Supplementary Table 2. Gene Ontology Pathways.

Group	GO Biological Processes Up-regulated	Odds-ratio	GO Biological Processes Down-regulated	Odds-ratio
WT Stress vs. WT Control	translational elongation	5.19	very-low-density lipoprotein particle clearance	-5.16
	musculoskeletal movement	4.92	negative regulation of macrophage derived foam cell differentiation	-4.89
	microspike assembly	4.44	oxygen transport	-4.37
	muscle contraction	4.19	cholesterol efflux	-4.34
	forward locomotion	4.09	low-density lipoprotein receptor particle metabolic process	-3.83
	cardiac muscle tissue development	4.00	gas transport	-3.67
	fructose 1,6-bisphosphate metabolic process	3.62	cellular ketone body metabolic process	-3.55
	response to activity	3.56	biphenyl metabolic process	-3.14
	directional locomotion	3.50	negative regulation of autophagy	-2.92
	fructose 6-phosphate metabolic process	3.28	peroxisome organization	-2.52
	collagen biosynthetic process	3.06	brown fat cell differentiation	-2.49
	uropod organization	3.01	platelet-derived growth factor receptor signaling pathway	-2.08
	response to lead ion	2.77	lipoprotein metabolic process	-1.95
	calcium ion homeostasis	2.67	water transport	-1.94
	blood vessel remodeling	2.55	acyl-CoA metabolic process	-1.91
	bioluminescence	2.54	regulation of mRNA stability	-1.86
	negative regulation of smooth muscle cell proliferation	2.48	cell division	-1.84
	neuromuscular synaptic transmission	2.33	negative regulation of proteolysis	-1.80
	aldehyde catabolic process	2.32	xenobiotic metabolic process	-1.75
	pattern specification process	2.29	fat cell differentiation	-1.67
	ovulation from ovarian follicle	2.17	fatty acid metabolic process	-1.53
	nucleosome assembly	2.06	glycerol ether metabolic process	-1.50
	respiratory burst	2.03	electron transport chain	-1.27
	response to heat	1.90	negative regulation of catalytic activity	-1.12
	muscle organ development	1.81	response to hormone stimulus	-1.10
	activation of plasma proteins involved in acute inflammatory response	1.81	peptide metabolic process	-1.07
	extracellular matrix organization	1.49	cellular aromatic compound metabolic process	-1.02
	cell-substrate adhesion	1.39	generation of precursor metabolites and energy	-0.96
	cellular carbohydrate metabolic process	1.22	nucleoside monophosphate biosynthetic process	-0.95
	DNA-dependent transcription, initiation	1.17	response to nutrient levels	-0.94
	regulation of cell growth	1.15	one-carbon metabolic process	-0.80
	carbohydrate metabolic process	1.09	heterocycle metabolic process	-0.74
	calcium ion transport	1.05	mRNA metabolic process	-0.71
	cellular aldehyde metabolic process	1.00	RNA processing	-0.57
	protein maturation	0.99	translation	-0.53
	respiratory system development	0.98		
	pigment biosynthetic process	0.89		
	cytokinesis	0.88		
	tissue remodeling	0.87		
	actin filament-based process	0.84		
	osteoblast differentiation	0.74		
	gliogenesis	0.70		
	cellular component movement	0.66		
	aging	0.64		
	protein folding	0.64		

	protein dephosphorylation	0.63		
	nucleocytoplasmic transport	0.63		
	anatomical structure formation involved in morphogenesis	0.60		
	dephosphorylation	0.58		
	response to abiotic stimulus	0.51		
	ossification	0.49		
	developmental maturation	0.49		
	negative regulation of apoptotic process	0.47		
	bone development	0.47		
	skeletal system development	0.46		
	locomotory behavior	0.44		
	tube development	0.44		
	cellular membrane organization	0.42		
	small GTPase mediated signal transduction	0.38		
	cell activation	0.38		
	enzyme linked receptor protein signaling pathway	0.37		
	microtubule-based process	0.35		
	behavior	0.34		
	response to biotic stimulus	0.34		
	cell wall macromolecule catabolic process	5.00	very-low-density lipoprotein particle clearance	-6.00
	uropod organization	4.14	female genitalia development	-3.76
	bioluminescence	3.05	post-embryonic body morphogenesis	-3.47
	collagen metabolic process	3.02	acyl-CoA metabolic process	-3.20
	'de novo' posttranslational protein folding	2.87	peroxisome organization	-3.02
	biphenyl metabolic process	2.76	regulation of autophagy	-2.91
	NK T cell proliferation	2.76	brown fat cell differentiation	-2.66
	peptidyl-proline modification	2.76	response to oxygen radical	-2.37
	peptide cross-linking	2.73	electron transport chain	-2.34
	membrane to membrane docking	2.53	glycerol ether metabolic process	-2.33
	toxin metabolic process	2.47	hyperosmotic response	-2.24
	cell recognition	2.44	vitamin metabolic process	-2.03
	antigen processing and presentation	2.37	proton transport	-1.81
	muscle contraction	2.23	generation of precursor metabolites and energy	-1.76
	oxygen transport	2.22	RNA processing	-1.72
	positive regulation of tumor necrosis factor production	2.22	fat cell differentiation	-1.72
	skin development	2.03	base-excision repair	-1.65
	xenobiotic metabolic process	2.01	head development	-1.59
	extracellular matrix organization	2.00	response to starvation	-1.43
	multicellular organismal metabolic process	1.95	peptide metabolic process	-1.33
	protein maturation	1.92	mitochondrion organization	-1.28
	protein processing	1.87	glucose metabolic process	-1.23
	gas transport	1.87	oxygen and reactive oxygen species metabolic process	-1.22
	response to xenobiotic stimulus	1.79	homophilic cell adhesion	-1.22
	positive regulation of Wnt receptor signaling pathway	1.72	response to peptide hormone stimulus	-1.05
	protein polymerization	1.67	negative regulation of catalytic activity	-1.00
	blood vessel remodeling	1.67	tRNA processing	-0.99
	response to inorganic substance	1.65	cellular aromatic compound metabolic process	-0.94
	translational elongation	1.59	heterocycle metabolic process	-0.72

Beta-less Control vs. WT Control	integrin-mediated signaling pathway	1.51	response to drug	-0.68
	neuromuscular synaptic transmission	1.47		
	actin filament-based process	1.44		
	protein stabilization	1.44		
	blood vessel development	1.32		
	aging	1.29		
	tissue remodeling	1.13		
	anatomical structure formation involved in morphogenesis	1.10		
	muscle organ development	1.08		
	regulation of epithelial cell proliferation	1.04		
	palate development	1.02		
	cell activation	1.00		
	alcohol catabolic process	0.99		
	positive regulation of cellular component movement	0.98		
	digestive tract development	0.95		
	endocytosis	0.94		
	sulfur compound metabolic process	0.94		
	respiratory system development	0.93		
	ossification	0.92		
	bone development	0.91		
	phosphatidylinositol-mediated signaling	0.90		
	ectoderm development	0.88		
	mRNA transport	0.84		
	skeletal system development	0.82		
	enzyme linked receptor protein signaling pathway	0.82		
	cellular membrane organization	0.81		
	response to other organism	0.79		
	tube development	0.78		
	regulation of growth	0.77		
	cellular component movement	0.76		
	carbohydrate metabolic process	0.75		
	locomotory behavior	0.74		
	regulation of ossification	0.72		
	response to biotic stimulus	0.71		
	glycoprotein metabolic process	0.66		
	protein folding	0.65		
	positive regulation of apoptotic process	0.62		
	translation	0.62		
	anterior/posterior pattern specification	0.59		
	behavior	0.59		
	regulation of phosphorylation	0.51		
	pattern specification process	0.48		
	microtubule-based process	0.42		
	cell division	0.42		
	regulation of protein metabolic process	0.40		
	cell cycle process	0.27		
	cellular ketone body metabolic process	4.22	musculoskeletal movement	-5.58
	mitochondrial respiratory chain complex assembly	4.01	muscle contraction	-4.94

Beta-less Stress vs. Beta-less Control

oxygen transport	3.60	response to activity	-4.46
taurine metabolic process	3.55	cardiac muscle tissue development	-4.40
peroxisome fission	2.99	uropod organization	-4.32
low-density lipoprotein receptor particle metabolic process	2.99	fructose 1,6-bisphosphate metabolic process	-4.24
water transport	2.92	cell wall macromolecule catabolic process	-3.45
response to hyperoxia	2.86	bioluminescence	-3.44
glucose 6-phosphate metabolic process	2.81	response to inorganic substance	-3.40
very-low-density lipoprotein particle clearance	2.71	response to metal ion	-3.38
iron-sulfur cluster assembly	2.44	'de novo' posttranslational protein folding	-3.16
acetyl-CoA metabolic process	2.31	peptidyl-proline modification	-2.93
response to sterol depletion	2.30	pattern specification process	-2.67
brown fat cell differentiation	2.25	cytolysis	-2.67
electron transport chain	2.15	spermine metabolic process	-2.53
Leydig cell differentiation	1.96	positive regulation of endocytosis	-2.22
response to arsenic-containing substance	1.83	cellular metal ion homeostasis	-2.15
gas transport	1.70	respiratory burst	-1.92
fatty acid metabolic process	1.66	protein stabilization	-1.76
generation of precursor metabolites and energy	1.61	actin filament-based process	-1.66
translational elongation	1.53	actin cytoskeleton organization	-1.65
proton transport	1.46	neuromuscular synaptic transmission	-1.65
glycerol-3-phosphate metabolic process	1.45	collagen metabolic process	-1.57
negative regulation of hydrolase activity	1.39	peptide cross-linking	-1.55
vitamin metabolic process	1.38	cell cycle arrest	-1.54
hexose metabolic process	1.31	cell-substrate adhesion	-1.52
autophagy	1.29	extracellular matrix organization	-1.51
cellular aldehyde metabolic process	1.23	multicellular organismal metabolic process	-1.45
mitochondrial transport	1.19	integrin-mediated signaling pathway	-1.42
glycerol ether metabolic process	1.14	muscle organ development	-1.40
fat cell differentiation	1.13	chemotaxis	-1.32
translation	1.11	cell activation	-1.14
oxygen and reactive oxygen species metabolic process	1.10	cell fate commitment	-1.13
rRNA processing	1.08	cell growth	-1.08
receptor metabolic process	1.07	osteoblast differentiation	-1.07
blood vessel remodeling	1.06	response to wounding	-1.05
protein folding	0.96	immune response	-1.00
sulfur compound metabolic process	0.96	ossification	-0.99
cell recognition	0.94	bone development	-0.95
cellular aromatic compound metabolic process	0.94	protein maturation	-0.94
response to peptide hormone stimulus	0.83	regulation of cytokine production	-0.93
amine metabolic process	0.78	protein processing	-0.92
lipoprotein metabolic process	0.75	cellular membrane organization	-0.90
carbohydrate metabolic process	0.75	MAPK cascade	-0.89
heterocycle metabolic process	0.62	locomotory behavior	-0.88
RNA processing	0.56	response to other organism	-0.85
		skeletal system development	-0.80
		anatomical structure formation involved in morphogenesis	-0.80
		cytokine production	-0.78
		DNA replication	-0.75

			respiratory system development	-0.74
			aging	-0.74
			behavior	-0.72
			regulation of phosphorylation	-0.66
			response to biotic stimulus	-0.64
			cellular component movement	-0.64
			enzyme linked receptor protein signaling pathway	-0.56
			microtubule-based process	-0.54
			tube development	-0.52
			response to abiotic stimulus	-0.37