



**Figure S1:** Isolation of cardiac mitochondrial proteins by gel electrophoresis. Hearts from sham and heart failure rats were removed. Proteins from subsarcolemmal mitochondria (SSM) and interfibrillar mitochondria (IFM) populations were isolated using SDS-PAGE and selected bands were analyzed by LC-MS/MS.

**Table S1- Body Water Enrichment profile in TAC and SHAM rats**

**(Each value represents the average of the measurements from 2 rats at each time point, which were differed less than 10%)**

<b>Time (days)</b>	<b>SHAM</b>	<b>TAC</b>
<b>0</b>	<b>0.00</b>	<b>0.00</b>
<b>3</b>	<b>0.97</b>	<b>1.01</b>
<b>10</b>	<b>1.43</b>	<b>2.40</b>
<b>20</b>	<b>2.73</b>	<b>3.13</b>
<b>40</b>	<b>3.23</b>	<b>3.46</b>
<b>60</b>	<b>3.67</b>	<b>3.42</b>
<b>80</b>	<b>3.43</b>	<b>3.47</b>

**Table S2- List of proteins presented in both SSM and IFM fractions from both sham and heart failure groups**  
**(the proteins marked in red were used in kinetic analysis)**

#	ACCESSION #	PROTEIN
1	gi 53850628	NADH-ubiquinone oxidoreductase 75 kDa subunit mitochondrial precursor [Rattus norvegicus]
2	gi 25742739	<b>long-chain-fatty-acid-CoA ligase 1 [Rattus norvegicus]</b>
3	gi 40538860	aconitate hydratase mitochondrial precursor [Rattus norvegicus]
4	gi 54792127	ATP synthase subunit beta mitochondrial precursor [Rattus norvegicus]
5	gi 8393180	cytochrome c oxidase subunit 4 isoform 1 mitochondrial precursor [Rattus norvegicus]
6	gi 62079055	isocitrate dehydrogenase [NADP] mitochondrial precursor [Rattus norvegicus]
7	gi 6981260	NADH dehydrogenase [ubiquinone] 1 alpha subcomplex subunit 5 [Rattus norvegicus]
8	gi 18426866	3-ketoacyl-CoA thiolase mitochondrial [Rattus norvegicus]
9	gi 40538742	ATP synthase subunit alpha mitochondrial precursor [Rattus norvegicus]
10	gi 189011657	cytochrome b-c1 complex subunit 7 [Rattus norvegicus]
11	gi 13786200	voltage-dependent anion-selective channel protein 1 [Rattus norvegicus]
12	gi 32189350	ADP/ATP translocase 2 [Rattus norvegicus]
13	gi 32189355	ADP/ATP translocase 1 [Rattus norvegicus]
14	gi 39930503	ATP synthase subunit gamma mitochondrial [Rattus norvegicus]
15	gi 148747393	trifunctional enzyme subunit alpha mitochondrial precursor [Rattus norvegicus]
16	gi 6978703	carnitine O-palmitoyltransferase 1 muscle isoform [Rattus norvegicus]
17	gi 18426858	succinate dehydrogenase [ubiquinone] flavoprotein subunit mitochondrial precursor [Rattus norvegicus]
18	gi 42476181	malate dehydrogenase mitochondrial precursor [Rattus norvegicus]
19	gi 1557127	NAD(P) transhydrogenase mitochondrial [Rattus norvegicus]
20	gi 6980972	aspartate aminotransferase mitochondrial [Rattus norvegicus]
21	gi 3796202	voltage-dependent anion-selective channel protein 2 [Rattus norvegicus]
22	gi 13786204	voltage-dependent anion-selective channel protein 3 [Rattus norvegicus]
23	gi 55741544	cytochrome b-c1 complex subunit 2 mitochondrial precursor [Rattus norvegicus]
24	gi 58865384	NADH dehydrogenase [ubiquinone] iron-sulfur protein 2 mitochondrial precursor [Rattus norvegicus]
25	gi 6978435	very long-chain specific acyl-CoA dehydrogenase mitochondrial precursor [Rattus norvegicus]
26	gi 52138635	<b>electron transfer flavoprotein-ubiquinone oxidoreductase mitochondrial precursor [Rattus norvegicus]</b>
27	gi 51948476	cytochrome b-c1 complex subunit 1 mitochondrial precursor [Rattus norvegicus]
28	gi 198386332	<b>fumarylacetoacetate hydrolase domain-containing protein 2 [Rattus norvegicus]</b>
29	gi 8393418	<b>glyceroldehyde-3-phosphate dehydrogenase [Rattus norvegicus]</b>
30	gi 13242293	<b>hydroxymethylglutaryl-CoA lyase mitochondrial precursor [Rattus norvegicus]</b>
31	gi 14183666	<b>cytochrome c oxidase subunit II (mitochondrion) [Rattus norvegicus]</b>
32	gi 14183666	aldehyde dehydrogenase mitochondrial precursor [Rattus norvegicus]
33	gi 156749584	succinyl-CoA ligase [ADP-forming] subunit beta mitochondrial [Rattus norvegicus]
34	gi 68341995	NADH dehydrogenase [ubiquinone] iron-sulfur protein 4 mitochondrial precursor [Rattus norvegicus]
35	gi 56606108	<b>NADH dehydrogenase [ubiquinone] iron-sulfur protein 7 mitochondrial [Rattus norvegicus]</b>
36	gi 16758404	peroxiredoxin-5 mitochondrial precursor [Rattus norvegicus]
37	gi 20806153	<b>ATP synthase subunit delta mitochondrial precursor [Rattus norvegicus]</b>
38	gi 8394328	superoxide dismutase [Cu-Zn] [Rattus norvegicus]
39	gi 164565371	NADH dehydrogenase (ubiquinone) 1 alpha subcomplex 12 [Rattus norvegicus]
40	gi 157821497	<b>NADH dehydrogenase [ubiquinone] iron-sulfur protein 8 mitochondrial [Rattus norvegicus]</b>
41	gi 5690293	pyruvate dehydrogenase E1 component subunit beta mitochondrial precursor [Rattus norvegicus]
42	gi 24233541	cytochrome c oxidase subunit 5A mitochondrial precursor [Rattus norvegicus]
43	gi 6758230	propionyl-CoA decarboxylase mitochondrial [Rattus norvegicus]
44	gi 145651820	methionylmalonate-semialdehyde dehydrogenase [acylating] mitochondrial precursor [Rattus norvegicus]
45	gi 8394449	<b>mitochondrial import inner membrane translocase subunit TIM44 [Rattus norvegicus]</b>
46	gi 19705465	<b>ATP synthase subunit b mitochondrial precursor [Rattus norvegicus]</b>
47	gi 51854229	<b>carnitine O-acetyltransferase [Rattus norvegicus]</b>
48	gi 25742626	<b>apoptosis-inducing factor 1 mitochondrial precursor [Rattus norvegicus]</b>
49	gi 11693170	<b>mitochondrial 2-oxoglutarate/malate carrier protein [Rattus norvegicus]</b>
50	gi 55741520	<b>enoyl-CoA delta isomerase 2 mitochondrial [Rattus norvegicus]</b>
51	gi 83977457	3-hydroxyisobutyrate dehydrogenase mitochondrial precursor [Rattus norvegicus]
52	gi 18426858	succinate dehydrogenase [ubiquinone] flavoprotein subunit mitochondrial precursor [Rattus norvegicus]
53	gi 20306141	phosphate carrier protein mitochondrial precursor [Rattus norvegicus]
54	gi 17530977	<b>enoyl-CoA hydratase mitochondrial precursor [Rattus norvegicus]</b>
55	gi 17105336	hydroxyacyl-coenzyme A dehydrogenase mitochondrial precursor [Rattus norvegicus]
56	gi 77628000	<b>omega-amidase NIT2 [Rattus norvegicus]</b>
57	gi 20302049	<b>NADH-cytochrome b5 reductase 3 [Rattus norvegicus]</b>
58	gi 6981146	<b>L-lactate dehydrogenase B chain [Rattus norvegicus]</b>
59	gi 198386332	<b>fumarylacetoacetate hydrolase domain-containing protein 2 [Rattus norvegicus]</b>
60	gi 78365255	dihydropyridyllysine-residue acetyltransferase component of pyruvate dehydrogenase complex mitochondrial [Rattus norvegicus]
61	gi 110189666	<b>[Rattus cytochrome c oxidase subunit II (mitochondrion) [Rattus norvegicus]</b>
62	gi 209919614	<b>succinate dehydrogenase [ubiquinone] iron-sulfur subunit mitochondrial precursor [Rattus norvegicus]</b>
63	gi 52138624	<b>mitochondrial carnitine/acylcarnitine carrier protein [Rattus norvegicus]</b>
64	gi 110189672	<b>NADH dehydrogenase subunit 4 (mitochondrion) [Rattus norvegicus]</b>
65	gi 69811212	isovaleryl-CoA dehydrogenase mitochondrial precursor [Rattus norvegicus]
66	gi 48675862	acyl-coenzyme A thioesterase 2 mitochondrial [Rattus norvegicus]
67	gi 189083744	creatine kinase S-type mitochondrial precursor [Rattus norvegicus]
68	gi 11693174	branched-chain-amino-acid aminotransferase mitochondrial precursor [Rattus norvegicus]
69	gi 158303308	propionyl-CoA carboxylase alpha chain mitochondrial [Rattus norvegicus]
70	gi 40786469	dihydropyridyl dehydrogenase mitochondrial precursor [Rattus norvegicus]
71	gi 148747119	propionyl-CoA carboxylase beta chain mitochondrial precursor [Rattus norvegicus]
72	gi 6980956	glutamate dehydrogenase 1 mitochondrial precursor [Rattus norvegicus]
73	gi 62945278	2-oxoglutarate dehydrogenase mitochondrial precursor [Rattus norvegicus]
74	gi 12018236	thioredoxin reductase 2 mitochondrial precursor [Rattus norvegicus]
75	gi 56905722	<b>serine hydroxymethyltransferase mitochondrial [Rattus norvegicus]</b>
76	gi 6978705	<b>carnitine O-palmitoyltransferase 2 mitochondrial precursor [Rattus norvegicus]</b>
77	gi 11693166	<b>mitochondrial-processing peptidase subunit beta precursor [Rattus norvegicus]</b>
78	gi 54234052	<b>mitochondrial-processing peptidase subunit alpha [Rattus norvegicus]</b>
79	gi 195927000	<b>dihydropyridyllysine-residue succinyltransferase component of 2-oxoglutarate dehydrogenase complex [Rattus norvegicus]</b>
80	gi 270288740	<b>mitochondrial amine oxidase [flavin-containing] A [Rattus norvegicus]</b>
81	gi 51948412	<b>electron transfer flavoprotein subunit beta [Rattus norvegicus]</b>
82	gi 50054266	<b>neurolysin mitochondrial precursor [Rattus norvegicus]</b>
83	gi 189181716	<b>succinyl-CoA:3-ketoacid-coenzyme A transferase 1 mitochondrial precursor [Rattus norvegicus]</b>
84	gi 55741424	<b>NADH dehydrogenase [ubiquinone] flavoprotein 1 mitochondrial precursor [Rattus norvegicus]</b>
85	gi 157818027	<b>acetyl-coenzyme A synthetase 2-like mitochondrial [Rattus norvegicus]</b>
86	gi 20302061	<b>ATP synthase subunit O mitochondrial precursor [Rattus norvegicus]</b>
87	gi 157820807	<b>glutaryl-CoA dehydrogenase mitochondrial [Rattus norvegicus]</b>
88	gi 7709992	<b>basigin isoform 2 precursor [Rattus norvegicus]</b>
89	gi 58865534	<b>ubiquinone biosynthesis monooxygenase COQ6 precursor [Rattus norvegicus]</b>
90	gi 197313734	<b>acyl-CoA dehydrogenase family member 9 mitochondrial [Rattus norvegicus]</b>

**Table S3- Proteins identified in band 1 and 2 (Figure S1) in SSM and IFM fractions. Only baseline samples (t= 0 hr) in sham group was analyzed. Proteomic analysis revealed that the higher molecular weight bands in SSM fraction mainly represent heavy-chain myosin contaminants.**

#	Accession	Protein	MW [kDa]	Band 1		IFM		Band 2		Sore	S.C.
				SSM	S.C.	Score	S.C.	SSM	S.C.		
1	564386121	PREDICTED: myosin-6 isoform X2	223.2	4255.1	1399	-	-	3222.1	1053	-	-
2	564386123	PREDICTED: myosin-7 isoform X1	222.8	3654.0	1218	-	-	3323.6	1097	-	-
3	106879208	myosin-4	222.7	1679.3	566	-	-	-	-	-	-
4	6981234	myosin-3	223.7	1399.7	475	-	-	-	-	-	-
5	564350262	PREDICTED: chromodomain-helicase-DNA-binding protein 7 isoform X3	333.6	161.1	65	-	-	-	-	-	-
6	32189355	ADP/ATP translocase 1	33.0	69.5	26	-	-	141.2	53	22.1	9
7	564379379	PREDICTED: restin isoform X7	241.4	57.0	22	-	-	-	-	-	-
8	564335344	PREDICTED: NAD(P) transhydrogenase, mitochondrial isoform X2	113.8	52.8	19	15.5	7	126.2	45	129.6	51
9	71043650	serine/threonine-protein kinase SRPK1	73.8	52.1	22	-	-	-	-	-	-
10	564340113	PREDICTED: spectrin alpha chain, non-erythrocytic 1 isoform X9	282.2	41.8	16	-	-	84.1	34	-	-
11	564382509	PREDICTED: ecotropic viral integration site 5 isoform X11	90.3	38.7	14	-	-	-	-	-	-
12	564302435	PREDICTED: titin	3939.4	33.8	12	-	-	-	-	-	-
13	157817117	F-box/LRR-repeat protein 19	55.8	28.0	11	-	-	-	-	-	-
14	564346142	PREDICTED: centrosomal protein of 41 kDa isoform X1	41.3	24.7	10	-	-	-	-	-	-
15	564358903	PREDICTED: small subunit processome component 20 homolog isoform X1	317.0	24.7	10	-	-	23.5	10	-	-
16	564316087	PREDICTED: immunoglobulin-like domain containing receptor 2 isoform X7	69.7	20.3	8	-	-	-	-	-	-
17	564376996	PREDICTED: poly [ADP-ribose] polymerase 9 isoform X4	74.6	18.3	13	-	-	-	-	-	-
18	564392930	PREDICTED: adenomatous polyposis coli protein isoform X9	308.1	18.2	7	-	-	-	-	-	-
19	564303636	PREDICTED: von Willebrand factor D and EGF domain-containing protein	196.8	16.7	7	-	-	22.4	9	-	-
20	157821969	arf-GAP with Rho-GAP domain, ANK repeat and PH domain-containing protein 2	189.7	16.1	6	-	-	-	-	-	-
21	564379381	PREDICTED: restin isoform X8	240.2	-	-	-	-	113.8	42	-	-
22	9506955	furin precursor	86.6	-	-	-	-	84.0	30	-	-
23	564302468	PREDICTED: LOW QUALITY PROTEIN: ryanodine receptor 3	546.8	-	-	-	-	38.5	16	-	-
24	564313516	PREDICTED: nucleosome-remodeling factor subunit BPTF isoform X5	305.2	-	-	-	-	36.3	14	-	-
25	564355172	PREDICTED: dystrobrevin beta isoform X8	61.0	-	-	-	-	30.8	13	-	-
26	564400349	PREDICTED: histone-lysine N-methyltransferase 2D-like isoform X9	588.9	-	-	-	-	27.5	11	-	-
27	564351052	PREDICTED: E3 ubiquitin-protein ligase BRE1A isoform X3	94.5	-	-	-	-	27.0	10	-	-
28	564382345	PREDICTED: laminin, beta 3 isoform X3	125.2	-	-	-	-	23.7	10	-	-
29	564318771	PREDICTED: mucin-17-like isoform X5	113.9	-	-	-	-	22.2	10	-	-
30	564335094	PREDICTED: microtubule-associated serine/threonine-protein kinase 4-like isoform X9	257.7	-	-	-	-	16.4	7	-	-