

Intronic CTCF target sites												
clone	gene	Celera ID	process	function	location	score (1 = low / 5 = high)	score (1 = low / 5 = high)	score (1 = low / 5 = high)				
	location	Genbank ID	node	end node	node	end node	node	end node	in vivo	insulator	in vitro	
14	60S ribosomal protein L7A	mCG49012	macromolecule biosynthesis, protein metabolism & modification	protein biosynthesis	nucleic acid binding	RNA binding	cell	intracellular	3	5	1	
	intron 5						cytoplasm	mitochondrion				
							cytoplasm	ribosome				
							cytosolic ribosome, large ribosomal subunit	cytosolic large ribosomal subunit				
140	DOCK-1	mCG125673	phagocytosis	phagocytosis, engulfment	small GTPase regulatory / interacting protein, enzyme activator	GTPase activator	cell	cytoplasm	5	3	2	
	intron 22		cell death	apoptosis	enzyme	glutaminase						
			cell communication	signal transduction								
			cell surface receptor linked signal transduction	integrin receptor signalling pathway								
			intracellular signalling cascade	small GTPase mediated signal transduction								
144	ubiquitin conjugating enzyme E2A related	mCG140765 XP_109923	protein metabolism & modification	protein modification	small protein conjugating enzyme	ubiquitin conjugating enzyme	cell	plasma membrane	5	1	1	
	intron 1		ubiquitin dependent protein degradation	ubiquitin cycle								
155	Putative Pheromone Receptor / intron 5	mCG125765 AAM77722							5	2	2	
163	protocadherin LKC precursor like / intron 5	mCG131495 NP_060145							5	1	3	
265	GDP-mannose dehydratase related / intron 7	mCG140567 AAH31788							5	1	1	
267	ring finger protein 144 intron 3	mCG17803 NP_542130	biological proceses	developmental processes	heavy metal binding	zinc binding	cellular component	extracellular	3	1	3	
294	putative prostate cancer suppressor / intron 1	mCG22289 AAH10370	metabolism	electron transport	redox-active disulfide bond electron carrier, protein disulfide oxidoreductase	thioredoxin	cell	membrane fraction	3	1	1	
411	coagulation factor II	mCG16136 AAL77436	macromolecule catabolism, protein metabolism & modification	proteolysis & peptidolysis	defense/immunity protein	blood coagulation factor	extracellular	extracellular	2	1	1	
	intron 4		apoptotic program	caspase activation	ser-type endopeptidase blood coagulation factor	thrombin	cell	soluble fracion				
			JAK-STAT cascade	tyr phosph of STAT	ser-type endopeptidase blood coagulation factor	blood coagulation factor IX	fibrinogen	fibrinogen beta chain				
			JAK-STAT cascade	STAT nuclear translocation	ser-type endopeptidase blood coagulation factor	protein C (activated)	fibrinogen	fibrinogen gamma chain				
			cell cycle	cell cycle control	ser-type endopeptidase blood coagulation factor	blood coagulation factor X	cellular component	extracellular				
462	olfactory receptor MOR239-6 / intron 1	mCG141920 AAL61152							5	1	1	
576	inner nuclear membrane protein	mCG10117AAF 73293	transcription, DNA-dependent	RNA processing	protein binding	lamin binding	cell	membrane fraction	2	1	1	
	intron 3				nucleic acid binding	RNA binding	nuclear inner membrane	nuclear inner membrane integral protein				
					mRNA binding	pre-mRNA splicing factor	nucleus	nucleoplasm				
612	cation chloride cotransporter / intron 10	mCG130131 NP_599012	transport	ion transport	enzyme	11-beta-hydroxysteroid dehydrogenase	plasma membrane	integral plasma membrane protein	5	2	5	
717	Ahi1 isoform 1	mCG2824 AAM94175	cell communication	signal transduction	glucosidase	mannosyl-oligosaccharide glucosidase	plasma membrane	peripheral plasma membrane protein	2	1	1	
736	nuclear pore complex protein / intron 24	mCG3046 NP_65134							3	1	1	
1006	glycogen synthase kinase3 beta	mCG129094 AAH06936	apoptosis	anti-apoptosis	protein ser/thr kinase	glycogen synthase kinase 3	nuclear membrane	nuclear membrane lumen	2	1	1	
	intron 1		embryogenesis & morphogenesis	histogenesis & organogenesis	enzyme	protein kinase						
			cell growth & maintenance	cell proliferation	nucleotide binding	ATP binding						
			protein modification	protein phosphorylation								
			polysaccharide metabolism	glycogen metabolism								

exonic CTCF target sites												
clone	gene	Celera ID	process		function		location		in vivo	score	in vitro	
	location	Genbank ID	node	end node	node	end node	node	end node		insulator		
284	c-src tyrosine kinase exon 9	mCG4006 AAH18394	protein modification	protein dephosphorylation	protein binding	protein C-terminus binding	cell	cytoplasm	3	1	1	
	exon 9		peptidoglycan catabolism, mitotic S phase	mitotic S-specific transcription	transmembrane receptor protein tyrosine kinase	macrophage colony stimulating factor receptor	cell	soluble fracion				
			intracellular signalling cascade	protein kinase cascade	transmembrane receptor protein tyrosine kinase	hepatocyte growth factor receptor	cell-substrate adherens junction	muscle tendon junction				
			enzyme linked reeptor protein signalling pathway	transmembrane receptor protein tyrosine kinase pathway	transmembrane receptor protein tyrosine kinase	vascular endothelial growth factor receptor	intercellular junction	adherens junction				
			zygotic determination of A/P axis, embryo	terminal region determination	platelet derived growth factor receptor	platelet derived growth factor, alpha receptor	cellular component	intracellular				
906	translation initiation factor 3 subunit exon 22	mCG1339 XP_220693	macromolecule biosynthesis, protein metabolism & modification	protein biosynthesis			cytoplasm	eukaryotic translation initiation factor 2B complex	2	1	1	
genes immediately adjacent to CTCF target site												
clone	gene	Celera ID	process		function		location		in vivo	score	in vitro	
		Genbank ID	node	end node	node	end node	node	end node		insulator		
6	Cbp/p300-interacting transactivator, Glu/Asp-rich c-terminal domain, 2	mCG7522 AAC39945	transcription regulation	transcription regulation from polymerase II promoter	DNA binding	transcription factor	cell	nucleus	4	5	5	
29	similar to cadherin like 26	mCG15216 XP_141582							5	2	5	
94	Fgd1 related F-actin binding protein	mCG126830 AAL05633	embryogenesis & morphogenesis	histogenesis & organogenesis	DNA binding	transcription factor	cell	nucleus	5	1	2	
			transcription, DNA-dependent	transcription regulation								
			cell growth & maintenance	cell shape & cell size control								
			cell communication	signal transduction								
			biological proceses	developmental processes								
94	olfactory receptor 19	mCG1038100 AAL61421							5	1	2	
116	bHLH domain containing, B2	mCG129630 AAK50859	embryogenesis & morphogenesis	histogenesis & organogenesis	DNA binding	transcription factor	nuclear membrane	nuclear membrane lumen	3	2	2	
192	vomeronasal 1 receptor H16	mCG142227 AAL47946							5	3	4	
192	C2H2 Zn finger	mCG7737 NP_766174	transcription regulation from polymerase II promoter	repression of transcription from polymerase II promoter	DNA binding	transcription factor	cell	nucleus	5	3	4	
			sensory perception	hearing	nucleic acid binding	DNA binding	nucleoplasm	transcription factor complex				
			transcription regulation	transcription regulation from polymerase III promoter	transcription factor	RNA polymerase II transcription factor	nucleus	nucleolus				
			eye morphogenesis	photoreceptor determination	RNA polymerase II transcription factor	specific RNA polymerase II transcription factor	ER	ER membrane				
			mesoderm development	mesoderm determination	transcription factor	RNA polymerase III transcription factor	nuclear membrane	nuclear membrane lumen				
200	leucine zipper	mCG19735 NP_082720							5	1	2	
200	sphingomyelin phosphodiesterase	mCG19710 AAH11304	metabolism	carbohydrate metabolism	phosphodiesterase	sphingomyelin phosphodiesterase	cytoplasm	lysosome	5	1	2	
			protein modification	protein dephosphorylation								
			glycosylceramide metabolism	sphingomyelin metabolism								
			ectoderm development	neurogenesis								
216	sialyltransferase 8D	mCG14019 XP_237435	protein modification	protein glycosylation	sialyltransferase	alpha-N-acetyl-neuraminide aloha-2,8-sialyltransferase	cell	membrane fraction	4	1	1	
			N-linked glycosylation	N-glycan processing	enzyme	sialyltransferase	cytoplasm	Golgi apparatus				
			ectoderm development	neurogenesis								
			carbohydrate metabolism	oligosaccharide metabolism								
			oligosaccharide metabolism, biosvnthesis	oligosaccharide biosynthesis								
396	membrane assoc guanylate kinase family	mCG6076 NP_653249							2	1	1	
398	Grb10	mCG116329 AAB72103	G protein linked receptor protein sianallino oathwav	neuropeptide signalling pathwav	protein kinase	protein tyrosine kinase	cytoplasm	cytosol	4	1	1	
			signal transduction	intracellular signalling cascade			cell	cytoplasm				
			cell communication	cell-cell signalling			cell	plasma membrane				
			transmembrane receptor protein tyr kinase pathway	insulin receptor signalling pathway								
			transmembrane receptor protein tyr kinase oathwav	EGF receptor signalling pathwav								

398	cordon-bleu	mCG9589 AAA92362								4	1	1
447	vitamin D3 25-hydroxylase	mCG133861 AAB26016	metabolism	electron transport	monooxygenase	steroid hydroxylase	cytoplasm	mitochondrion		2	1	1
			nucleotide metabolism	lipid metabolism	monooxygenase	clacidiol 1-monooxygenase						
			ion homeostasis	Ca ion homeostasis	enzyme	monooxygenase						
			biosynthesis vitamin metabolism	vitamin biosynthesis								
575	similar to aldehyde dehydrogenase 7	mCG3881 AAH46597	carbohydrate metabolism	alcohol metabolism	enzyme	aldehyde dehydrogenase	cytoplasm	cytosol		3	1	1
			nucleotide metabolism	lipid metabolism	aldehyde dehydrogenase	aldehyde dehydrogenase (NAD(P)+)	ER	microsome				
			neurogenesis	central nervous system develooment	aldehyde dehydrogenase	aldehyde dehydrogenase (NAD+)	cell	membrane fraction				
			neurogenesis	peripheral nervous system development	ligand binding or carrier	electron transfer	cytoplasm	ER				
			carbohydrate metabolism	aldehyde metabolism								

575	unc93 homolog B	mCG3871 XP_129127							3	1	1
648	ubiquitin conjugating enzyme E2 related	mCG49525 XP_130872	cell cycle	cell cycle control	small protein conjugating enzyme	ubiquitin conjugating enzyme	cellular component	unknown	2	1	1
			ubiquitin cycle	polyubiquitination							
			DNA repair	DNA repair regulation							
			cell growth & maintenance	cell proliferation							
			ubiquitin dependent protein degradation	ubiquitin cycle							
648	purinergic receptor P2Y, G protein coupled 1	mCG19415 NP_036932	cell surface receptor linked signal transduction	G protein linked receptor protein signalling pathway	enzyme	2-acetyl-1-alkylglycerophosphocholine esterase	cell	membrane fraction	2	1	1
			signal transduction	cell surface receptor linked signal transduction			plasma membrane	integral plasma membrane protein			
			G protein linked receptor protein signalling pathway	G protein signalling linked to IP3 2nd messenger (phospholipase C activating)							
			G protein signalling linked to IP3 2nd messenger (phospholipase C activating)	cytosolic Ca ion conc elevator							
673	enoyl CoA hydratase related	mCG18133 NP_077170							2	4	1
780	chemokine ligand 12	mCG133006 NP_038683	ion homeostasis	Ca ion homeostasis	defense/immunity protein	antiviral response protein	extracellular	extracellular space	1	1	5
			cell motility	chemotaxis							
			defense response	immune response							
			cell surface receptor linked signal transduction	G protein linked receptor protein signalling pathway							
			defense response	inflammatory response							
797	tolloid-like	mCG22897 AAC52654	skeletal development	ossification	metalloendopeptidase	astacin	cellular component	extracellular	1	1	2
			mesoderm development	skeletal development	peptidase	metallopeptidase	cell	plasma membrane			
			skeletal development	cartilage condensation	ligand binding or carrier	Ca binding					
			developmental processes	embryogenesis & morphogenesis	metallopeptidase endopeptidase	metalloendopeptidase					
			embryogenesis & morphogenesis	histogenesis & organogenesis	peptidase	endopeptidase					
797	carboxypeptidase E	mCG116595 AAH10197	macromolecule catabolism	proteolysis & peptidolysis	exopeptidase	carboxypeptidase	plasma membrane	peripheral plasma membrane protein	1	1	2
			protein metabolism & modification	protein modification	metallocarboxypeptidase	carboxypeptidase A	cell	plasma membrane			
			G protein linked receptor protein signalling pathway	neuropeptide signalling pathway	metallocarboxypeptidase	carboxypeptidase H	extracellular	extracellular space			
			cell growth & maintenance	metabolism	carboxypeptidase metalloexopeptidase	metallocarboxypeptidase	cell	cytoplasm			
			mesoderm development	skeletal development	metallocarboxypeptidase	lys (arg) carboxypeptidase	cell	membrane fraction			
862	myeloid ecotropic viral integration site-related 1	mCG10922 AAH17375	transcription, DNA-dependent	transcription regulation	nucleic acid binding	DNA binding	cell	nucleus	2	1	1
					DNA binding	transcription factor					

neighbouring genes (within 150 Kb of CTCF target site)												
clone	gene	Celera ID	process	end node	node	function	end node	location	end node	in vivo	score insulator	in vitro
	location	Genbank ID	node									
144	sphingosine kinase 1	mCG6841 AAC61697	sphingolipid metabolism	sphingosine metabolism	enzyme	gamma glutamyl hydrolase	golgi apparatus	golgi membrane		5	1	1
144	arylalkylamine N-acetyltransferase	mCG6836 NP_033721	cell communication	signal transduction								
			rhythmic behaviour	circadian rhythm	N-acetyltransferase	arylamine N-acetyltransferase	cellular component	extracellular		5	1	1
					N-acetyltransferase	arylalkylamine N-acetyltransferase						
163	mf 44	mCG4385 AAH39833								5	1	3
163	synuclein beta	mCG4389 NP_291088	neurogenesis	central nervous system development	enzyme inhibitor	phospholipase inhibitor	cell	cytoplasm		5	1	3
			apoptosis	anti-apoptosis								
			cell communication	signal transduction								
200	amyloid beta A4 precursor binding B1	mCG19725 AAH22732	signal transduction	intracellular signalling cascade	protein binding	protein C-terminus binding	cell	cytoplasm		5	1	2
			cell communication	signal transduction	ligand binding or carrier	protein binding						
200	cholecystokinin B receptor	mCG19730 AAB71863	behaviour	feeding behaviour	1-phosphatidylinositol 3-kinase	1-phosphatidylinositol 3-kinase regulator	cell	membrane fraction		5	1	2
			G protein linked receptor protein signalling pathway	G protein signalling linked to IP3 2nd messenger (phospholipase C activating)			plasma membrane	integral plasma membrane protein				
			G protein signalling linked to IP3 2nd messenger (phospholipase C activating)	phospholipase C activation			cell	plasma membrane				
			G protein signalling linked to IP3 2nd messenger (phospholipase C activating)	phosphatidylinositol-4,5 bisphosphate hydrolysis								
			G protein signalling linked to IP3 2nd messenger (phospholipase C activating)	cytosolic Ca ion concentration elevator								
265	FoxC1	mCG11671 NP_032618	histogenesis & organogenesis	mesoderm development	nucleic acid binding	DNA binding	cell	nucleus		5	1	1
			eye-antennal disc metamorphosis	eye morphogenesis	DNA binding	transcription factor	nucleoplasm	transcription factor complex				
			histogenesis & organogenesis	ectoderm development	transcription factor	transcription activating factor						
			periodic partitioning	segment polymerasearity determination	transcription factor	RNA polymerase II transcription factor						
			periodic partitioning	periodic partitioning by pair rule gene	RNA polymerase II transcription factor	specific RNA polymerase II transcription factor						
267	VHSV induced gene 1	mCG17799 AAF60314								3	1	3
267	thymidylate kinase family LPS inducible	mCG17802 XP_234017	pyrimidine ntp biosynthesis	dTTP biosynthesis	nucleotide binding	ATP binding	cytoplasm	lysosome		3	1	3
284	ERGIC-53	mCG3998 AAG30902	exocytosis	ER to Golgi transport	molecular function	chaperone	cytoplasm	Golgi apparatus		3	1	1
284	cytochrome P450 1a2	mCG4004 AAH18298	metabolism	electron transport	enzyme	monooxygenase	cytoplasm	ER		3	1	1
			cell growth & maintenance	metabolism	ligand binding or carrier	electron transfer	ER	microsome				
							cytoplasm	mitochondrion				
293	Mapre1	mCG10464 AAA96320	cell cycle	cell cycle control	protein binding	protein C-terminus binding	cell	cytoplasm		3	1	1
			cell growth & maintenance	cell proliferation			mitochondrial membrane	mitochondrial inner membrane				
322	paraneoplastic C-T-B related	mCG116288 NP_082601	neurogenesis	central nervous system development	unknown	tumour antigen	cell	cytoplasm		2	3	5
411	Rho/Rac/cdc GTPase activating	mCG16139 NP_666236	organelle organization & biogenesis	cytoskeleton organization & biogenesis	GTPase activator	RHO GTPase activator	plasma membrane	peripheral plasma membrane protein		2	1	1
			small GTPase mediated signal transduction	RHO protein signal transduction		small monomeric GTPase	nuclear membrane	nuclear membrane lumen				
411	colonic & hepatic tumour overexpressed	mCG134148 NP_055571	microtubule cytoskeleton organization & biogenesis	microtubule nucleation	motor microtubule binding	microtubule motor	spindle polymerase body	inner plaque of spindle polymerase body		2	1	1
447	AMP-activated protein kinase gamma 3	mCG133883 XP_237293	biosynthesis fatty acid metabolism	fatty acid biosynthesis	cyclic-nucleotide dependent protein kinase	cAMP-dependent protein kinase	cell	nucleus		2	1	1
			intracellular signalling cascade	protein kinase cascade								
			cell growth & maintenance	stress response								
			protein modification	protein phosphorylation								
			gametogenesis	spermatogenesis								
612	EFG-like domain containing	mCG127133 XP_221446	ectoderm development	neurogenesis	ligand binding or carrier	Ca binding	cell	membrane fraction		5	2	5
			eye morphogenesis	mystery cell fate differentiation	ligand binding or carrier	protein binding	plasma membrane	integral plasma membrane protein				
			biological processes	unknown			extracellular	extracellular space				
			cell recognition	neuronal cell recognition								
			axon guidance	motor axon guidance								

717	myeloblastosis oncogene	mCG140750 AAA39781	transcription, DNA-dependent	transcription regulation	molecular function	cell cycle regulator	cell	nucleus	2	1	1
			cell cycle	cell cycle control	nucleic acid binding	DNA binding	cellular component	intracellular			
			transcription, DNA-dependent	transcription from polymerase II promoter	DNA binding	transcription factor	chromosome	chromatin			
			apoptosis	anti-apoptosis			nuclear membrane	nuclear membrane lumen			
736	transformed mouse 3T3 cell double minute 2	mCG3393 AAA91167	biological processes	developmental processes			cell	cytoplasm	3	1	1
			cell proliferation	negative control of cell proliferation	enzyme	ubiquitin protein ligase	cell	nucleus			
736	bladder cancer overexpressed	mCG3048 XP_125868	developmental processes	fertilization	enzyme	N-acetylglucosaminyl phosphatidylinositol deacetylase	plasma membrane	integral plasma membrane protein	3	1	1
736	RAP family	mCG3219 AAH44988	cell cycle	cell cycle control	small monomeric GTPase	RAB small monomeric GTPase	plasma membrane	peripheral plasma membrane protein	3	1	1
			intracellular signalling cascade	small GTPase mediated signal transduction	small monomeric GTPase	RHO small monomeric GTPase	cell	bud			
			budding	axial budding	GTP binding enzyme	GTPase	cell	cytoplasm			
			G protein signalling linked to cAMP 2nd messenger	G protein signalling, adenylate cyclase activating pathway	small monomeric GTPase	RAS small monomeric GTPase	cell	plasma membrane			
			small GTPase mediated signal transduction	RAS protein signalling transduction			cellular component	intracellular			
906	platelet activating factor acetylhydrolase 1b	mCG1329 AAL34972	nucleotide metabolism	lipid metabolism	enzyme	2-acetyl-1-alkylglycerophosphocholine esterase	cell	cytoplasm	2	1	1
			cell growth & maintenance	cell motility	molecular function	motor					
			cell communication	signal transduction							
			ectoderm development	neurogenesis							
1006	pregnane X receptor	mCG129096 AAM10633	transcription, DNA-dependent	transcription regulation	ligand dependent nuclear receptor	steroid hormone receptor	cell	nucleus	2	1	1
			lipid metabolism	steroid metabolism	ligand regulated transcription factor	ligand-dependent nuclear receptor	nuclear membrane	nuclear membrane lumen			
			mesoderm development	skeletal development	transcription factor	transcription activating factor	nucleoplasm	transcription factor complex			
			ion homeostasis	Ca ion homeostasis	steroid hormone receptor	androgen receptor					
			developmental processes	embryogenesis & morphogenesis	RNA polymerase II transcription factor	ligand-regulated transcription factor					