70584) Short/branched chain specific acyl-CoA dehydrogenase, mitochondrial
AL4A1_RAT	5.51	3	563	61.8	7.46	86.48	(P0C2X9) Delta-1-pyrroline-5-carboxylate dehydrogenase, mitochondrial
AOFA_RAT	8.37	3	526	59.5	7.93	153.76	(P21396) Amine oxidase [flavin-containing] A
ATPO_RAT	25.82	3	213	23.4	10.02	122.38	(Q06647) ATP synthase subunit O, mitochondrial
BCAT2_RAT	48.85	42	393	44.2	8.16	1355.62	(O35854) Branched-chain-amino-acid aminotransferase, mitochondrial
BDH_RAT	27.70	10	343	38.2	8.84	590.21	(P29147) D-beta-hydroxybutyrate dehydrogenase, mitochondrial
BR44L_MOUSE	43.12	9	109	12.4	9.61	493.61	(P63030) Brain protein 44-like protein
CACP_RAT	16.61	8	626	70.8	8.54	322.00	(Q704S8) Carnitine O-acetyltransferase

CD36_RAT	6.78	2	472	52.7	8.56	61.30	(Q07969) Platelet glycoprotein 4
CH10_RAT	47.06	8	102	10.9	8.92	357.50	(P26772) 10 kDa heat shock protein, mitochondrial
CISD1_RAT	44.44	5	108	12.1	8.84	216.13	(B0K020) CDGSH iron sulfur domain-containing protein 1
CPT1B_RAT	15.67	15	772	88.2	8.60	535.92	(Q63704) Carnitine O-palmitoyltransferase 1, muscle isoform
CPT2_RAT	29.33	22	658	74.1	7.33	769.25	(P18886) Carnitine O-palmitoyltransferase 2, mitochondrial
D3D2_RAT	28.03	8	289	32.2	9.54	305.06	(P23965) 3,2-trans-enoyl-CoA isomerase, mitochondrial
DECR_RAT	18.81	5	335	36.1	8.94	180.79	(Q64591) 2,4-dienoyl-CoA reductase, mitochondrial
DHB8_RAT	9.65	2	259	26.8	6.55	101.04	(Q6MGB5) Estradiol 17-beta-dehydrogenase 8
DHSD_RAT	20.75	28	159	17.0	9.29	1413.61	(Q6PCT8) Succinate dehydrogenase [ubiquinone] cytochrome b small subunit, mitochondrial
ECHM_RAT	41.72	19	290	31.5	8.13	993.53	(P14604) Enoyl-CoA hydratase, mitochondrial
ES1_RAT	24.81	4	266	28.2	8.92	125.66	(P56571) ES1 protein homolog, mitochondrial
F162A_RAT	16.77	4	155	17.8	9.99	87.89	(Q4QQV3) Protein FAM162A
GHITM_RAT	6.65	3	346	37.2	9.79	132.04	(Q5XIA8) Growth hormone-inducible

							transmembrane protein
GRP75_RAT	24.74	17	679	73.8	6.30	890.47	(P48721) Stress-70 protein, mitochondrial
GSTK1_RAT	13.27	2	226	25.5	9.07	58.51	(P24473) Glutathione S-transferase kappa 1
HCD2_RAT	80.08	37	261	27.2	8.78	1716.06	(O70351) 3-hydroxyacyl-CoA dehydrogenase type-2
HSDL2_RAT	24.81	17	524	58.3	6.19	829.71	(Q4V8F9) Hydroxysteroid dehydrogenase-like protein 2
ISOC2_RAT	33.33	7	210	23.1	7.83	240.90	(Q5U3Z3) Isochorismatase domain-containing protein 2, mitochondrial
LONM_RAT	2.95	2	950	105.7	6.60	48.31	(Q924S5) Lon protease homolog, mitochondrial
M2OM_RAT	41.72	22	314	34.2	9.88	777.36	(P97700) Mitochondrial 2-oxoglutarate/malate carrier protein
MCAT_RAT	45.85	18	301	33.1	9.48	440.37	(P97521) Mitochondrial carnitine/acylcarnitine carrier protein
MMSA_RAT	41.50	25	535	57.8	8.22	1006.25	(Q02253) Methylmalonate-semialdehyde dehydrogenase [acylating], mitochondrial
NDUV2_RAT	18.95	3	248	27.4	6.68	148.77	(P19234) NADH dehydrogenase [ubiquinone] flavoprotein 2, mitochondrial
ODBA_RAT	38.32	21	441	50.1	7.83	596.95	(P11960) 2-oxoisovalerate dehydrogenase subunit

							alpha, mitochondrial
ODPB_RAT	58.77	41	359	39.0	6.65	1502.42	(P49432) Pyruvate dehydrogenase E1 component subunit beta, mitochondrial
PECI_RAT	12.28	3	391	43.0	8.98	170.76	(Q5XIC0) Peroxisomal 3,2-trans-enoyl-CoA isomerase
PECR_RAT	10.56	2	303	32.4	8.69	82.12	(Q9WVK3) Peroxisomal trans-2-enoyl-CoA reductase
PRDX5_RAT	12.21	2	213	22.2	8.66	101.47	(Q9R063) Peroxiredoxin-5, mitochondrial
PYRD2_RAT	14.80	5	581	62.8	8.18	248.21	(Q68FT3) Pyridine nucleotide-disulfide oxidoreductase domain-containing protein 2
SCOT1_RAT	44.62	38	520	56.2	8.47	1821.95	(B2GV06) Succinyl-CoA:3-ketoacid-coenzyme A transferase 1, mitochondrial
SCPDH_RAT	10.02	2	429	47.1	8.84	51.30	(Q6AY30) Probable saccharopine dehydrogenase
SUCA_RAT	32.37	15	346	36.1	9.48	614.84	(P13086) Succinyl-CoA ligase [GDP-forming] subunit alpha, mitochondrial
THIL_RAT	61.32	56	424	44.7	8.76	2141.79	(P17764) Acetyl-CoA acetyltransferase, mitochondrial
TM14C_RAT	25.22	4	115	11.8	9.41	169.31	(Q924P2) Transmembrane protein 14C
USMG5_RAT	44.83	2	58	6.4	9.83	108.14	(Q9JJW3) Up-regulated during skeletal muscle

							growth protein 5
IMMT_RAT	10.51	5	609	67.1	5.80	221.11	(Q3KR86) Mitochondrial inner membrane protein
DHRS4_RAT	12.54	4	279	29.8	9.55	246.65	(Q8VID1) Dehydrogenase/reductase SDR family member 4
AL7A1_RAT	5.01	2	539	58.7	7.87	66.72	(Q64057) Alpha-aminoadipic semialdehyde dehydrogenase
GPX1_RAT	62.69	12	201	22.2	7.87	337.08	(P04041) Glutathione peroxidase 1
TRXR2_RAT	34.98	21	526	56.5	8.56	940.62	(Q9Z0J5) Thioredoxin reductase 2, mitochondrial

Supplemental Table S7. Complex 3 band chymotrypsin digestion

Accession	Coverage	Peptides	# AAs	MW [kDa]	calc. pI	Score	Description
IDHP_RAT	11.73	4	452	50.9	8.69	184.79	(P56574) Isocitrate dehydrogenase [NADP], mitochondrial
QCR2_RAT	78.76	167	452	48.4	9.14	6450.27	(P32551) Cytochrome b-c1 complex subunit 2, mitochondrial
ATPA_RAT	8.68	3	553	59.7	9.19	87.38	(P15999) ATP synthase subunit alpha, mitochondrial
AATM_RAT	27.91	11	430	47.3	9.00	371.22	(P00507) Aspartate aminotransferase, mitochondrial
MDHM_RAT	25.44	11	338	35.7	8.68	349.11	(P04636) Malate dehydrogenase, mitochondrial
ECHA_RAT	38.93	38	763	82.6	9.06	1351.69	(Q64428) Trifunctional enzyme subunit alpha, mitochondrial
KCRS_RAT	61.10	186	419	47.4	8.51	6050.56	(P09605) Creatine kinase S-type, mitochondrial
COX7B_RAT	16.25	4	80	9.0	10.11	123.65	(P80431) Cytochrome c oxidase subunit 7B, mitochondrial
ECHB_RAT	40.00	27	475	51.4	9.47	1092.75	(Q60587) Trifunctional enzyme subunit beta, mitochondrial
ACON_RAT	7.82	5	780	85.4	7.83	151.14	(Q9ER34) Aconitate hydratase, mitochondrial
QCR1_RAT	71.25	109	480	52.8	5.88	3815.28	(Q68FY0) Cytochrome b-c1 complex subunit 1,

							mitochondrial
CH60_MOUSE	13.96	6	573	60.9	6.18	179.51	(P63038) 60 kDa heat shock protein, mitochondrial
COX5A_RAT	41.10	7	146	16.1	6.54	202.20	(P11240) Cytochrome c oxidase subunit 5A, mitochondrial
ATPB_RAT	10.21	7	529	56.3	5.34	180.55	(P10719) ATP synthase subunit beta, mitochondrial
ADT1_RAT	31.21	14	298	33.0	9.79	465.64	(Q05962) ADP/ATP translocase 1
ADT2_RAT	11.07	4	298	32.9	9.73	229.50	(Q09073) ADP/ATP translocase 2
SODM_RAT	18.47	4	222	24.7	8.81	106.66	(P07895) Superoxide dismutase [Mn], mitochondrial
VDAC1_RAT	42.76	18	283	30.7	8.54	483.33	(Q9Z2L0) Voltage-dependent anion-selective channel protein 1
VDAC3_RAT	16.61	3	283	30.8	8.70	234.72	(Q9R1Z0) Voltage-dependent anion-selective channel protein 3
ACADV_RAT	14.35	6	655	70.7	8.90	203.14	(P45953) Very long-chain specific acyl-CoA dehydrogenase, mitochondrial
BR44L_MOUSE	31.19	2	109	12.4	9.61	78.66	(P63030) Brain protein 44-like protein
COX1_RAT	5.84	3	514	56.9	6.80	150.50	(P05503) Cytochrome c oxidase subunit 1
COX2_RAT	32.60	19	227	25.9	4.73	521.15	(P00406) Cytochrome c oxidase subunit 2

COX41_RAT	31.95	18	169	19.5	9.44	604.77	(P10888) Cytochrome c oxidase subunit 4 isoform 1, mitochondrial
COX5B_RAT	13.18	2	129	13.9	7.78	134.28	(P12075) Cytochrome c oxidase subunit 5B, mitochondrial
CX6C2_RAT	59.21	13	76	8.4	10.07	374.14	(P11951) Cytochrome c oxidase subunit 6C-2
CTRB1_RAT	3.80	4	263	27.8	5.07	203.71	(P07338) Chymotrypsinogen B
CX6A1_RAT	27.03	5	111	12.3	9.32	177.08	(P10818) Cytochrome c oxidase subunit 6A1, mitochondrial
CX6A2_RAT	41.49	14	94	10.5	9.07	498.53	(P10817) Cytochrome c oxidase subunit 6A2, mitochondrial
CYB_RAT	12.37	8	380	43.0	7.99	331.49	(P00159) Cytochrome b
GRP75_RAT	10.31	5	679	73.8	6.30	129.90	(P48721) Stress-70 protein, mitochondrial
MCCB_RAT	5.86	2	563	61.5	8.31	76.19	(Q5XIT9) Methylcrotonoyl-CoA carboxylase beta chain, mitochondrial
MMSA_RAT	22.43	9	535	57.8	8.22	312.38	(Q02253) Methylmalonate-semialdehyde dehydrogenase [acylating], mitochondrial
PECI_RAT	8.44	2	391	43.0	8.98	90.69	(Q5XIC0) Peroxisomal 3,2-trans-enoyl-CoA isomerase
QCR8_RAT	31.71	7	82	9.8	10.52	156.80	(Q7TQ16) Cytochrome b-c1 complex subunit 8
SUCA_RAT	17.34	5	346	36.1	9.48	189.56	(P13086) Succinyl-CoA

							ligase [GDP-forming] subunit alpha, mitochondrial
THIL_RAT	8.02	3	424	44.7	8.76	193.30	(P17764) Acetyl-CoA acetyltransferase, mitochondrial
UCRI_RAT	75.91	56	274	29.4	8.87	1789.47	(P20788) Cytochrome b-c1 complex subunit Rieske, mitochondrial
IMMT_RAT	4.60	2	609	67.1	5.80	97.70	(Q3KR86) Mitochondrial inner membrane protein

Supplemental Table S8. Complex 3 band trypsin digestion

Accession	Coverage	Peptides	# AAs	MW [kDa]	calc. pI	Score	Description
IDHP_RAT	35.40	17	452	50.9	8.69	544.64	(P56574) Isocitrate dehydrogenase [NADP], mitochondrial
QCR2_RAT	64.82	336	452	48.4	9.14	13815.08	(P32551) Cytochrome b-c1 complex subunit 2, mitochondrial
ATPA_RAT	33.09	28	553	59.7	9.19	1378.09	(P15999) ATP synthase subunit alpha, mitochondrial
CISY_RAT	13.95	6	466	51.8	8.35	211.90	(Q8VHF5) Citrate synthase, mitochondrial
AATM_RAT	56.98	34	430	47.3	9.00	1317.64	(P00507) Aspartate aminotransferase, mitochondrial
MDHM_RAT	42.01	26	338	35.7	8.68	1380.43	(P04636) Malate dehydrogenase, mitochondrial
TRY1_RAT	8.13	8	246	25.9	4.89	312.81	(P00762) RecName: Full=Anionic trypsin-1;
ECHA_RAT	57.93	134	763	82.6	9.06	5622.67	(Q64428) Trifunctional enzyme subunit alpha, mitochondrial
KCRS_RAT	60.14	494	419	47.4	8.51	24682.35	(P09605) Creatine kinase S-type, mitochondrial
ODPA_RAT	11.28	2	390	43.2	8.19	94.74	(P26284) Pyruvate dehydrogenase E1

							component subunit alpha, somatic form, mitochondrial
ECHB_RAT	56.42	102	475	51.4	9.47	4095.35	(Q60587) Trifunctional enzyme subunit beta, mitochondrial
ATPG_RAT	13.19	3	273	30.2	8.84	150.80	(P35435) ATP synthase subunit gamma, mitochondrial
ACON_RAT	25.13	18	780	85.4	7.83	750.31	(Q9ER34) Aconitate hydratase, mitochondrial
DHSA_RAT	8.99	2	656	71.6	7.17	91.86	(Q920L2) Succinate dehydrogenase [ubiquinone] flavoprotein subunit, mitochondrial
ACSL1_RAT	9.44	4	699	78.1	6.99	184.83	(P18163) Long-chain-fatty-acid--CoA ligase 1
QCR1_RAT	61.67	386	480	52.8	5.88	17472.63	(Q68FY0) Cytochrome b-c1 complex subunit 1, mitochondrial
CH60_MOUSE	28.10	14	573	60.9	6.18	614.65	(P63038) 60 kDa heat shock protein, mitochondrial
COX5A_RAT	54.11	28	146	16.1	6.54	1058.27	(P11240) Cytochrome c oxidase subunit 5A, mitochondrial
ATPB_RAT	59.17	30	529	56.3	5.34	1272.75	(P10719) ATP synthase subunit beta, mitochondrial
ADT1_RAT	56.04	56	298	33.0	9.79	2561.90	(Q05962) ADP/ATP translocase 1

ADT2_RAT	28.86	34	298	32.9	9.73	1594.74	(Q09073) ADP/ATP translocase 2
BR44_RAT	16.54	4	127	14.2	10.48	106.03	(P38718) Brain protein 44
SODM_RAT	32.88	5	222	24.7	8.81	247.44	(P07895) Superoxide dismutase [Mn], mitochondrial
VDAC1_RAT	55.48	22	283	30.7	8.54	1161.75	(Q9Z2L0) Voltage-dependent anion-selective channel protein 1
VDAC2_RAT	41.36	16	295	31.7	7.49	566.73	(P81155) Voltage-dependent anion-selective channel protein 2
VDAC3_RAT	20.14	7	283	30.8	8.70	231.19	(Q9R1Z0) Voltage-dependent anion-selective channel protein 3
MPCP_RAT	14.33	7	356	39.4	9.33	341.99	(P16036) Phosphate carrier protein, mitochondrial
ACADV_RAT	27.94	24	655	70.7	8.90	1205.66	(P45953) Very long-chain specific acyl-CoA dehydrogenase, mitochondrial
AOFA_RAT	6.65	3	526	59.5	7.93	214.91	(P21396) Amine oxidase [flavin-containing] A
ATP5H_RAT	10.56	3	161	18.8	6.60	94.73	(P31399) ATP synthase subunit d, mitochondrial
ATPO_RAT	16.90	3	213	23.4	10.02	78.54	(Q06647) ATP synthase subunit O, mitochondrial

BR44L_MOUSE	43.12	4	109	12.4	9.61	238.50	(P63030) Brain protein 44-like protein
COX1_RAT	6.42	4	514	56.9	6.80	302.07	(P05503) Cytochrome c oxidase subunit 1
COX2_RAT	33.04	50	227	25.9	4.73	1714.21	(P00406) Cytochrome c oxidase subunit 2
COX41_RAT	31.95	22	169	19.5	9.44	1087.13	(P10888) Cytochrome c oxidase subunit 4 isoform 1, mitochondrial
COX5B_RAT	42.64	19	129	13.9	7.78	878.82	(P12075) Cytochrome c oxidase subunit 5B, mitochondrial
CX6C2_RAT	51.32	6	76	8.4	10.07	162.49	(P11951) Cytochrome c oxidase subunit 6C-2
CPT1B_RAT	11.01	8	772	88.2	8.60	285.58	(Q63704) Carnitine O-palmitoyltransferase 1, muscle isoform
CX6A1_RAT	33.33	2	111	12.3	9.32	96.02	(P10818) Cytochrome c oxidase subunit 6A1, mitochondrial
CX7A2_RAT	15.66	13	83	9.3	10.27	431.18	(P35171) Cytochrome c oxidase subunit 7A2, mitochondrial
CYB_RAT	2.37	3	380	43.0	7.99	104.99	(P00159) Cytochrome b
GRP75_RAT	12.22	10	679	73.8	6.30	385.31	(P48721) Stress-70 protein, mitochondrial
HCD2_RAT	22.22	3	261	27.2	8.78	174.05	(O70351) 3-hydroxyacyl-CoA dehydrogenase type-2
M2OM_RAT	7.96	2	314	34.2	9.88	106.54	(P97700) Mitochondrial 2-oxoglutarate/malate carrier protein

MCCB_RAT	38.90	16	563	61.5	8.31	786.96	(Q5XIT9) Methylcrotonoyl-CoA carboxylase beta chain, mitochondrial
MMSA_RAT	39.25	24	535	57.8	8.22	996.51	(Q02253) Methylmalonate-semialdehyde dehydrogenase [acylating], mitochondrial
PECI_RAT	9.72	2	391	43.0	8.98	87.89	(Q5XIC0) Peroxisomal 3,2-trans-enoyl-CoA isomerase
PRDX3_RAT	39.30	11	257	28.3	7.55	361.53	(Q9Z0V6) Thioredoxin-dependent peroxide reductase, mitochondrial
PRDX5_RAT	20.66	3	213	22.2	8.66	94.43	(Q9R063) Peroxiredoxin-5, mitochondrial
QCR6_RAT	20.22	4	89	10.4	4.97	164.05	(Q5M9I5) Cytochrome b-c1 complex subunit 6, mitochondrial
QCR8_RAT	64.63	16	82	9.8	10.52	413.55	(Q7TQ16) Cytochrome b-c1 complex subunit 8
SAM50_RAT	5.97	2	469	51.9	6.80	67.97	(Q6AXV4) Sorting and assembly machinery component 50 homolog
SUCA_RAT	12.72	4	346	36.1	9.48	176.65	(P13086) Succinyl-CoA ligase [GDP-forming] subunit alpha, mitochondrial
THIL_RAT	26.65	9	424	44.7	8.76	332.58	(P17764) Acetyl-CoA

							acetyltransferase, mitochondrial
UCRI_RAT	71.53	285	274	29.4	8.87	17901.66	(P20788) Cytochrome b-c1 complex subunit Rieske, mitochondrial
IMMT_RAT	16.42	8	609	67.1	5.80	246.50	(Q3KR86) Mitochondrial inner membrane protein

Supplemental Table S9. Complex 4 band chymotrypsin digestion

Accession	Coverage	Peptides	# AAs	MW [kDa]	calc. pI	Score	Description
IDHP_RAT	46.24	25	452	50.9	8.69	898.15	(P56574) Isocitrate dehydrogenase [NADP], mitochondrial
AATM_RAT	53.26	45	430	47.3	9.00	1309.63	(P00507) Aspartate aminotransferase, mitochondrial
IVD_RAT	7.31	3	424	46.4	7.90	141.70	(P12007) Isovaleryl-CoA dehydrogenase, mitochondrial
MDHM_RAT	39.35	27	338	35.7	8.68	792.33	(P04636) Malate dehydrogenase, mitochondrial
ECHA_RAT	6.16	4	763	82.6	9.06	152.24	(Q64428) Trifunctional enzyme subunit alpha, mitochondrial
KCRS_RAT	11.46	3	419	47.4	8.51	131.40	(P09605) Creatine kinase S-type, mitochondrial
COX7B_RAT	20.00	3	80	9.0	10.11	114.15	(P80431) Cytochrome c oxidase subunit 7B, mitochondrial
ODPA_RAT	15.13	4	390	43.2	8.19	145.71	(P26284) Pyruvate dehydrogenase E1 component subunit alpha, somatic form, mitochondrial
ACON_RAT	24.36	30	780	85.4	7.83	935.87	(Q9ER34) Aconitate hydratase, mitochondrial
DHSA_RAT	27.90	18	656	71.6	7.17	525.36	(Q920L2) Succinate dehydrogenase

							[ubiquinone] flavoprotein subunit, mitochondrial
ETFD_RAT	6.82	3	616	68.2	7.56	67.28	(Q6UPE1) Electron transfer flavoprotein-ubiquinone oxidoreductase, mitochondrial
ODO1_RAT	8.02	6	1023	116.2	6.77	197.92	(Q5XI78) 2-oxoglutarate dehydrogenase E1 component, mitochondrial
FUMH_RAT	19.13	9	507	54.4	8.95	297.91	(P14408) Fumarate hydratase, mitochondrial
COX5A_RAT	53.42	21	146	16.1	6.54	655.00	(P11240) Cytochrome c oxidase subunit 5A, mitochondrial
ADT1_RAT	37.58	34	298	33.0	9.79	1251.00	(Q05962) ADP/ATP translocase 1
ADT2_RAT	40.27	17	298	32.9	9.73	859.29	(Q09073) ADP/ATP translocase 2
CYC_MOUSE	23.81	2	105	11.6	9.58	65.49	(P62897) Cytochrome c, somatic
SODM_RAT	18.47	3	222	24.7	8.81	114.38	(P07895) Superoxide dismutase [Mn], mitochondrial
VDAC1_RAT	41.34	14	283	30.7	8.54	404.20	(Q9Z2L0) Voltage-dependent anion-selective channel protein 1
VDAC2_RAT	10.17	2	295	31.7	7.49	121.81	(P81155) Voltage-dependent anion-selective channel protein 2
VDAC3_RAT	7.42	2	283	30.8	8.70	97.64	(Q9R1Z0) Voltage-dependent anion-

							selective channel protein 3
MPCP_RAT	10.96	5	356	39.4	9.33	97.04	(P16036) Phosphate carrier protein, mitochondrial
DHSB_RAT	9.93	4	282	31.8	8.68	163.63	(P21913) Succinate dehydrogenase [ubiquinone] iron-sulfur subunit, mitochondrial
ACADV_RAT	19.39	14	655	70.7	8.90	568.36	(P45953) Very long-chain specific acyl-CoA dehydrogenase, mitochondrial
ALDH2_RAT	50.10	80	519	56.5	7.05	2527.89	(P11884) Aldehyde dehydrogenase, mitochondrial
AOFA_RAT	7.03	3	526	59.5	7.93	77.05	(P21396) Amine oxidase [flavin-containing] A
CACP_RAT	5.11	2	626	70.8	8.54	73.05	(Q704S8) Carnitine O-acetyltransferase
COX2_RAT	36.56	19	227	25.9	4.73	513.11	(P00406) Cytochrome c oxidase subunit 2
COX41_RAT	40.24	31	169	19.5	9.44	873.41	(P10888) Cytochrome c oxidase subunit 4 isoform 1, mitochondrial
COX5B_RAT	13.18	6	129	13.9	7.78	285.23	(P12075) Cytochrome c oxidase subunit 5B, mitochondrial
CX6C2_RAT	64.47	23	76	8.4	10.07	592.62	(P11951) Cytochrome c oxidase subunit 6C-2
CTRB1_RAT	3.80	4	263	27.8	5.07	148.97	(P07338) Chymotrypsinogen B
CX6A1_RAT	26.13	6	111	12.3	9.32	257.54	(P10818) Cytochrome c oxidase subunit 6A1, mitochondrial

CX6A2_RAT	52.13	28	94	10.5	9.07	871.36	(P10817) Cytochrome c oxidase subunit 6A2, mitochondrial
CX7A2_RAT	26.51	2	83	9.3	10.27	69.87	(P35171) Cytochrome c oxidase subunit 7A2, mitochondrial
GRP75_RAT	8.54	3	679	73.8	6.30	102.94	(P48721) Stress-70 protein, mitochondrial
HCD2_RAT	14.56	3	261	27.2	8.78	104.66	(O70351) 3-hydroxyacyl-CoA dehydrogenase type-2
MMSA_RAT	25.23	13	535	57.8	8.22	536.60	(Q02253) Methylmalonate-semialdehyde dehydrogenase [acylating], mitochondrial
ODPB_RAT	15.60	5	359	39.0	6.65	266.32	(P49432) Pyruvate dehydrogenase E1 component subunit beta, mitochondrial
SAM50_RAT	2.35	2	469	51.9	6.80	57.50	(Q6AXV4) Sorting and assembly machinery component 50 homolog
SSDH_RAT	6.12	3	523	56.1	8.09	117.63	(P51650) Succinate-semialdehyde dehydrogenase, mitochondrial
SUCA_RAT	27.46	9	346	36.1	9.48	326.62	(P13086) Succinyl-CoA ligase [GDP-forming] subunit alpha, mitochondrial
THIL_RAT	21.70	15	424	44.7	8.76	563.80	(P17764) Acetyl-CoA acetyltransferase, mitochondrial
IMMT_RAT	8.54	4	609	67.1	5.80	148.85	(Q3KR86) Mitochondrial inner

							membrane protein

Supplemental Table S10. Complex 4 band trypsin digestion

Accession	Coverage	Peptides	# AAs	MW [kDa]	calc. pI	Score	Description
ACADL_RAT	25.81	9	430	47.8	7.74	383.61	(P15650) Long-chain specific acyl-CoA dehydrogenase, mitochondrial
IDHP_RAT	52.88	118	452	50.9	8.69	4020.14	(P56574) Isocitrate dehydrogenase [NADP], mitochondrial
QCR2_RAT	14.82	9	452	48.4	9.14	459.35	(P32551) Cytochrome b-c1 complex subunit 2, mitochondrial
ATPA_RAT	16.82	8	553	59.7	9.19	400.14	(P15999) ATP synthase subunit alpha, mitochondrial
CISY_RAT	22.96	15	466	51.8	8.35	592.84	(Q8VHF5) Citrate synthase, mitochondrial
AATM_RAT	66.51	191	430	47.3	9.00	7425.02	(P00507) Aspartate aminotransferase, mitochondrial
IVD_RAT	20.52	10	424	46.4	7.90	460.20	(P12007) Isovaleryl-CoA dehydrogenase, mitochondrial
MDHM_RAT	55.03	72	338	35.7	8.68	3717.71	(P04636) Malate dehydrogenase, mitochondrial
TRY1_RAT	8.13	9	246	25.9	4.89	307.23	(P00762) RecName: Full=Anionic trypsin-1;
ECHA_RAT	32.11	22	763	82.6	9.06	954.36	(Q64428) Trifunctional enzyme subunit alpha, mitochondrial
THIM_RAT	32.24	11	397	41.8	7.94	451.98	(P13437) 3-ketoacyl-CoA

							thiolase, mitochondrial
KCRS_RAT	28.16	11	419	47.4	8.51	523.22	(P09605) Creatine kinase S-type, mitochondrial
ODPA_RAT	42.31	18	390	43.2	8.19	610.40	(P26284) Pyruvate dehydrogenase E1 component subunit alpha, somatic form, mitochondrial
ECHB_RAT	32.21	15	475	51.4	9.47	570.66	(Q60587) Trifunctional enzyme subunit beta, mitochondrial
K2C6A_RAT	3.99	4	552	59.2	7.94	183.43	(Q4FZU2) Keratin, type II cytoskeletal 6A
LPPRC_RAT	1.72	2	1392	156.6	6.61	71.65	(Q5SGE0) Leucine-rich PPR motif-containing protein, mitochondrial
K2C1_RAT	3.68	2	625	64.8	7.87	106.84	(Q6IMF3) Keratin, type II cytoskeletal 1
ACON_RAT	54.36	93	780	85.4	7.83	3613.32	(Q9ER34) Aconitate hydratase, mitochondrial
DHSA_RAT	47.26	79	656	71.6	7.17	2856.69	(Q920L2) Succinate dehydrogenase [ubiquinone] flavoprotein subunit, mitochondrial
ODP2_RAT	11.23	8	632	67.1	8.53	323.05	(P08461) Dihydrolipoyllysine-residue acetyltransferase component of pyruvate dehydrogenase complex, mitochondrial
ACSL1_RAT	30.90	33	699	78.1	6.99	1340.93	(P18163) Long-chain-fatty-acid--CoA ligase 1
ETFD_RAT	22.73	15	616	68.2	7.56	558.16	(Q6UPE1) Electron transfer flavoprotein-ubiquinone oxidoreductase,

							mitochondrial
ODO1_RAT	36.27	47	1023	116.2	6.77	1682.99	(Q5XI78) 2-oxoglutarate dehydrogenase E1 component, mitochondrial
FUMH_RAT	55.03	72	507	54.4	8.95	2905.28	(P14408) Fumarate hydratase, mitochondrial
CH60_MOUSE	8.55	2	573	60.9	6.18	130.12	(P63038) 60 kDa heat shock protein, mitochondrial
COX5A_RAT	48.63	43	146	16.1	6.54	1602.66	(P11240) Cytochrome c oxidase subunit 5A, mitochondrial
ATPB_RAT	33.46	18	529	56.3	5.34	664.32	(P10719) ATP synthase subunit beta, mitochondrial
ADT1_RAT	61.41	251	298	33.0	9.79	12021.61	(Q05962) ADP/ATP translocase 1
ADT2_RAT	36.58	158	298	32.9	9.73	8205.75	(Q09073) ADP/ATP translocase 2
DCMC_RAT	33.13	18	492	54.7	8.72	779.00	(Q920F5) Malonyl-CoA decarboxylase, mitochondrial
CYC_MOUSE	25.71	2	105	11.6	9.58	115.82	(P62897) Cytochrome c, somatic
BR44_RAT	44.09	7	127	14.2	10.48	245.88	(P38718) Brain protein 44
SODM_RAT	68.92	35	222	24.7	8.81	1785.42	(P07895) Superoxide dismutase [Mn], mitochondrial
DHE3_RAT	9.86	4	558	61.4	8.00	127.39	(P10860) Glutamate dehydrogenase 1, mitochondrial
AL9A1_RAT	19.23	11	494	53.6	6.92	488.30	(Q9JLJ3) 4-trimethylaminobutyraldehyde dehydrogenase

VDAC1_RAT	35.69	23	283	30.7	8.54	1181.75	(Q9Z2L0) Voltage-dependent anion-selective channel protein 1
VDAC2_RAT	26.44	8	295	31.7	7.49	325.06	(P81155) Voltage-dependent anion-selective channel protein 2
VDAC3_RAT	29.33	11	283	30.8	8.70	384.02	(Q9R1Z0) Voltage-dependent anion-selective channel protein 3
MPCP_RAT	21.63	22	356	39.4	9.33	708.20	(P16036) Phosphate carrier protein, mitochondrial
DHSB_RAT	19.15	9	282	31.8	8.68	336.78	(P21913) Succinate dehydrogenase [ubiquinone] iron-sulfur subunit, mitochondrial
ABCB7_RAT	5.98	2	752	82.5	9.31	110.28	(Q704E8) ATP-binding cassette sub-family B member 7, mitochondrial
HCDH_RAT	36.31	10	314	34.4	8.76	527.88	(Q9WVK7) Hydroxyacyl-coenzyme A dehydrogenase, mitochondrial
ACADV_RAT	53.74	130	655	70.7	8.90	6270.29	(P45953) Very long-chain specific acyl-CoA dehydrogenase, mitochondrial
ALDH2_RAT	57.03	169	519	56.5	7.05	7389.90	(P11884) Aldehyde dehydrogenase, mitochondrial
AOFA_RAT	22.24	11	526	59.5	7.93	430.31	(P21396) Amine oxidase [flavin-containing] A
AT1B1_RAT	8.88	2	304	35.2	8.65	59.89	(P07340) Sodium/potassium-transporting ATPase subunit beta-1

ATPO_RAT	15.49	3	213	23.4	10.02	100.54	(Q06647) ATP synthase subunit O, mitochondrial
BDH_RAT	18.95	4	343	38.2	8.84	267.63	(P29147) D-beta-hydroxybutyrate dehydrogenase, mitochondrial
BR44L_MOUSE	43.12	5	109	12.4	9.61	255.58	(P63030) Brain protein 44-like protein
CACP_RAT	19.49	10	626	70.8	8.54	368.80	(Q704S8) Carnitine O-acetyltransferase
CISD1_RAT	23.15	3	108	12.1	8.84	193.28	(B0K020) CDGSH iron sulfur domain-containing protein 1
COX1_RAT	9.14	7	514	56.9	6.80	400.23	(P05503) Cytochrome c oxidase subunit 1
COX2_RAT	33.04	52	227	25.9	4.73	1740.63	(P00406) Cytochrome c oxidase subunit 2
COX41_RAT	34.91	61	169	19.5	9.44	1927.01	(P10888) Cytochrome c oxidase subunit 4 isoform 1, mitochondrial
COX5B_RAT	40.31	46	129	13.9	7.78	1601.34	(P12075) Cytochrome c oxidase subunit 5B, mitochondrial
CX6C2_RAT	31.58	25	76	8.4	10.07	822.97	(P11951) Cytochrome c oxidase subunit 6C-2
COX8B_RAT	50.00	4	70	7.5	10.37	200.12	(P16221) Cytochrome c oxidase subunit 8B, mitochondrial
CPT1B_RAT	21.89	23	772	88.2	8.60	865.79	(Q63704) Carnitine O-palmitoyltransferase 1, muscle isoform
CPT2_RAT	16.11	10	658	74.1	7.33	530.19	(P18886) Carnitine O-palmitoyltransferase 2, mitochondrial

CX6A1_RAT	45.05	5	111	12.3	9.32	166.73	(P10818) Cytochrome c oxidase subunit 6A1, mitochondrial
CX6A2_RAT	30.85	6	94	10.5	9.07	127.87	(P10817) Cytochrome c oxidase subunit 6A2, mitochondrial
CX7A2_RAT	18.07	21	83	9.3	10.27	656.56	(P35171) Cytochrome c oxidase subunit 7A2, mitochondrial
D3D2_RAT	17.30	4	289	32.2	9.54	230.11	(P23965) 3,2-trans-enoyl-CoA isomerase, mitochondrial
DECR_RAT	16.42	7	335	36.1	8.94	241.24	(Q64591) 2,4-dienoyl-CoA reductase, mitochondrial
ECH1_RAT	32.11	15	327	36.1	7.99	692.29	(Q62651) Delta(3,5)-Delta(2,4)-dienoyl-CoA isomerase, mitochondrial
ECHM_RAT	10.34	3	290	31.5	8.13	174.94	(P14604) Enoyl-CoA hydratase, mitochondrial
ES1_RAT	19.17	2	266	28.2	8.92	56.45	(P56571) ES1 protein homolog, mitochondrial
GRP75_RAT	17.53	15	679	73.8	6.30	663.44	(P48721) Stress-70 protein, mitochondrial
HCD2_RAT	58.24	21	261	27.2	8.78	805.18	(O70351) 3-hydroxyacyl-CoA dehydrogenase type-2
HIG1A_RAT	33.33	3	93	10.3	9.99	155.36	(Q8VH49) HIG1 domain family member 1A
HSDL2_RAT	14.31	20	524	58.3	6.19	1078.26	(Q4V8F9) Hydroxysteroid dehydrogenase-like protein 2
M2OM_RAT	31.21	14	314	34.2	9.88	632.35	(P97700) Mitochondrial 2-oxoglutarate/malate carrier protein
MCAT_RAT	8.97	4	301	33.1	9.48	195.77	(P97521) Mitochondrial carnitine/acylcarnitine

							carrier protein
MMSA_RAT	56.07	55	535	57.8	8.22	2426.00	(Q02253) Methylmalonate-semialdehyde dehydrogenase [acylating], mitochondrial
NB5R3_RAT	13.95	5	301	34.2	8.38	211.93	(P20070) NADH-cytochrome b5 reductase 3
ODBA_RAT	14.97	4	441	50.1	7.83	204.55	(P11960) 2-oxoisovalerate dehydrogenase subunit alpha, mitochondrial
ODPB_RAT	51.25	29	359	39.0	6.65	1168.27	(P49432) Pyruvate dehydrogenase E1 component subunit beta, mitochondrial
PECI_RAT	6.65	2	391	43.0	8.98	69.43	(Q5XIC0) Peroxisomal 3,2-trans-enoyl-CoA isomerase
PRDX3_RAT	20.62	3	257	28.3	7.55	91.29	(Q9Z0V6) Thioredoxin-dependent peroxide reductase, mitochondrial
PRDX5_RAT	33.80	7	213	22.2	8.66	344.98	(Q9R063) Peroxiredoxin-5, mitochondrial
PYRD2_RAT	12.56	3	581	62.8	8.18	105.75	(Q68FT3) Pyridine nucleotide-disulfide oxidoreductase domain-containing protein 2
SAM50_RAT	30.28	16	469	51.9	6.80	505.46	(Q6AXV4) Sorting and assembly machinery component 50 homolog
SCPDH_RAT	10.96	2	429	47.1	8.84	121.68	(Q6AY30) Probable saccharopine dehydrogenase
SSDH_RAT	16.63	6	523	56.1	8.09	303.40	(P51650) Succinate-semialdehyde dehydrogenase, mitochondrial

SUCA_RAT	27.46	10	346	36.1	9.48	415.32	(P13086) Succinyl-CoA ligase [GDP-forming] subunit alpha, mitochondrial
THIL_RAT	39.86	22	424	44.7	8.76	1187.83	(P17764) Acetyl-CoA acetyltransferase, mitochondrial
TOM40_RAT	11.91	2	361	37.9	8.35	157.21	(Q75Q40) Mitochondrial import receptor subunit TOM40 homolog
IMMT_RAT	30.54	25	609	67.1	5.80	922.67	(Q3KR86) Mitochondrial inner membrane protein

Supplemental Table S11. Complex V band trypsin digestion

Accession	Coverage	Peptides	# AAs	MW [kDa]	calc. pI	Score	Description
IDHP_RAT	13.94	7	452	50.9	8.69	231.61	(P56574) Isocitrate dehydrogenase [NADP], mitochondrial
QCR2_RAT	40.49	32	452	48.4	9.14	1332.91	(P32551) Cytochrome b-c1 complex subunit 2, mitochondrial
ATPA_RAT	59.49	967	553	59.7	9.19	46073.48	(P15999) ATP synthase subunit alpha, mitochondrial
CISY_RAT	8.37	3	466	51.8	8.35	87.09	(Q8VHF5) Citrate synthase, mitochondrial
AATM_RAT	34.65	19	430	47.3	9.00	618.51	(P00507) Aspartate aminotransferase, mitochondrial
MDHM_RAT	46.45	22	338	35.7	8.68	1006.00	(P04636) Malate dehydrogenase, mitochondrial
TRY1_RAT	8.13	4	246	25.9	4.89	141.97	(P00762) RecName: Full=Anionic trypsin-1;
ECHA_RAT	48.75	64	763	82.6	9.06	2760.69	(Q64428) Trifunctional enzyme subunit alpha, mitochondrial
KCRS_RAT	47.97	190	419	47.4	8.51	7100.46	(P09605) Creatine kinase S-type, mitochondrial
ECHB_RAT	50.95	48	475	51.4	9.47	1790.61	(Q60587) Trifunctional enzyme subunit beta, mitochondrial
ATPG_RAT	34.07	108	273	30.2	8.84	3892.13	(P35435) ATP synthase subunit gamma,

							mitochondrial
ACON_RAT	17.44	13	780	85.4	7.83	433.26	(Q9ER34) Aconitate hydratase, mitochondrial
QCR1_RAT	37.08	29	480	52.8	5.88	1050.02	(Q68FY0) Cytochrome b-c1 complex subunit 1, mitochondrial
FUMH_RAT	7.50	2	507	54.4	8.95	163.72	(P14408) Fumarate hydratase, mitochondrial
COX5A_RAT	42.47	9	146	16.1	6.54	322.22	(P11240) Cytochrome c oxidase subunit 5A, mitochondrial
ATPB_RAT	79.58	1290	529	56.3	5.34	49550.09	(P10719) ATP synthase subunit beta, mitochondrial
ADT1_RAT	47.65	41	298	33.0	9.79	1608.97	(Q05962) ADP/ATP translocase 1
ADT2_RAT	27.85	19	298	32.9	9.73	761.97	(Q09073) ADP/ATP translocase 2
BR44_RAT	22.83	3	127	14.2	10.48	71.50	(P38718) Brain protein 44
SODM_RAT	6.31	2	222	24.7	8.81	66.65	(P07895) Superoxide dismutase [Mn], mitochondrial
VDAC1_RAT	40.99	18	283	30.7	8.54	605.87	(Q9Z2L0) Voltage-dependent anion-selective channel protein 1
VDAC2_RAT	46.44	14	295	31.7	7.49	510.29	(P81155) Voltage-dependent anion-selective channel protein 2
VDAC3_RAT	27.56	9	283	30.8	8.70	314.35	(Q9R1Z0) Voltage-dependent anion-

							selective channel protein 3
MPCP_RAT	18.54	12	356	39.4	9.33	480.20	(P16036) Phosphate carrier protein, mitochondrial
ACADV_RAT	25.34	17	655	70.7	8.90	889.11	(P45953) Very long-chain specific acyl-CoA dehydrogenase, mitochondrial
AT5F1_RAT	37.50	120	256	28.9	9.36	4763.73	(P19511) ATP synthase subunit b, mitochondrial
AT5G1_RAT	22.79	23	136	14.2	9.91	974.33	(Q06645) ATP synthase lipid-binding protein, mitochondrial
ATP5H_RAT	72.05	64	161	18.8	6.60	1612.06	(P31399) ATP synthase subunit d, mitochondrial
ATP5I_RAT	56.34	21	71	8.2	9.35	706.66	(P29419) ATP synthase subunit e, mitochondrial
ATP5J_RAT	43.52	2	108	12.5	9.44	56.42	(P21571) ATP synthase-coupling factor 6, mitochondrial
ATP6_RAT	4.42	2	226	25.0	9.60	87.98	(P05504) ATP synthase subunit a
ATP8_RAT	34.33	12	67	7.6	9.32	361.71	(P11608) ATP synthase protein 8
ATPO_RAT	59.15	89	213	23.4	10.02	3684.73	(Q06647) ATP synthase subunit O, mitochondrial
BR44L_MOUSE	43.12	5	109	12.4	9.61	225.04	(P63030) Brain protein 44-like protein
COX1_RAT	8.95	2	514	56.9	6.80	102.09	(P05503) Cytochrome c oxidase subunit 1
COX2_RAT	28.63	10	227	25.9	4.73	360.88	(P00406) Cytochrome c oxidase subunit 2

COX41_RAT	27.22	20	169	19.5	9.44	497.87	(P10888) Cytochrome c oxidase subunit 4 isoform 1, mitochondrial
CX6C2_RAT	31.58	6	76	8.4	10.07	188.88	(P11951) Cytochrome c oxidase subunit 6C-2
CPT1B_RAT	15.54	11	772	88.2	8.60	272.89	(Q63704) Carnitine O-palmitoyltransferase 1, muscle isoform
CX7A2_RAT	15.66	3	83	9.3	10.27	161.21	(P35171) Cytochrome c oxidase subunit 7A2, mitochondrial
GRP75_RAT	6.63	3	679	73.8	6.30	123.05	(P48721) Stress-70 protein, mitochondrial
HSDL2_RAT	5.92	2	524	58.3	6.19	84.44	(Q4V8F9) Hydroxysteroid dehydrogenase-like protein 2
M2OM_RAT	8.92	2	314	34.2	9.88	91.87	(P97700) Mitochondrial 2-oxoglutarate/malate carrier protein
MCCB_RAT	17.94	9	563	61.5	8.31	502.85	(Q5XIT9) Methylcrotonoyl-CoA carboxylase beta chain, mitochondrial
MMSA_RAT	35.14	19	535	57.8	8.22	654.75	(Q02253) Methylmalonate-semialdehyde dehydrogenase [acylating], mitochondrial
NU4M_RAT	8.28	2	459	51.8	9.41	71.78	(P05508) NADH-ubiquinone oxidoreductase chain 4
PRDX3_RAT	16.34	2	257	28.3	7.55	70.73	(Q9Z0V6) Thioredoxin-dependent peroxide reductase,

							mitochondrial
QCR8_RAT	15.85	5	82	9.8	10.52	210.19	(Q7TQ16) Cytochrome b-c1 complex subunit 8
SAM50_RAT	11.09	6	469	51.9	6.80	237.54	(Q6AXV4) Sorting and assembly machinery component 50 homolog
SUCA_RAT	13.01	4	346	36.1	9.48	221.68	(P13086) Succinyl-CoA ligase [GDP-forming] subunit alpha, mitochondrial
THIL_RAT	4.01	2	424	44.7	8.76	97.74	(P17764) Acetyl-CoA acetyltransferase, mitochondrial
UCRI_RAT	25.18	5	274	29.4	8.87	373.17	(P20788) Cytochrome b-c1 complex subunit Rieske, mitochondrial
USMG5_RAT	44.83	10	58	6.4	9.83	366.74	(Q9JJW3) Up-regulated during skeletal muscle growth protein 5
IMMT_RAT	10.51	4	609	67.1	5.80	99.44	(Q3KR86) Mitochondrial inner membrane protein
DHRS4_RAT	6.09	2	279	29.8	9.55	45.19	(Q8VID1) Dehydrogenase/reductase SDR family member 4

Supplemental Table S12. Complex 5 band chymotrypsin digestion

Accession	Coverage	Peptides	# AAs	MW [kDa]	calc. pI	Score	Description
QCR2_RAT	11.06	5	452	48.4	9.14	63.62	(P32551) Cytochrome b-c1 complex subunit 2, mitochondrial
ATPA_RAT	4.16	5	553	59.7	9.19	61.59	(P15999) ATP synthase subunit alpha, mitochondrial
KCRS_RAT	19.33	14	419	47.4	8.51	271.49	(P09605) Creatine kinase S-type, mitochondrial
NDUS1_RAT	5.50	3	727	79.4	5.90	27.13	(Q66HF1) NADH-ubiquinone oxidoreductase 75 kDa subunit, mitochondrial
NDUS2_RAT	2.81	2	463	52.5	6.99	29.96	(Q641Y2) NADH dehydrogenase [ubiquinone] iron-sulfur protein 2, mitochondrial
QCR1_RAT	12.50	4	480	52.8	5.88	53.79	(Q68FY0) Cytochrome b-c1 complex subunit 1, mitochondrial
COX2_RAT	9.69	2	227	25.9	4.73	43.96	(P00406) Cytochrome c oxidase subunit 2
NDUA9_RAT	15.95	4	370	41.8	9.76	39.27	(Q5BK63) NADH dehydrogenase [ubiquinone] 1 alpha subcomplex subunit 9, mitochondrial

Supplemental Figure S8. Complex V activity assay, showing that the enzyme hydrolyzes ATP (A) and GTP (B) with essentially the same affinity. Thus, incubating 2D BN-PAGE gels with ATP or GTP, generates free phosphate and ADP or GDP.