Imprinted transcriptional units in human and mouse - Jan 2011

Please advise regarding errors and omissions

Location Human (Mouse)	Transcriptional unit Human (Mouse)	Functional component	Imprinting status										Expressed allele	ICR methylation	Protein Name or description	RNA[b] Description
			Human	Mouse	Primate	Rat	Rabbit	Cow	Pig	Sheep	Marsupial	Monotreme				
1p36 (4 E2)	TP73 (Trp73)		I	NR									M		Tumour related protein	
1p32	EPS15		mono	NR											EGFR pathway substrate 15	
1p31	DIRAS3		PD	NO					I				P		Ras homolog	
2p12 (6 C3)	LRRTM1 (Lrrtm1)		I	NR									P		leucine rich repeat transmembrane	
2p15 (11 A3)	COMMD1 (Commd1)		NI	I					NI				M		Copper metabolism gene Murr1	
	(Zrsr1)		NO	I									P	M	U2 small nuclear RNP auxiliary factor	
4q22.1 (6 C1)	NAP1L5 (Nap1l5)		I	I				I					P	M	Nucleosome assembly protein	
6p11 (1 B)	PRIM2 (Prim2)		I	NR					PD				M		Primase, polypeptide 2	
6q24 (10 A1)	HYMAI (Hymai)		I	PD									P	M		misc RNA
	PLAGL1 (Plagl1)		I	I					I				P		Zinc finger protein	
6q25 (17 A1)	IGF2R (Igf2r)		PI	I		I		I	I	I	I	NI	M		Insulin-like growth factor receptor 2	
	(Air)		NO	I							NO		P	M		Igf2r AS
	SLC22A2 (Slc22a2)		PI	I									M		Organic cation transporter	
	SLC22A3 (Slc22a3)		PD	I									M		Organic cation transporter	
7p12 (11 A1)	DDC (Ddc)	Exon1a transcript	NR	I									P		Dopa decarboxylase	
	GRB10 (Grb10)		I	I						I			M(P)[c]	M	Growth factor receptor-bound protein	
7q21.3 (6 A1)	CALCR (Calcr)		I	I									M		Calcitonin receptor	
	TFPI2 (Tfpi2)		I	I									M			
	SGCE (Sgce)		I	I					I		NI		P		Sarcoglycan, epsilon	
	PEG10 (Peg10)		I	I				I	I		I	NO	P	M	Retroviral gag pol homologue	
	PPP1R9A (Ppp1r9a)		I	I							NI		M		Protein phosphatase inhibitor	
	PON3 (Pon3)		NI	I									M		Paraoxonase 3	
	PON2 (Pon2)		NI	I									M		Paraoxonase 2	
	ASB4 (Asb4)		NI	I				NI(PD)	NI		NI		M		Ankyrin repeat and SOCS box	
7q32.2 (6 A3)	CPA4 (Cpa4)		I	NR									M		Carboxypeptidase	
	MEST (Mest)		I	I					I	I	I		P	M	Alpha/beta hydrolase fold family	
	MIRN335 (Mirn335)		NR	I												microRNA
	MESTIT1		I	NO									P			MEST AS
	COPG2IT1 (Copgas2)		I	I									P			COPG2 AS
	COPG2 (Copg2)		CD	I				NI	PD				P(M)[d]		Coatomer protein complex subunit	
	KLF14 (Klf14)		I	I									M		Krüppel-like factor 14	
8p23 (8 A1.1)	DLGAP2		I	ND									P		Membrane associated guanylate kinase	
8q24.3 (15 D3)	KCNK9 (Kcnk9)		I	I									M		Potassium channel	
	(Peg13)		NO	I									P	M		misc RNA
10p14 (2 A1)	SFMBT2 (Sfmbt2)		NR	I									P	M	Scm-like with 4 mbt domains	
10q26.11 (7 F3)	INPP5F_V2 (Inpp5f_v2)	V2 isoform only	I	I	I								P	M		misc RNA (retro)
11p15 (7 F5)	H19 (H19)	H19 (H19)	I	I		I		I	I	I			M	P		miRNA host
		miR-675	I	I									M			miRNA
	IGF2 (Igf2)	IGF2 (Igf2)	I	I		I		I	I	I	I	NI	P		Insulin-like growth factor 2	
		miR-483	NR	NR												
	IGF2AS (Igf2as)		I	I					I				P			IGF2 AS
	INS (Ins2)		I	I							PD		P		Insulin	
	TH (Th)		NR	I									M	?	Tyrosine hydroxylase	
	ASCL2 (Ascl2)		NI	I					NI	PD			M		HLH transcription factor	
	TSPAN32 (Tspan32)		NI	CD					NI				M		Tetraspanin 32	
	CD81 (Cd81)		NI	CD				NI(PD)					M		Transmembrane 4 superfamily	
	TSSC4 (Tssc4)		NI	CD				PD					M		Tumor suppressing candidate	
	KCNQ1 (Kcnq1)		I	I									M		Voltage-gated potassium channel	
	KCNQ1OT1 (Kcnq1ot1)		I	I									P	M		KCNQ1 AS
	KCNQ1DN		I	NO									M		BWRT protein	
	CDKN1C (Cdkn1c)		I	I						I	NI		M		Cyclin-dependent kinase inhibitor	
	(Msuit1, AF313042)		NO	I									M			misc RNA
	SLC22A18AS		PD	NO									M		SLC22A18AS putative protein	
	SLC22A18 (Slc22a18)		I	I									M		Organic cation transporter	
	PHLDA2 (Phlda2)		I	I					I				M		Pleckstrin homology-like domain	
	NAP1L4 (Nap1l4)		NR	CD									M		Nucleosome assembly protein	
	(Tnfrsf23)		NO	CD									M		TNF receptor superfamily	
	OSBPL5 (Osbpl5)		I	CD				NI(PD)					M		Oxysterol binding protein-like 5	
	SMPD1		PD	NR									M			
	ZNF215		PD	NO									M		Zinc finger protein	
11p15.4 (7 E3)	AMPD3 (Ampd3)		NI	I									M		AMP deaminase (isoform E)	
11p13 (2 E)	WT1-Alt transcript (Wt1)		I	NR									P		Zinc finger protein	
	WT1AS (Wt1as)		PD	NI									P			WT1 AS
11p13	CD44		mono	NR											CD44	
11q13.4 (7 F5)	DHCR7 (Dhcr7)		NI	I									M		7-dehydrocholesterol reductase	
11q23 (9 A5)	SDHD (Sdhd)		CD	NR				NI					P		Succinate dehydrogenase, subunit	
12q13 (15 F1)	SLC38A4 (Slc38a4)		NR	I				NI	PD				P		Amino acid transporter	

12q14.3	WIF1		PD	NR									P	M	Wnt inhibitory factor 1	
12q21 (10 C3)	DCN (Dcn)		NI	PD				NI	NI				M		Proteoglycan	
13q14 (14 D2)	HTR2A (Htr2a)		NI/CD	I				NI(PD)					M		Serotonin receptor	
	RB1 (Rb1)	RB1	I	NI									M			
		RB1 2B	I	NO									P			
14q32 (12 F1)	BEGAIN [BEGAIN - sheep]		NR	NR						I			P		brain-enriched guanylate kinase-associated	(imprinted in sheep)
	DLK1 (Dlk1)		I	I					I	I	NI	NI	P		Delta-like 1 homolog	
	DLK1 downstream transcripts		NR	I						I			P			misc RNA
	(Mico1)		NR	I									M			Circadian oscillating
	(Mico1os)		NR	I									M			Circadian oscillating
	MEG3 (Meg3)		I	I				I	I	I	NO		M	P		misc RNA
	miR-337		NR	I									M			miRNA
	RTL1 (Rtl1;PEG11)		NR	I				PD		I	NE	NO	P		Retrotransposon-like 1	
	Anti-PEG11 (anti-Rtl1)	anti-Rtl1	NR	I						I			M			Rtl1-AS
		miR-431	NR	I									M			miRNA
		miR-433	NR	PD									M			miRNA
		miR-127	NR	I									M			miRNA
		miR-434	NR	PD									M			miRNA
		miR-432	NR	PD									M			miRNA
		miR-136	NR	I									M			miRNA
	MEG8 (Rian)	MEG8 (Rian)	NR	I						I			M			snoRNA host
		miR-370	NR	I									M			miRNA
		(MBII-78)	NO	I									M			snoRNA
		(MBII-19)	NO	I									M			snoRNA
		14q(0)	NR	I									M			snoRNA
		14q(I) (MBII-48)	NR	I									M			snoRNA
		(MBII-49)	NO	I									M			snoRNA
		(MBII-426)	NO	I									M			snoRNA
		14q(II) (MBII-343)	NR	I									M			snoRNA
		[RBII-36-rat]	NO	NO		I							?			snoRNA 86 copies
	(Mirg)	(Mirg)	NR	I									M			miRNA host
		miR-411	NR	I									M			miRNA
		miR-380	NR	I									M			miRNA
		miR-376b	NR	I									M			miRNA
		miR-376	NR	I									M			miRNA
		miR-134	I	I									M			miRNA
		miR-154	NR	I									M			miRNA
		miR-410	NR	I									M			miRNA
	DIO3 (Dio3)		NR	I							NI	NI	P		Deiodinase, iodothyronine type III	
15q11-q12 (7C-B5)	(Peg12)		NO	I									P		Gsk-3-binding protein family	
	MKRN3 (Mkrn3)		I	I									P		Makorin, ring finger protein	
	ZNF127AS (Zfp127as)		NR	I									P			MKRN3 AS
	MAGEL2 (Magel2)		I	I				PD					P		MAGE-like protein	
	NDN (Ndn)		I	I									P		Necdin, neuronal growth suppressor	
	(AK014392)		NR	PD									P			Ndn AS
	(BM117114)		NO	I									P			EST
	(Pec2)		NO	I									P			LINE-rich intergenic
	(BB077283)		NO	I									P			EST
	(Pec3)		NO	I									P			LINE-rich intergenic
	W89101		PD	?									P			
	PWRN1		PD	?NO									NK			misc RNA
	C15ORF2		I	NO									NK		1156 aa intron-less gene in primates only	
	SNURF-SNRPN	SNURF (Snurf)	I	I									P		SNRPN upstream reading frame	
		SNRPN (Snrpn)	I	I							NI		P	M	Small nuclear ribonucleoprotein	
		SNORD107 (MBII-436)	I	I									P			snoRNA
		SNORD64 (MBII-13)	I	I									P			snoRNA
		SNORD108	I	NO									P			snoRNA
		SNORD109A	I	NO									P			snoRNA
		SNORD116@ (Pwcr1)	I	I									P			snoRNA cluster
		SNORD115@	I	I									P			snoRNA cluster
		SNORD109B	I	NO									P			snoRNA
		UBE3A-AS	I	I									P			UBE3A AS
	UBE3A (Ube3a)		I	I							NI	NI	M		Ubiquitin protein ligase	
	ATP10A (Atp10a)		I	CD									M		ATPase, Class V	
	GABRB3 (Gabrb3)		CD	NI									P		Gamma-aminobutyric acid receptor	
	GABRA5 (Gabra5)		CD	NI									P		Gamma-aminobutyric acid receptor	
	GABRG3 (Gabrg3)		CD	NI									P		Gamma-aminobutyric acid receptor	
15q21 (2 E5)	GATM (Gatm)		NI	PD					NI				M		Glycine amidinotransferase	
15q24 (9 E3.1)	MIRN184 (Mirn184)		NR	I									P			microRNA
	(AS4)		NR	I									P			misc RNA
	(4930524O08Rik, A19)		NO	I									P			misc RNA
	RASGRF1 (Rasgrf1)		NR	I		I							P	P	Guanine nucleotide exchange factor	
16p13 (16 A1)	ZNF597 (Zfp597)		I	NR									M		Zinc finger protein	
18q11 (18A2-B2)	IMPACT (Impact)		NI	I		I	I						P		Imprinted and ancient	
18q21.1	TCEB3C		I	NO									M		Transcription elongation factor	

19q13.41	C19MC		I	NO									P			microRNA gene cluster
	ZNF331		PD	NO									M		Zinc finger protein	
19q13.42	NLRP2		I										M			
19q13.43 (7A2-B1)	ZIM2 (Zim2)		I	I				NI					P(M)[d]		Zinc-finger protein	
	(Zim1)		NO	I									M		Zinc-finger protein	
	PEG3 (Peg3)		I	I				I		I			P	M	Zinc-finger protein	
	ITUP1/MIMT1 (Usp29)		I	NO				I					P			Imprinted transcript variant1
	USP29 (Usp29)[e]		NR	I				I					P		Ubiquitin-specific protease	
	ZIM3 (Zim3)		NR	I									M		Zinc-finger protein (human)	No ORF (mouse)
	ZNF264 (Zfp264)		NR	I				NI					P		Zinc-finger protein (human)	No ORF (mouse)
20q11.21 (2 H1)	PSIMCT-1 (Mcts2)		I	I				NO					P	M	?RNA binding protein	?MCTS1 pseudogene
	HM13 (H13)		NR	I					NI				M		Signal peptide peptidase	
20q11.23 (2 H1)	NNAT (Nnat)		I	I				I	I				P	M	Neuronatin	
	BLCAP		I	I									M/P			
20q13 (2 H3)	L3MBTL (L3mbtl)		I	NI									P	DMR	Polycomb group	
20q13 (2 E1-H3)	GNAS (Gnas)	NESP55	I	I				I					M		Neuroendocrine secretory protein 55	
		GNASXL	I	I						PD			P	M	Large isoform of GS-a	
	(F7)		NO	PD									M		Hypothetical protein (Mm.125770)	
		Exon-1A	I	I						PD			P	M		misc RNA
		GS-alpha	I	I						PD			M		Stimulatory G-protein, alpha subunit	
	SANG (Nespas)		I	I									P			GNAS AS
X	X inactivation		NI	I				I			I					
(X)	(Rhox5)		?	I									P/M		Reproductive homeobox 5	
(X A7)	(Xlr3b)		NO	I									M		X linked lymphocyte regulated	
	(Xlr4b)		NO	I									M		X linked lymphocyte regulated	
	(Xlr4c)		NO	I									M		X linked lymphocyte regulated	
Xq13 (X D)	XIST (Xist)		NI	I				I			NO	NO	P			XIST
	TSIX (Tsix)		NI	I							NO	NO	M			XIST AS

Abbreviations. AS, antisense transcript; miRNA, microRNA; misc RNA, RNA of unknown function

CD, conflicting data; I, reported to be imprinted; ICR, Imprint control region; mono, monoallelic; ND, not detected; NI, reported to be not imprinted; NO, no orthologue known; NE, not expressed

NK, not known; NR, no reports of imprinting status; M, maternal; P, paternal; PD, provisional data; PI, polymorphic imprinting

[b]Noncoding RNAs only

[c]Imprinting is isoform dependent.

[d]ZIM2 and COPG2 are reported to be oppositely imprinted in human and mouse.

[e] Mouse Usp29 appears to split into two genes in human and cow (ie MIMT1 and Usp29). See Kim 2007

Discordances:

Not imprinted vs Imprinted

No orthologue

Possible discordance