

Online Supporting Material
Supplemental Table 1
List of selected beta cell genes differentially regulated > 1.8-fold by 10mM
compared to 1mM L-glutamine over 24hr

FUNCTION	ACCESSION No	GENE NAME	FOLD CHANGE
<i>SIGNALLING (25)</i>			Upregulated
Phosphorylation	NM_017309	protein phosphatase 3, regulatory subunit B, alpha isoform,type 1	+6.02
	NM_053990	protein tyrosine phosphatase, non-receptor type 2	+5.48
	NM_019140	protein tyrosine phosphatase, receptor type, D	+4.53
	NM_172045	protein phosphatase 1, regulatory (inhibitor) 5 subunit 14B	+2.23
	NM_053824	casein kinase II, alpha 1 polypeptide	+2.07
	NM_017042	protein phosphatase 3, catalytic subunit, beta isoform	+1.95
	NM_019140	protein tyrosine phosphatase, receptor type, D	+1.83
	NM_013080	protein tyrosine phosphatase, receptor-type, Z polypeptide 1	+1.80
G-Protein	NM_032075	growth hormone secretagogue receptor	+2.73
	NM_017327	guanine nucleotide binding protein, alpha o	+2.51
	NM_012869	neuropeptide Y receptor Y5	+2.46
	AF072935	small GTP-binding protein rab5	+2.49
	NM_080904	ADP-ribosylation factor 3	+2.06
	NM_139042	guanylyl cyclase with kinase-like domain, soluble	+2.03
	D14076	testicular dynamin	+1.92
	NM_013108	adrenergic receptor, beta 3	+1.83
	NM_022714	corticotrophin releasing hormone receptor 2	+1.82
	NM_031581	pancreatic polypeptide receptor 1	+1.81
	NM_033441	rhodopsin	+1.80
	NM_022236	phosphodiesterase 10A	+1.80
Ca ²⁺ Binding	NM_031507	epidermal growth factor	+2.27
	NM_004525	low density lipoprotein receptor-related protein 2	+1.99
	NM_130416	annexin A7	+1.89
Other	NM_173319	putative pheromone receptor VN7	+2.20
	NM_173320	putative pheromone receptor Go-VN13C	+2.04
<i>METABOLISM (14)</i>			
Carbohydrate	M74439	UDP-glucuronosyltransferase	+3.74
	XM_343380	trehalase	+2.40
	NM_138907	mitochondrial acyl-CoA thioesterase 1	+2.13

FUNCTION	ACCESSION No	GENE NAME	FOLD CHANGE
	NM_053291	phosphoglycerate kinase 1	+2.02
	NM_021596	diazepam binding inhibitor-like 5	+1.91
	NM_022193	acetyl-coenzyme A carboxylase	+1.91
	NM_053853	N-acetyltransferase 1 (arylamine N-acetyltransferase)	+1.84
Amino Acid	NM_012740	tyrosine hydroxylase	+2.05
	NM_021750	cysteine-sulfinate decarboxylase	+1.83
Lipid	NM_031841	stearoyl-Coenzyme A desaturase 2	+2.47
Electron Transport	NM_017154	xanthine dehydrogenase	+3.44
	NM_012915	ATPase inhibitor	+2.41
	NM_031839	arachidonic acid epoxygenase	+2.03
	NM_012692	Cytochrome P450 IIA1 (hepatic steroid hydroxylase IIA1) gene	+1.82
<i>GROWTH / GENE REGULATION</i>			
(24)			
Transcription	NM_022852	pancreatic and duodenal homeobox gene 1	+5.41
	NM_012988	nuclear factor I/A	+2.44
	NM_053792	selective LIM binding factor, rat homolog	+2.34
	NM_181638	T-box 3 (ulnar mammary syndrome)	+2.34
	XM_341842	CCAAT/enhancer binding protein ,gamma	+2.13
	NM_012581	homeobox A2	+2.10
	NM_017103	transcription elongation factor B (SIII), polypeptide 3	+2.09
	NM_053536	Kruppel-like factor 15	+2.06
	NM_022615	DNA topoisomerase I	+1.98
	XM_340913	transcription factor UBF	+1.94
	NM_017179	Unc4.1 homeobox (C. elegans)	+1.93
	NM_139113	nuclear receptor subfamily 2, group F, member 6	+1.87
	AF305619	Sam68-like mammalian protein 1	+1.87
	NM_024360	hairy and enhancer of split 1 (Drosophila)	+1.84
	NM_002382	Max	+1.84
	XM_225241	human immunodeficiency virus type I enhancer-binding protein 1	+1.81
Growth	NM_031815	activin beta E	+2.23
	BC103659	growth hormone receptor	+2.08
	NM_031836	vascular endothelial growth factor	+1.90
	NM_031507	epidermal growth factor receptor	+1.80
	NM_030849	bone morphogenetic protein receptor, type 1A	+1.82
	NM_023020	transmembrane protein with EGF-like and two follistatin-like domains 1	+1.82

FUNCTION	ACCESSION No	GENE NAME	FOLD CHANGE
Cell Cycle	BC078738	v-jun sarcoma virus 17 oncogene homolog (avian)	+1.91
	NM_012643	ret proto-oncogene	+1.84
	NM_013192	potassium inwardly-rectifying channel, subfamily J, member 6	+4.10
	NM_019134	solute carrier family 12, member 1	+3.07
	NM_024372	solute carrier family 6 (neurotransmitter transporter, GABA), member 11	+2.02
	NM_031568	chloride channel 7	+2.01
	NM_031353	voltage-dependent anion channel 1	+1.98
	NM_138897	GABA receptor rho-3 subunit	+1.94
	NM_012504	ATPase, Na+K+ transporting, alpha 1	+1.87
	NM_012970	potassium channel, subfamily K, member 2	+1.84
	NM_183402	glutamate receptor, ionotropic	+1.90
<i>STRUCTURAL</i>			
<i>(13)</i>			
Cell Adhesion	NM_030863	moesin	+3.22
	NM_053967	sperm adhesion molecule	+3.09
	NM_017329	surfactant, pulmonary-associated protein A1	+2.17
	NM_031768	integrin alpha E1, epithelial-associated	+1.83
	NM_013114	selectin, platelet	+1.82
Cytoskeletal	NM_017212	microtubule-associated protein tau	+2.18
	NM_139039	membrane and microfilament-associated protein p58	+1.98
	NM_021847	vesicle-associated membrane protein, associated protein B and C	+1.95
	NM_030873	profilin II	+1.86
ER	NM_031120	TRAP-complex gamma subunit	+1.97
Skeletal Muscle	XM_579696	tropomyosin isoform 6	+2.43
	AF157005	type 2X myosin heavy chain	+2.22
	NM_002472	myosin, heavy polypeptide 8, skeletal muscle, perinatal	+2.06

FUNCTION	ACCESSION No	GENE NAME	FOLD CHANGE
<i>APOPTOSIS / IMMUNE RESPONSE / INFLAMMATORY RESPONSE (7)</i>			
	NM_017180	T-cell death associated gene	+2.40
	NM_012696	T-kininogen	+2.27
	NM_031513	interleukin 3	+2.26
	AY070268	immune-associated nucleotide 1	+2.25
	NM_017259	B-cell translocation gene 2, anti-proliferative	+2.20
	NM_022612	BCL2-like 11 (apoptosis facilitator)	+1.98
	AF136282	apoptotic death agonist BID	+1.85
<i>TRANSPORT (3)</i>			
	NM_133600	solute carrier family 31 (copper transporters), member 1	+3.30
	NM_001035232	solute carrier family 19, member 1	+1.92
	NM_031722	coated vesicle membrane protein	+1.84
<i>MISCELLANEOUS (21)</i>			
	NM_019192	selenoprotein P, plasma, 1	+3.50
	NM_139262	cathepsin Q	+2.95
	NM_053319	dynein, cytoplasmic, light chain 1	+2.02
	NM_019258	cystatin 8	+2.02
	NM_199266	cystatin related protein 2	+2.52
	NM_022537	prolactin-like protein D	+2.56
	NM_198972	foveolin precursor	+2.48
	NM_012684	variable coding sequence A1	+2.37
	AF271158	pituitary tumor X2CR1 protein	+2.36
	XM_214939	kallikrein	+2.35
	NM_021868	cortactin isoform B	+2.28
	NM_012750	glial cell line derived neurotrophic factor family receptor alpha 2	+2.26
	NM_001034111	prolactin receptor	+2.12
	NM_030854	leukocyte cell derived chemotaxin 1	+2.12
	NM_031082	geranylgeranyltransferase type I (GGTase-I)	+2.05
	NM_033097	SAC2 (supressor of actin mutations 2, homolog)-like (S. cerevisiae)	+1.98
	NM_053912	pleckstrin homology, Sec7 and coiled/coil domains 3	+1.97
	XM_341248	neurofibromatosis 2	+1.95
	NM_021590	aryl hydrocarbon receptor-interacting protein-like 1	+1.87
	NM_012532	ceruloplasmin	+1.84
	NM_012674	serine protease inhibitor, Kazal type 1	+1.82

FUNCTION	ACCESSION No	GENE NAME	FOLD CHANGE Down-Regulated
<i>METABOLISM (3)</i>			
	NM_021769	Tyrosine-ester Sulfotransferase	-5.54
	NM_053596	Endothelin converting enzyme 1	-2.30
	NM_012634	Phosphoribosyl pyrophosphate synthetase 2	-1.82
<i>SIGNALLING (4)</i>			
	NM_019249	Protein tyrosine phosphatase, receptor type F	-2.17
	NM_001013100	ATP-binding cassette, sub-family D	-1.90
	NM_031034	Guanine nucleotide binding protein, alpha 12	-1.86
	NM_022385	ADP-ribosylation factor domain protein 1	-1.80
<i>GENE</i>			
<i>REGULATION (3)</i>			
	NM_020082	Ribonuclease, RNase A family 4	-2.17
	NM_019326	Neurogenic differentiation 2	-2.13
	XM_342244	Forkhead box 01	-2.08
<i>RECEPTORS / CHANNELS (3)</i>			
	D12524	c-kit receptor tyrosine kinase	-1.94
	AF196965	Potassium channel TREK-2	-1.89
	NM_019298	Cholinergic receptor, nicotinic, delta	-1.86
<i>APOPTOSIS (1)</i>			
	NM_021692	Smad5	-1.81
<i>MISCELLANEOUS (4)</i>			
	NM_033233	Chorionic somatomammotropin hormone 1	-2.08
	U20181	Iron-regulatory protein 2	-2.06
	XM_341341	Stathmin-like 4	-1.99
	NM_138840	Trans-golgi network protein 1	-1.92