

Imprinted transcriptional units in human and mouse - Jan 2016

Please advise regarding errors and omissions

Location		Transcriptional unit	Functional	Imprinting status											Expressed	ICR	Protein	RNA ^b
Human (Mouse)	Location mouse	Human (Mouse)	component	Human	Mouse	Primate	Rat	Rabbit	Cow	Pig	Sheep	Marsupial	Monotreme	allele	methylation	Name or description	Description	
1p31	NO	DIRAS3		PD	NO					I					P		Ras homolog	
1p34.1	4 D1	RNU5D-1		I	NO										P			
1p36	4 E2	TP73 (Trp73)		I	NR										M		Tumour related protein	
2p12	6 C3	LRRTM1 (Lrrtm1)		PD	NI										P		leucine rich repeat transmembrane	
2p15	11 A3	COMMD1 (Comm1)		NI	I					NI					M		Copper metabolism gene Murr1	
2p15	11 A3	(Zrsf1)		NO	I										P	M	U2 small nuclear RNP auxiliary factor	
2q33.3	1 C2	GPR1 (Gpr1)		PD	PD										P	P		
2q33.3	1 C2	GPR1-AS (Zdbf2linc)		I	I										P			
2q33.3	1 C2	ZDBF2 (Zdbf2)		I	I										P	P		
4q22.1	6 C1	NAP1L5 (Nap15)		I	I				I	I					P	M	Nucleosome assembly protein	
4q28.2	3 B	JADE1 (Jade1)		ND	I										P			
4q31	8 C3	GAB1 (Gab1)		NI	I										P		GRB2-associated binding protein	
5q15	13C1	RHOBTB3 (Rhoibt3)		PD	NR										P	M		
6p25.2	13 A3.3	FAM50B (Fam50b)		I	NI										P			
6p25.2	13 A3.3	FAM50B-AS		I	NR										P			
6q14	9 E3.1	SNX14 (Snx14)		ND	PD										P			
6q21	10 B2	LIN28B		PD	NI										P			
6q21	10 B2	AIM1 (Aim1)		I	NR										P	P (promoter)		
6q24	10 A1	PHACTR2 (Phactr2)		I	I										M		phosphatase and actin regulator	misc RNA
6q24	10 A1	HYMAI (Hymai)		I	PD										P	M		misc RNA
6q24	10 A1	PLAGL1 (Plagl1)		I	I				I	I					P		Zinc finger protein	
6q25	17 A1	IGF2R (Igf2r)		PI	I		I		I	NI	I	I	NI		M		Insulin-like growth factor receptor 2	
6q25	17 A1	AIRN (Aim)		ND	I										P	M		Igf2r AS
6q25	17 A1	SLC22A2 (Slc22a2)		PI	I										M		Organic cation transporter	
6q25	17 A1	SLC22A3 (Slc22a3)		PD	I										M		Organic cation transporter	
6q26	17A1	PDE10A (Pde10a)		NR	I										M			
7p12	11 A1	DDC (Ddc)	Exon1a transcript	NI	I										P		Dopa decarboxylase	
7p12	11 A1	COBL (Cobl)		NI	PD										M			
7p12	11 A1	GRB10 (Grb10)		I	I						I				M(P) ^d	M	Growth factor receptor-bound protein	
7q21.3	6 A1	CALCR (Calcr)		I	I										M		Calcitonin receptor	
7q21.3	6 A1	TFPI2 (Tfpi2)		I	I										M			
7q21.3	6 A1	CASD1 (Casd1)		NI	PD										M			
7q21.3	6 A1	SGCE (Sgce)	Review is it imprinted	I	I				I			NI			P		Sarcoglycan, epsilon	
7q21.3	6 A1	PEG10 (Peg10)		I	I				I		I		NO		P	M	Retroviral gag pol homologue	
7q21.3	6 A1	PPP1R9A (Ppp1r9a)		Insuff data	I					NI		NI			M		Protein phosphatase inhibitor	
7q21.3	6 A1	ASB4 (Asb4)		NI	I				NI(PD)	NI		NI			M		Ankyrin repeat and SOCS box	
7q32.2	6 A3	CPA4 (Cpa4)		I	NR										M		Carboxypeptidase	
7q32.2	6 A3	MEST (Mest)		I	I				I	I	I	I			P	M	Alpha/beta hydrolase fold family	
7q32.2	6 A3	MIRN335 (Mirn335)		NR	I													microRNA
7q32.2	6 A3	MESTIT1		I	NO										P			MEST AS
7q32.2	6 A3	COPG2 (Copp2)		CD	I				NI	PD					P(M) ^d		Coatome protein complex subunit	
7q32.2	6 A3	KLF14 (Klf14)		I	I										M		Krüppel-like factor 14	
8p23	8 A1.1	DLGAP2		I	ND										P		Membrane associated guanylate kinase	
8q24.22		ZFAT-AS1		PD	ND													
8q24.3	15 D3	KCNK9 (Kcnk9)		I	I										M		Potassium channel	
8q24.3	15 D3	(Peg13)		NO	I										P	M		misc RNA
10p14	2 A1	SFMBT2 (Sfmbt2)		NI	I		I		NI						P	M	Scm-like with 4 mbt domains	
10p14	2 A1		Intron 10 miRNA cluster	NI	I		I		NI									
10q26.11	7 F3	INPP5F_V2 (Inpp5f_v2)		I	I	I									P	M		misc RNA (retro) coding in mouse
11p13	2 E	WT1-Alt transcript (Wt1)	Check name on entry	I	NR										P		Zinc finger protein	
11p13	2 E	WT1AS (Wt1as)		PD	NI										P			WT1 AS
11p15	7 F5	H19 (H19)	H19 (H19)	I	I		I	I	I	I					M	P		miRNA host
11p15	7 F5		miR-675-3p	I	I													
11p15	7 F5		miR-675-5p	I	I										M			miRNA
11p15	7 F5	(PIHi)		NR	I										P			misc RNA

11p15	7 F5	IGF2 (Igf2)	IGF2 (Igf2)	I	I									NI	P	Insulin-like growth factor 2			
11p15	7 F5		miR-483	NR	NR											miRNA			
11p15	7 F5	IGF2AS (Igf2as)		I	I				I						P	IGF2 AS			
11p15	7 F5	INS (Ins2)		I	I									PD	P	Insulin			
11p15	7 F5	TH (Th)		NR	I										M	?	Tyrosine hydroxylase		
11p15	7 F5	ASCL2 (Ascl2)		NI	I				NI	PD					M		HLH transcription factor		
11p15	7 F5	TSPAN32 (Tspan32)		NI	CD				NI						M		Tetraspanin 32		
11p15	7 F5	CD81 (Cd81)		NI	I				NI(PD)	NI					M		Transmembrane 4 superfamily		
11p15	7 F5	TSSC4 (Tssc4)		NI	I				PD						M		Tumor suppressing candidate		
11p15	7 F5	KCNQ1 (Kcnq1)		I	I										M		Voltage-gated potassium channel		
11p15	7 F5	KCNQ1OT1 (Kcnq1ot1)		I	I										P	M	KCNQ1 AS		
11p15	7 F5	KCNQ1DN		I	NO										M		BWRT protein		
11p15	7 F5	CDKN1C (Cdkn1c)		I	I				I					NI	M		Cyclin-dependent kinase inhibitor		
11p15	7 F5	(Msuit1, AF313042)		NO	I										M		misc RNA		
11p15	7 F5	SLC22A18AS		PD	NO										M		SLC22A18AS putative protein		
11p15	7 F5	SLC22A18 (Slc22a18)		I	I										M		Organic cation transporter		
11p15	7 F5	PHLDA2 (Phlda2)		I	I				I	I					M		Pleckstrin homology-like domain		
11p15	7 F5	(Tnfrsf26)		NO	I														
11p15	7 F5	(Tnfrsf22)		NO	I														
11p15	7 F5	(Tnfrsf23)		NO	PD										M		TNF receptor superfamily		
11p15	7 F5	ZNF215		PD	NO										M		Zinc finger protein		
11q13.3	7 F5	ANO1 (Ano1)		PD	PD										M		Anoctamin 1, Ca activated Cl channel		
12q13	15 F1	SLC38A4 (Slc38a4)		NR	I				NI	PD					P		Amino acid transporter		
12q14.3	10 D2	WIF1 (Wif1)		PD	NR										P	M	Wnt inhibitory factor 1		
13q14	14 D2	HTR2A (Htr2a)		NI/CD	I				NI(PD)						M		Serotonin receptor		
13q14	14 D2	RB1 (Rb1)	RB1	I	NI	I									M				
13q14	14 D2		RB1 2B	I	NO										P				
14q32	12 F1	BEGAIN (Begain)		NR	I										P		brain-enriched guanylate kinase-associated	(imprinted in sheep)	
14q32	12 F1	DLK1 (Dlk1)		I	I				I	I	NI			NI	P		Delta-like 1 homolog		
14q32	12 F1	DLK1 downstream transcripts		NR	I										P		misc RNA		
14q32	12 F1	(Mico1)		NR	I										M		Circadian oscillating		
14q32	12 F1	(Mico1os)		NR	I										M		Circadian oscillating		
14q32	12 F1	MEG3 (Meg3)		I	I				I	I	I	NO			M		misc RNA		
14q32	12 F1	MIR337 (Mir337)		I	I										M		miRNA		
14q32	12 F1	RTL1 (Rtl1;PEG11)		I	I				PD		I	NE		NO	P		Retrotransposon-like 1		
14q32	12 F1	Anti-PEG11 (anti-Rtl1)	anti-Rtl1	NR	I						I				M		Rtl1-AS		
14q32	12 F1	Anti-PEG11 (anti-Rtl1)	miR-431	NR	I										M		miRNA		
14q32	12 F1	Anti-PEG11 (anti-Rtl1)	miR-433	NR	PD										M		miRNA		
14q32	12 F1	Anti-PEG11 (anti-Rtl1)	miR-127	NR	I										M		miRNA		
14q32	12 F1	Anti-PEG11 (anti-Rtl1)	miR-434	NR	PD										M		miRNA		
14q32	12 F1	Anti-PEG11 (anti-Rtl1)	miR-432	NR	PD										M		miRNA		
14q32	12 F1	Anti-PEG11 (anti-Rtl1)	miR-136	NR	I										M		miRNA		
14q32	12 F1	MEG8 (Rian)	MEG8 (Rian)	I	I						I				M		snoRNA host		
14q32	12 F1		miR-370	NR	I										M		miRNA		
14q32	12 F1		(MBII-78)	NO	I										M		snoRNA		
14q32	12 F1		(MBII-19)	NO	I										M		snoRNA		
14q32	12 F1		14q(0)	NR	I										M		snoRNA		
14q32	12 F1		14q(I) (MBII-48)	NR	I										M		snoRNA		
14q32	12 F1		(MBII-49)	NO	I										M		snoRNA		
14q32	12 F1		(MBII-426)	NO	I										M		snoRNA		
14q32	12 F1		14q(II) (MBII-343)	NR	I										M		snoRNA		
14q32	12 F1		[RBII-36-rat]	NO	NO				I						?		snoRNA 86 copies		
14q32	12 F1	C14MC (Mirg)	C14MC (Mirg)	NR	I										M		miRNA host		
14q32	12 F1		miR-411	NR	I										M		miRNA		
14q32	12 F1		miR-380	NR	I										M		miRNA		
14q32	12 F1		miR-376b	NR	I										M		miRNA		
14q32	12 F1		miR-376	NR	I										M		miRNA		
14q32	12 F1		miR-134	I	I										M		miRNA		
14q32	12 F1		miR-154	NR	I										M		miRNA		
14q32	12 F1		miR-410	NR	I										M		miRNA		
14q32	12 F1	DIO3 (Dio3)		NR	I									NI	NI	P	Deiodinase, iodothyronine type III		

15q11-q12	7C-B5	(Peg12)		NO	I									P		Gsk-3-binding protein family	
15q11-q12	7C-B5	MKRN3 (Mkm3)		I	I									P		Makorin, ring finger protein	
15q11-q12	7C-B5	MKRN3-AS1 (Mkm3os)		NR	PD									P		MKRN3 AS	
15q11-q12	7C-B5	MAGEL2 (Magel2)		I	I			PD	I					P		MAGE-like protein	
15q11-q12	7C-B5	NDN (Ndn)		I	I				I					P		Necdin, neuronal growth suppressor	
15q11-q12	7C-B5	(AK014392; Ndn-AS)	(AK014392)	NR	PD									P			Ndn AS
15q11-q12	7C-B5	(BM117114)		NO	I									P			EST
15q11-q12	7C-B5	(U80893)		NR	PD									P			
15q11-q12	7C-B5	(Pec2)		NO	I									P			LINE-rich intergenic
15q11-q12	7C-B5	(BB077283)		NO	I									P			EST
15q11-q12	7C-B5	(Pec3)		NO	I									P			LINE-rich intergenic
15q11-q12	7C-B5	W89101		PD	?									P			
15q11-q12	7C-B5	PWRN1		PD	?NO									NK			misc RNA
15q11-q12	7C-B5	NPAP1		I	NO									NK			
15q11-q12	7C-B5	SNURF-SNRPN	SNURF (Snurf)	I	I									P		1156 aa intron-less gene in primates only	
15q11-q12	7C-B5		SNRPN (Snrpn)	I	I			I	I		NI			P	M	Small nuclear ribonucleoprotein	
15q11-q12	7C-B5		SNORD107 (MBII-436)	I	I									P			snoRNA
15q11-q12	7C-B5		SNORD64 (MBII-13)	I	I									P			snoRNA
15q11-q12	7C-B5		SNORD108	I	NO									P			snoRNA
15q11-q12	7C-B5		SNORD109A	I	NO									P			snoRNA
15q11-q12	7C-B5		SNORD116@ (Pwer1)	I	I									P			snoRNA cluster
15q11-q12	7C-B5		JPW	I	I									P			ncRNA
15q11-q12	7C-B5		SNORD115@	I	I									P			snoRNA cluster
15q11-q12	7C-B5		SNORD109B	I	NO									P			snoRNA
15q11-q12	7C-B5		UBE3A-AS	I	I									P			UBE3A AS
15q11-q12	7C-B5	UBE3A (Ube3a)		I	I						NI	NI		M		Ubiquitin protein ligase	
15q24	9 E3.1	MIRN184 (Mirn184)		NR	I									P			miRNA
15q24	9 E3.1	(AS4)		NR	I									P			misc RNA
15q24	9 E3.1	(4930524O08Rik, A19)		NO	I									P			misc RNA
15q24	9 E3.1	RASGRF1 (Rasgrf1)		NR	I			I		M/P				P	Mh/Pm	Guanine nucleotide exchange factor	
15q26.3	7 D1	IRAIN (Irain)		PD	NO									P			
16p13.1	16 A1	ZNF597 (Zfp597)		I	NI									M	P	Zinc finger protein	
16p13.1	16 A2	NAA60	NAA60 isoform 1	I	NI									M			
16q24.3	8 E1	CDH15 (Cdh15)	5' transcript (mouse)	NI	I												
18q11	18 A2-B2	IMPACT (Impact)		NI	I			I	I					P		Imprinted and ancient	
19p13.2	9 A3	DNMT1		I	NI												
19q13.1	7 A3-B1	AXL (Axl)		PD	I									M	P		
19q13.41	NO	ZNF331		PD	NO									M		Zinc finger protein	
19q13.41	NO	C19MC		I	NO									P			miRNA cluster
19q13.41	NO	Anti-MIR371-MIR373		PD	NO									P			
19q13.42	7 A1	NLRP2		PD/PI										M			
19q13.43	7 A2-B1	ZIM2 (Zim2)		I	I				NI					P(M) ^d		Zinc-finger protein	
19q13.43	7 A2-B1	(Zim1)		NO	I									M		Zinc-finger protein	
19q13.43	7 A2-B1	PEG3 (Peg3)		I	I			I	I	I				P	M	Zinc-finger protein	
19q13.43	7 A2-B1	MIMT1		I	NO			I						P			Imprinted transcript variant1
19q13.43	7 A2-B1	USP29 (Usp29) ^g		NR	I			I						P		Ubiquitin-specific protease	
19q13.43	7 A2-B1	ZIM3 (Zim3)		NR	I									M		Zinc-finger protein (human)	No ORF (mouse)
19q13.43	7 A2-B1	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
20q11.21	2 H1	HM13 (H13)		NR	I					NI				M		Signal peptide peptidase	
20q11.23	2 H1	NNAT (Nnat)		I	I			I	I					P	M	Neuronatin	
20q11.23 (2 H1)	2 H1	BLCAP (Bicap)		I	I									M/P			
20q13.12 (2 H3)	2 H2	L3MBTL (L3mbtl)		I	NI									P	DMR	Polycomb group	
20q13.32	2 H4	GNAS (Gnas)	NESP55	I	I			I	I					M		Neuroendocrine secretory protein 55	
20q13.32	2 H4		GNASXL	I	I							PD		P	M	Large isoform of GS-a	
20q13.32	2 H4	(F7)		NO	PD									M		Hypothetical protein (Mm.125770)	
20q13.32	2 H4		Exon-1A	I	I						PD			P	M		misc RNA
20q13.32	2 H4		GS-alpha	I	I						PD			M		Stimulatory G-protein, alpha subunit	
20q13.32	2 H4	SANG (Nespas)		I	I									P			GNAS AS
20q13.32	2 H4		miR-296	I	I									P			
20q13.32	2 H4		miR-298	I	I									P			

X	X	(Rhox5)		?	I								P/M		Reproductive homeobox 5	
(X A7)	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)	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

^dNoncoding RNAs only

^eImprinting is isoform dependent.

^fZIM2 and COPG2 are reported to be oppositely imprinted in human and mouse.

^gMouse 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

PLACENTAL MATERNAL EXPRESSION

IPO - imprinted placenta only