

## Supplementary Material

# Proteomics and Transcriptomics Analysis Reveals Clues into the Mechanism of the Beneficial Effect of Electrical Stimulation on Rat Denervated Gastrocnemius Muscle

Gaoyan La<sup>a</sup> Mouwang Zhou<sup>a</sup> Jae-Young Lim<sup>b</sup> Seung-Lyul Oh<sup>b</sup>  
Huayi Xing<sup>a</sup> Nan Liu<sup>a</sup> Yanyan Yang<sup>a</sup> Xiaoxie Liu<sup>a</sup> Lijun Zhong<sup>c</sup>

<sup>a</sup>Department of Rehabilitation Medicine, Peking University Third Hospital, Beijing, China, <sup>b</sup>Aging & Mobility Biophysics Lab, Department of Rehabilitation Medicine, Seoul National University Bundang Hospital, Seongnam-si, Republic of Korea, <sup>c</sup>Medical and Health Analytical Center, Peking University Health Science Center, Beijing, China

Year	Value
1980	100
1981	100
1982	100
1983	100
1984	100
1985	100
1986	100
1987	100
1988	100
1989	100
1990	100
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2098	100
2099	100
2100	100



Supplementary Table 2. Primers used in this study

Primer	(5'to3')
GAPDH-F	ACGGCAAGTTCAACGGCACAG
GAPDH-R	ACGGCAAGTTCAACGGCACAG
Des-F	CTTCGCCAACTACATCGAGAAG
Des-R	CAGGTCGTCTATCAGGTTGTC
Rpl18a-F	ACTCCAAGATCAAGTTCCCATT
Rpl18a-R	TTATTCAGTGGGTCTCTGTGTC
Cyc1-F	GTAGGGGTTTCCAGGTATACAA
Cyc1-R	CTTAGCTTCTTCCTCCGTGTAG
Sparc-F	CAATGACAACAAGACCTTCGAC
Sparc-R	AATGTATTTGCATGGTCCGATG
Lgals1-F	AGGAATCTCTTCGCTTCAATCA
Lgals1-R	CATCATCCTTGCTGTTACACAC
Ndufb10-F	CTAACCCCATCACCTACTTGAC
Ndufb10-R	GTGCTGTTGTTCAATGAACTCT

Supplementary Table 3. The DEPs.

Pathway Name	Pathway ID	Pvalue	Pvalue_adjusted	Genes	Count	Pop Hit	List_Total	Background Genes	URL
Protein processing in endoplasmic reticulum	rno04141	0,00	4,91E-02	Mogs 1;Ero1a 1;Sec31a 1;Hsp90aa1 1;Prkcs1 1	5	165	33	7905	<a href="http://www.kegg.jp/kegg-bin/show_pathway?rno04141/rno:78947%09pink/rno:171562%09pink/rno:93646%09pink/rno:103692716%09pink/rno:300445%09pink">http://www.kegg.jp/kegg-bin/show_pathway?rno04141/rno:78947%09pink/rno:171562%09pink/rno:93646%09pink/rno:103692716%09pink/rno:300445%09pink</a>
Bacterial invasion of epithelial cells	rno05100	0,00	1,44E-01	Ctnna1 1;Arpc4 1;Rac1 1	3	81	33	7905	<a href="http://www.kegg.jp/kegg-bin/show_pathway?rno05100/rno:307505%09pink/rno:297518%09pink/rno:363875%09pink">http://www.kegg.jp/kegg-bin/show_pathway?rno05100/rno:307505%09pink/rno:297518%09pink/rno:363875%09pink</a>
Salmonella infection	rno05132	0,00	1,44E-01	Rilp 1;Arpc4 1;Rac1 1	3	83	33	7905	<a href="http://www.kegg.jp/kegg-bin/show_pathway?rno05132/rno:287531%09pink/rno:297518%09pink/rno:363875%09pink">http://www.kegg.jp/kegg-bin/show_pathway?rno05132/rno:287531%09pink/rno:297518%09pink/rno:363875%09pink</a>
Glucagon signaling pathway	rno04922	0,01	1,91E-01	Phkb 1;Phkg1 1;Pdhb 1	3	102	33	7905	<a href="http://www.kegg.jp/kegg-bin/show_pathway?rno04922/rno:361377%09pink/rno:293538%09pink/rno:289950%09pink">http://www.kegg.jp/kegg-bin/show_pathway?rno04922/rno:361377%09pink/rno:293538%09pink/rno:289950%09pink</a>
Glutathione metabolism	rno00480	0,02	3,64E-01	Gstm5 1;Gss 1	2	59	33	7905	<a href="http://www.kegg.jp/kegg-bin/show_pathway?rno00480/rno:100912430%09pink/rno:25458%09pink">http://www.kegg.jp/kegg-bin/show_pathway?rno00480/rno:100912430%09pink/rno:25458%09pink</a>
VEGF signaling pathway	rno04370	0,03	3,64E-01	Hspb1 1;Rac1 1	2	60	33	7905	<a href="http://www.kegg.jp/kegg-bin/show_pathway?rno04370/rno:24471%09pink/rno:363875%09pink">http://www.kegg.jp/kegg-bin/show_pathway?rno04370/rno:24471%09pink/rno:363875%09pink</a>
Metabolism of xenobiotics by cytochrome P450	rno00980	0,03	3,64E-01	Gstm5 1;Cbr1 1	2	70	33	7905	<a href="http://www.kegg.jp/kegg-bin/show_pathway?rno00980/rno:100912430%09pink/rno:29224%09pink">http://www.kegg.jp/kegg-bin/show_pathway?rno00980/rno:100912430%09pink/rno:29224%09pink</a>
Adherens junction	rno04520	0,04	3,64E-01	Ctnna1 1;Rac1 1	2	74	33	7905	<a href="http://www.kegg.jp/kegg-bin/show_pathway?rno04520/rno:307505%09pink/rno:363875%09pink">http://www.kegg.jp/kegg-bin/show_pathway?rno04520/rno:307505%09pink/rno:363875%09pink</a>
Arrhythmic right ventricular cardiomyopathy (ARVC)	rno05412	0,04	3,64E-01	Ctnna1 1;Jup 1	2	74	33	7905	<a href="http://www.kegg.jp/kegg-bin/show_pathway?rno05412/rno:307505%09pink/rno:81679%09pink">http://www.kegg.jp/kegg-bin/show_pathway?rno05412/rno:307505%09pink/rno:81679%09pink</a>
Calcium signaling pathway	rno04020	0,04	3,64E-01	Phkb 1;Phkg1 1;Slc25a4 1	3	187	33	7905	<a href="http://www.kegg.jp/kegg-bin/show_pathway?rno04020/rno:361377%09pink/rno:293538%09pink/rno:85333%09pink">http://www.kegg.jp/kegg-bin/show_pathway?rno04020/rno:361377%09pink/rno:293538%09pink/rno:85333%09pink</a>
Synthesis and degradation of ketone bodies	rno00072	0,05	3,64E-01	Oxct1 1	1	11	33	7905	<a href="http://www.kegg.jp/kegg-bin/show_pathway?rno00072/rno:690163%09pink">http://www.kegg.jp/kegg-bin/show_pathway?rno00072/rno:690163%09pink</a>
Chemical carcinogenesis	rno05204	0,06	3,76E-01	Gstm5 1;Cbr1 1	2	91	33	7905	<a href="http://www.kegg.jp/kegg-bin/show_pathway?rno05204/rno:100912430%09pink/rno:29224%09pink">http://www.kegg.jp/kegg-bin/show_pathway?rno05204/rno:100912430%09pink/rno:29224%09pink</a>
Fc gamma R-mediated phagocytosis	rno04666	0,06	3,76E-01	Arpc4 1;Rac1 1	2	91	33	7905	<a href="http://www.kegg.jp/kegg-bin/show_pathway?rno04666/rno:297518%09pink/rno:363875%09pink">http://www.kegg.jp/kegg-bin/show_pathway?rno04666/rno:297518%09pink/rno:363875%09pink</a>
Regulation of actin cytoskeleton	rno04810	0,06	4,05E-01	Rras2 1;Arpc4 1;Rac1 1	3	221	33	7905	<a href="http://www.kegg.jp/kegg-bin/show_pathway?rno04810/rno:365355%09pink/rno:297518%09pink/rno:363875%09pink">http://www.kegg.jp/kegg-bin/show_pathway?rno04810/rno:365355%09pink/rno:297518%09pink/rno:363875%09pink</a>
Pathways in cancer	rno05200	0,08	4,59E-01	Ctnna1 1;Jup 1;Hsp90aa1 1;Rac1 1	4	400	33	7905	<a href="http://www.kegg.jp/kegg-bin/show_pathway?rno05200/rno:307505%09pink/rno:81679%09pink/rno:103692716%09pink/rno:363875%09pink">http://www.kegg.jp/kegg-bin/show_pathway?rno05200/rno:307505%09pink/rno:81679%09pink/rno:103692716%09pink/rno:363875%09pink</a>
Leukocyte transendothelial migration	rno04670	0,09	4,59E-01	Ctnna1 1;Rac1 1	2	120	33	7905	<a href="http://www.kegg.jp/kegg-bin/show_pathway?rno04670/rno:307505%09pink/rno:363875%09pink">http://www.kegg.jp/kegg-bin/show_pathway?rno04670/rno:307505%09pink/rno:363875%09pink</a>
MAPK signaling pathway	rno04010	0,09	4,59E-01	Rras2 1;Hspb1 1;Rac1 1	3	259	33	7905	<a href="http://www.kegg.jp/kegg-bin/show_pathway?rno04010/rno:365355%09pink/rno:24471%09pink/rno:363875%09pink">http://www.kegg.jp/kegg-bin/show_pathway?rno04010/rno:365355%09pink/rno:24471%09pink/rno:363875%09pink</a>
Butanoate metabolism	rno00650	0,11	4,59E-01	Oxct1 1	1	28	33	7905	<a href="http://www.kegg.jp/kegg-bin/show_pathway?rno00650/rno:690163%09pink">http://www.kegg.jp/kegg-bin/show_pathway?rno00650/rno:690163%09pink</a>
Insulin signaling pathway	rno04910	0,12	4,59E-01	Phkb 1;Phkg1 1	2	140	33	7905	<a href="http://www.kegg.jp/kegg-bin/show_pathway?rno04910/rno:361377%09pink/rno:293538%09pink">http://www.kegg.jp/kegg-bin/show_pathway?rno04910/rno:361377%09pink/rno:293538%09pink</a>
Endocytosis	rno04144	0,12	4,59E-01	Snx2 1;Arpc4 1;Ap2a1 1	3	290	33	7905	<a href="http://www.kegg.jp/kegg-bin/show_pathway?rno04144/rno:291464%09pink/rno:297518%09pink/rno:308578%09pink">http://www.kegg.jp/kegg-bin/show_pathway?rno04144/rno:291464%09pink/rno:297518%09pink/rno:308578%09pink</a>
Tight junction	rno04530	0,12	4,59E-01	Rras2 1;Ctnna1 1	2	143	33	7905	<a href="http://www.kegg.jp/kegg-bin/show_pathway?rno04530/rno:365355%09pink/rno:307505%09pink">http://www.kegg.jp/kegg-bin/show_pathway?rno04530/rno:365355%09pink/rno:307505%09pink</a>
Citrate cycle (TCA cycle)	rno00020	0,13	4,59E-01	Pdhb 1	1	32	33	7905	<a href="http://www.kegg.jp/kegg-bin/show_pathway?rno00020/rno:289950%09pink">http://www.kegg.jp/kegg-bin/show_pathway?rno00020/rno:289950%09pink</a>
Apoptosis - multiple species	rno04215	0,13	4,59E-01	Diablo 1	1	33	33	7905	<a href="http://www.kegg.jp/kegg-bin/show_pathway?rno04215/rno:288753%09pink">http://www.kegg.jp/kegg-bin/show_pathway?rno04215/rno:288753%09pink</a>
RNA transport	rno03013	0,15	4,59E-01	Paip1 1;Upf1 1	2	165	33	7905	<a href="http://www.kegg.jp/kegg-bin/show_pathway?rno03013/rno:365684%09pink/rno:684558%09pink">http://www.kegg.jp/kegg-bin/show_pathway?rno03013/rno:365684%09pink/rno:684558%09pink</a>
Pyruvate metabolism	rno00620	0,15	4,59E-01	Pdhb 1	1	40	33	7905	<a href="http://www.kegg.jp/kegg-bin/show_pathway?rno00620/rno:289950%09pink">http://www.kegg.jp/kegg-bin/show_pathway?rno00620/rno:289950%09pink</a>
Purine metabolism	rno00230	0,18	4,59E-01	Adk 1;Gmpr 1	2	182	33	7905	<a href="http://www.kegg.jp/kegg-bin/show_pathway?rno00230/rno:25368%09pink/rno:117533%09pink">http://www.kegg.jp/kegg-bin/show_pathway?rno00230/rno:25368%09pink/rno:117533%09pink</a>
Proteasome	rno03050	0,18	4,59E-01	Psmb6 1	1	47	33	7905	<a href="http://www.kegg.jp/kegg-bin/show_pathway?rno03050/rno:29666%09pink">http://www.kegg.jp/kegg-bin/show_pathway?rno03050/rno:29666%09pink</a>
Cysteine and methionine metabolism	rno00270	0,18	4,59E-01	Gss 1	1	47	33	7905	<a href="http://www.kegg.jp/kegg-bin/show_pathway?rno00270/rno:25458%09pink">http://www.kegg.jp/kegg-bin/show_pathway?rno00270/rno:25458%09pink</a>
Endocrine and other factor-regulated calcium reabsorption	rno04961	0,19	4,59E-01	Ap2a1 1	1	49	33	7905	<a href="http://www.kegg.jp/kegg-bin/show_pathway?rno04961/rno:308578%09pink">http://www.kegg.jp/kegg-bin/show_pathway?rno04961/rno:308578%09pink</a>
N-Glycan biosynthesis	rno00510	0,19	4,59E-01	Mogs 1	1	50	33	7905	<a href="http://www.kegg.jp/kegg-bin/show_pathway?rno00510/rno:78947%09pink">http://www.kegg.jp/kegg-bin/show_pathway?rno00510/rno:78947%09pink</a>
Endometrial cancer	rno05213	0,20	4,59E-01	Ctnna1 1	1	52	33	7905	<a href="http://www.kegg.jp/kegg-bin/show_pathway?rno05213/rno:307505%09pink">http://www.kegg.jp/kegg-bin/show_pathway?rno05213/rno:307505%09pink</a>
cAMP signaling pathway	rno04024	0,20	4,59E-01	Rras2 1;Rac1 1	2	196	33	7905	<a href="http://www.kegg.jp/kegg-bin/show_pathway?rno04024/rno:365355%09pink/rno:363875%09pink">http://www.kegg.jp/kegg-bin/show_pathway?rno04024/rno:365355%09pink/rno:363875%09pink</a>
Starch and sucrose metabolism	rno00500	0,20	4,59E-01	Ag 1	1	53	33	7905	<a href="http://www.kegg.jp/kegg-bin/show_pathway?rno00500/rno:362029%09pink">http://www.kegg.jp/kegg-bin/show_pathway?rno00500/rno:362029%09pink</a>
Phagosome	rno04145	0,20	4,59E-01	Rilp 1;Rac1 1	2	200	33	7905	<a href="http://www.kegg.jp/kegg-bin/show_pathway?rno04145/rno:287531%09pink/rno:363875%09pink">http://www.kegg.jp/kegg-bin/show_pathway?rno04145/rno:287531%09pink/rno:363875%09pink</a>
Amyotrophic lateral sclerosis (ALS)	rno05014	0,21	4,59E-01	Rac1 1	1	56	33	7905	<a href="http://www.kegg.jp/kegg-bin/show_pathway?rno05014/rno:363875%09pink">http://www.kegg.jp/kegg-bin/show_pathway?rno05014/rno:363875%09pink</a>
Valine, leucine and isoleucine degradation	rno00280	0,21	4,59E-01	Oxct1 1	1	56	33	7905	<a href="http://www.kegg.jp/kegg-bin/show_pathway?rno00280/rno:690163%09pink">http://www.kegg.jp/kegg-bin/show_pathway?rno00280/rno:690163%09pink</a>
Proteoglycans in cancer	rno05205	0,21	4,59E-01	Rras2 1;Rac1 1	2	205	33	7905	<a href="http://www.kegg.jp/kegg-bin/show_pathway?rno05205/rno:365355%09pink/rno:363875%09pink">http://www.kegg.jp/kegg-bin/show_pathway?rno05205/rno:365355%09pink/rno:363875%09pink</a>
Huntington's disease	rno05016	0,21	4,59E-01	Ap2a1 1;Slc25a4 1	2	206	33	7905	<a href="http://www.kegg.jp/kegg-bin/show_pathway?rno05016/rno:308578%09pink/rno:85333%09pink">http://www.kegg.jp/kegg-bin/show_pathway?rno05016/rno:308578%09pink/rno:85333%09pink</a>
Acute myeloid leukemia	rno05221	0,21	4,59E-01	Jup 1	1	57	33	7905	<a href="http://www.kegg.jp/kegg-bin/show_pathway?rno05221/rno:81679%09pink">http://www.kegg.jp/kegg-bin/show_pathway?rno05221/rno:81679%09pink</a>
NOD-like receptor signaling pathway	rno04621	0,22	4,59E-01	Hsp90aa1 1	1	58	33	7905	<a href="http://www.kegg.jp/kegg-bin/show_pathway?rno04621/rno:103692716%09pink">http://www.kegg.jp/kegg-bin/show_pathway?rno04621/rno:103692716%09pink</a>
Synaptic vesicle cycle	rno04721	0,23	4,59E-01	Ap2a1 1	1	62	33	7905	<a href="http://www.kegg.jp/kegg-bin/show_pathway?rno04721/rno:308578%09pink">http://www.kegg.jp/kegg-bin/show_pathway?rno04721/rno:308578%09pink</a>
mTOR signaling pathway	rno04150	0,24	4,59E-01	Rragc 1	1	64	33	7905	<a href="http://www.kegg.jp/kegg-bin/show_pathway?rno04150/rno:298514%09pink">http://www.kegg.jp/kegg-bin/show_pathway?rno04150/rno:298514%09pink</a>
Colorectal cancer	rno05210	0,24	4,59E-01	Rac1 1	1	64	33	7905	<a href="http://www.kegg.jp/kegg-bin/show_pathway?rno05210/rno:363875%09pink">http://www.kegg.jp/kegg-bin/show_pathway?rno05210/rno:363875%09pink</a>
Pancreatic cancer	rno05212	0,24	4,59E-01	Rac1 1	1	65	33	7905	<a href="http://www.kegg.jp/kegg-bin/show_pathway?rno05212/rno:363875%09pink">http://www.kegg.jp/kegg-bin/show_pathway?rno05212/rno:363875%09pink</a>
Central carbon metabolism in cancer	rno05230	0,24	4,59E-01	Pdhb 1	1	65	33	7905	<a href="http://www.kegg.jp/kegg-bin/show_pathway?rno05230/rno:289950%09pink">http://www.kegg.jp/kegg-bin/show_pathway?rno05230/rno:289950%09pink</a>
Renal cell carcinoma	rno05211	0,25	4,59E-01	Rac1 1	1	68	33	7905	<a href="http://www.kegg.jp/kegg-bin/show_pathway?rno05211/rno:363875%09pink">http://www.kegg.jp/kegg-bin/show_pathway?rno05211/rno:363875%09pink</a>
Ras signaling pathway	rno04014	0,25	4,59E-01	Rras2 1;Rac1 1	2	232	33	7905	<a href="http://www.kegg.jp/kegg-bin/show_pathway?rno04014/rno:365355%09pink/rno:363875%09pink">http://www.kegg.jp/kegg-bin/show_pathway?rno04014/rno:365355%09pink/rno:363875%09pink</a>
Glycolysis / Gluconeogenesis	rno00010	0,26	4,59E-01	Pdhb 1	1	70	33	7905	<a href="http://www.kegg.jp/kegg-bin/show_pathway?rno00010/rno:289950%09pink">http://www.kegg.jp/kegg-bin/show_pathway?rno00010/rno:289950%09pink</a>
Fc epsilon RI signaling pathway	rno04664	0,26	4,59E-01	Rac1 1	1	70	33	7905	<a href="http://www.kegg.jp/kegg-bin/show_pathway?rno04664/rno:363875%09pink">http://www.kegg.jp/kegg-bin/show_pathway?rno04664/rno:363875%09pink</a>
Drug metabolism - cytochrome P450	rno00982	0,26	4,59E-01	Gstm5 1	1	71	33	7905	<a href="http://www.kegg.jp/kegg-bin/show_pathway?rno00982/rno:100912430%09pink">http://www.kegg.jp/kegg-bin/show_pathway?rno00982/rno:100912430%09pink</a>
B cell receptor signaling pathway	rno04662	0,27	4,66E-01	Rac1 1	1	74	33	7905	<a href="http://www.kegg.jp/kegg-bin/show_pathway?rno04662/rno:363875%09pink">http://www.kegg.jp/kegg-bin/show_pathway?rno04662/rno:363875%09pink</a>
Arachidonic acid metabolism	rno00590	0,29	4,93E-01	Cbr1 1	1	81	33	7905	<a href="http://www.kegg.jp/kegg-bin/show_pathway?rno00590/rno:29224%09pink">http://www.kegg.jp/kegg-bin/show_pathway?rno00590/rno:29224%09pink</a>
Prostate cancer	rno05215	0,31	4,93E-01	Hsp90aa1 1	1	89	33	7905	<a href="http://www.kegg.jp/kegg-bin/show_pathway?rno05215/rno:103692716%09pink">http://www.kegg.jp/kegg-bin/show_pathway?rno05215/rno:103692716%09pink</a>
Progesterone-mediated oocyte maturation	rno04914	0,32	4,93E-01	Hsp90aa1 1	1	90	33	7905	<a href="http://www.kegg.jp/kegg-bin/show_pathway?rno04914/rno:103692716%09pink">http://www.kegg.jp/kegg-bin/show_pathway?rno04914/rno:103692716%09pink</a>
mRNA surveillance pathway	rno03015	0,33	4,93E-01	Upf1 1	1	94	33	7905	<a href="http://www.kegg.jp/kegg-bin/show_pathway?rno03015/rno:684558%09pink">http://www.kegg.jp/kegg-bin/show_pathway?rno03015/rno:684558%09pink</a>
Pancreatic secretion	rno04972	0,33	4,93E-01	Rac1 1	1	95	33	7905	<a href="http://www.kegg.jp/kegg-bin/show_pathway?rno04972/rno:363875%09pink">http://www.kegg.jp/kegg-bin/show_pathway?rno04972/rno:363875%09pink</a>
Viral myocarditis	rno05416	0,33	4,93E-01	Rac1 1	1	95	33	7905	<a href="http://www.kegg.jp/kegg-bin/show_pathway?rno05416/rno:363875%09pink">http://www.kegg.jp/kegg-bin/show_pathway?rno05416/rno:363875%09pink</a>
Estrogen signaling pathway	rno04915	0,33	4,93E-01	Hsp90aa1 1	1	96	33	7905	<a href="http://www.kegg.jp/kegg-bin/show_pathway?rno04915/rno:103692716%09pink">http://www.kegg.jp/kegg-bin/show_pathway?rno04915/rno:103692716%09pink</a>
Toll-like receptor signaling pathway	rno04620	0,34	4,93E-01	Rac1 1	1	97	33	7905	<a href="http://www.kegg.jp/kegg-bin/show_pathway?rno04620/rno:363875%09pink">http://www.kegg.jp/kegg-bin/show_pathway?rno04620/rno:363875%09pink</a>
Antigen processing and presentation	rno04612	0,34	4,93E-01	Hsp90aa1 1	1	100	33	7905	<a href="http://www.kegg.jp/kegg-bin/show_pathway?rno04612/rno:103692716%09pink">http://www.kegg.jp/kegg-bin/show_pathway?rno04612/rno:103692716%09pink</a>
Choline metabolism in cancer	rno05231	0,35	4,93E-01	Rac1 1	1	101	33	7905	<a href="http://www.kegg.jp/kegg-bin/show_pathway?rno05231/rno:363875%09pink">http://www.kegg.jp/kegg-bin/show_pathway?rno05231/rno:363875%09pink</a>
Natural killer cell mediated cytotoxicity	rno04650	0,35	4,93E-01	Rac1 1	1	102			

