

## YÖNTEM

Çalışmada talep edilen gen panelinde bulunan genlerin kodlayıcı bölgeleri (ekzonlar) ve ekzon-intron bağlantıları NGS yöntemi kullanılarak incelenmektedir. Çalışmada tespit edilen genetik değişimlerin sınıflandırmasında ACMG kılavuzu esas alınmaktadır ancak güvenilir veritabanlarının sınıflandırma yapmış olduğu durumlarda ve merkezimizin deneyimi ışığında ACMG sınıflandırmasından bağımsız sınıflandırma yapılabilir.

## ACMG SINIFLANDIRMASI

ACMG topluluğu, *Germline* varyantların patojenik sınıflandırmasında kullanılmak üzere 2015 yılında bir kılavuz yayınlamıştır (PMID: 25741868). Nükleotid dizisindeki kalıcı değişimler için kullanılan mutant ve polimorfizm terimlerinin kullanılmaması onun yerine "varyant" teriminin kullanılması önerilmiştir. Varyantların sınıflandırılması için benin ve patojenik kriterlere göre skorlama sistemi oluşturulmuştur. Skorlama sonucunda tespit edilen varyant 5 sınıftan birine sokularak raporlanmaktadır:

**Patojenik (P):** Pathogenic (P, Class 5). Hastalık yapıcı.

**Muhtemel Patojenik (MP):** Likely Pathogenic (LP, Class 4).

**Klinik Önemi Bilinmeyen (KÖB):** Variant of Uncertain Significance (VUS, Class 3).

**Muhtemel Benin (MB):** Likely Benign (LB, Class 2).

**Benin (B):** Benign (Class 1). Hastalık yapmayan, selim.

**Skorlamada kullanılan kriterler:** Pathogenic criterion is weighted as very strong (PVS1), strong (PS1-4); moderate (PM1-6), or supporting (PP1-5) and each benign criterion is weighted as stand-alone (BA1), strong (BS1-4) or supporting (BP1-6).

Hakkında hiçbir olgu bildiriminin olmadığı varyantların, klinikteki etkilerini ön görmek için tahmin yazılımlarının (*In Silico* Predictive Programs) tek başına bir varyantı benin veya patojenik sınıfa sokamayacağı özellikle vurgulanmıştır.

Merkezimizde ticari yazılımlar, ACMG kılavuzu, uluslararası veritabanları (ClinVar, Franklin, Varsome, hastalık spesifik veritabanları) ve merkez içi veritabanımız esas alınarak varyant sınıflandırması yapılmaktadır.

Daha önce sınıflandırılmış bir varyant, güncellenen bilgiler ışığında yeniden değerlendirildiğinde başka bir sınıfta yer alabilir. Bu nedenle test sonuçlarının güncel bilgiler ışığında belli aralıklarla tekrar değerlendirilmesi önerilir. Hastada tespit edilen bir varyant için, hastanın klinik bulguları ve bazen de ailedeki diğer bireylerin de incelenmesi (segregasyon analizi) ile daha doğru sonuçlar elde edilebilir. Hastanın test sonucuna yönelik genetik danışma alması önerilir.

## RAPORLAMA

Raporda tespit edilen varyantlar 3 ana başlık altında sunulmaktadır. **Sonuç** bölümünde patojenik olduğu düşünülen değişimler bildirilmektedir: P, MP. Bu değişimler hastanın başvuru kliniği ile doğrudan ilişkili olup, hasta yönetimini etkileyecek değişimlerdir. **Klinik önemi bilinmeyen** (KÖB; VUS) değişimlerin ise test sonrasında 1 yıl arayla güncel veritabanlarından sınıflandırılmasında değişim olup olmadığı kontrol edilmelidir. **İkincil (sekonder , insidental)** varyantlar, araştırma sırasında, başvuru bulguları ile doğrudan

ilişkili olmayan ancak klinik önemi olabilecek patojenik varyantları ifade eder. Sekonder varyantların raporlanması için imzalı hasta onamına ihtiyaç vardır; aksi durumda, tıbbi genetik uzmanının uygun gördüğü özel durumlar hariç, ikincil bulgular raporlanmaz. Toplumda %5'in üzerinde sıklıkla görülen varyantların benin olduğu kabul edilir ancak toplumda sık görülmesine rağmen klinik önemi olabilecek istisnai varyantların olduğu literatürde bildirilmiştir (Table 1).

**Table 1.**

Gene	Variant	Classification	ACMG/AMP Criteria applied (not including BA1 or BS1)	ClinVar ID	ClinGen Allele Registry ID	Chr	Position	Ref	Alt	ExAC Source Pop	ExAC Source Pop MAF	ClinVar disease entry
ACAD9	NM_014049.4:c.-44_-41dupTAAAG	VUS	PS3_Supporting; BS2	1018	CA114709	3	128,398,490	C	CTAAG	AFR	0.1261	Deficiency of Acyl-CoA dehydrogenase family, member 9
GJB2	NM_004004.3:c.109G>A (p.Val37Ile)	Pathogenic	PS4; PP1_Strong; PM3_VeryStrong; PS3_Moderate	17023	CA172210	13	20,763,612	C	T	EAS	0.07242	Deafness, autosomal recessive
HFE	NM_000410.3:c.187C>G (p.His63Asp)	Pathogenic*	PS4	10	CA113797	6	26,091,179	C	G	NFE	0.1368	Hereditary hemochromatosis
HFE	NM_000410.3:c.845G>A (p.Cys282Tyr)	Pathogenic*	PS4; PP3	9	CA113795	6	26,093,141	G	A	NFE	0.05135	Hereditary hemochromatosis
MEFV	NM_000243.2:c.1105C>T (p.Pro369Ser)	VUS	PM3; PM5	2551	CA280114	16	3,299,586	G	A	EAS	0.07156	Familial Mediterranean fever
MEFV	NM_000243.2:c.1223G>A (p.Arg408Gln)	VUS	PM3; PM5	2552	CA280116	16	3,299,468	C	T	EAS	0.05407	Familial Mediterranean fever
FIBF1	NM_006346.2:c.1214G>A (p.Arg405Gln)	VUS	PM3; BS2	217689	CA210261	13	73,409,487	G	A	AMR	0.09838	Joubert syndrome
ACAD5	NM_000017.3:c.511C>T (p.Arg171Trp)	VUS	PS3_Moderate; PM3; PP3	3830	CA312214	12	121,173,678	C	T	FIN#	0.06589	Deficiency of butyryl-CoA dehydrogenase
BTD	NM_00060.4:c.1330G>C (p.Asp444His)	Pathogenic	PS3; PM3_Strong; PP3; PP4	1900	CA090886	3	15,686,693	G	C	FIN#	0.02398	Biotinidase deficiency

\*ACMG/AMP criteria selected does not match the classification as these variants are common low-penetrant variants and the ACMG/AMP guidelines are not designed for this variant type

# Detected at >5% MAF only in Finnish population (see text).

Genomic coordinates on build GRCh37

AFR: African/African American, EAS: East Asian, NFE: Non-Finnish European, AMR: Latino, FIN=Finnish

## LİMİTASYONLAR

Dizi analizi (sekans) yöntemi ile yapılan çalışmalar tekrar sayısı hastalıkları, kromozom bozuklukları, metilasyon ve *imprinting* durumu, UPD, düşük oranlı mozaik değişimler, kopya sayısı değişiklikleri (CNV) için tanı değeri taşımaz. Özel durumlarda tarama amaçlı kullanılabilir.

## KAYNAKLAR

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**GEN LİSTESİ**

A1BG	COQ4	IFITM2	OR5H6	SMPD2
A1CF	COQ5	IFITM3	OR5H14	SMPD3
A2M	COQ6	IFITM5	OR5H15	SMPD4
A2ML1	COQ7	IFITM10	OR5I1	SMPDL3A
A3GALT2	COQ8A	IFNA1	OR5J2	SMPDL3B
A4GALT	COQ8B	IFNA2	OR5K1	SMPX
A4GNT	COQ9	IFNA4	OR5K2	SMR3A
AAAS	COQ10A	IFNA5	OR5K3	SMR3B
AACS	COQ10B	IFNA6	OR5K4	SMS
AADAC	CORIN	IFNA7	OR5L1	SMTN
AADA2L1	CORO1A	IFNA8	OR5L2	SMTNL1
AADA2L2	CORO1B	IFNA10	OR5M1	SMTNL2
AADA2L3	CORO1C	IFNA13	OR5M3	SMU1
AADAT	CORO2A	IFNA14	OR5M8	SMUG1
AAED1	CORO2B	IFNA16	OR5M9	SMURF1
AAGAB	CORO6	IFNA17	OR5M10	SMURF2
AAK1	CORO7	IFNA21	OR5M11	SMYD1
AAMDC	CORO7-PAM16	IFNAR1	OR5P2	SMYD2
AAMP	CORT	IFNAR2	OR5P3	SMYD3
AANAT	COTL1	IFNB1	OR5R1	SMYD4
AAR2	COX4I1	IFNE	OR5T1	SMYD5
AARD	COX4I2	IFNG	OR5T2	SNAI1
AARS	COX5A	IFNGR1	OR5T3	SNAI2
AARS1	COX5B	IFNGR2	OR5V1	SNAI3
AARS2	COX6A1	IFNK	OR5W2	SNAP23
AARSD1	COX6A2	IFNL1	OR6A2	SNAP25
AASDH	COX6B1	IFNL2	OR6B1	SNAP29
AASDHPPT	COX6B2	IFNL3	OR6B2	SNAP47
AASS	COX6C	IFNLR1	OR6B3	SNAP91
AATF	COX7A1	IFNW1	OR6C1	SNAPC1
AATK	COX7A2	IFRD1	OR6C2	SNAPC2
ABAT	COX7A2L	IFRD2	OR6C3	SNAPC3
ABCA1	COX7B	IFT20	OR6C4	SNAPC4
ABCA2	COX7B2	IFT22	OR6C6	SNAPC5
ABCA3	COX7C	IFT27	OR6C65	SNAPIN
ABCA4	COX8A	IFT43	OR6C68	SNCA
ABCA5	COX8C	IFT46	OR6C70	SNCAIP
ABCA6	COX10	IFT52	OR6C74	SNCB
ABCA7	COX11	IFT57	OR6C75	SNCG
ABCA8	COX14	IFT74	OR6C76	SND1
ABCA9	COX15	IFT80	OR6F1	SNED1

ABCA10	COX16	IFT81	OR6J1	SNF8
ABCA12	COX17	IFT88	OR6K2	SNIP1
ABCA13	COX18	IFT122	OR6K3	SNN
ABCB1	COX19	IFT140	OR6K6	SNORC
ABCB4	COX20	IFT172	OR6M1	SNPH
ABCB5	CP	IFTAP	OR6N1	SNRK
ABCB6	CPA1	IGBP1	OR6N2	SNRNP25
ABCB7	CPA2	IGDCC3	OR6P1	SNRNP27
ABCB8	CPA3	IGDCC4	OR6Q1	SNRNP35
ABCB9	CPA4	IGF1	OR6S1	SNRNP40
ABCB10	CPA5	IGF1R	OR6T1	SNRNP48
ABCB11	CPA6	IGF2	OR6V1	SNRNP70
ABCC1	CPAMD8	IGF2BP1	OR6X1	SNRNP200
ABCC2	CPB1	IGF2BP2	OR6Y1	SNRPA
ABCC3	CPB2	IGF2BP3	OR7A5	SNRPA1
ABCC4	CPD	IGF2R	OR7A10	SNRPB
ABCC5	CPE	IGFALS	OR7A17	SNRPB2
ABCC6	CPEB1	IGFBP1	OR7C1	SNRPC
ABCC8	CPEB2	IGFBP2	OR7C2	SNRPD1
ABCC9	CPEB3	IGFBP3	OR7D2	SNRPD2
ABCC10	CPEB4	IGFBP4	OR7D4	SNRPD3
ABCC11	CPED1	IGFBP5	OR7E24	SNRPE
ABCC12	CPHXL	IGFBP6	OR7G1	SNRPF
ABCD1	CPLANE1	IGFBP7	OR7G2	SNRPG
ABCD2	CPLANE2	IGFBPL1	OR7G3	SNRPN
ABCD3	CPLX1	IGFL1	OR8A1	SNTA1
ABCD4	CPLX2	IGFL2	OR8B2	SNTB1
ABCE1	CPLX3	IGFL3	OR8B3	SNTB2
ABCF1	CPLX4	IGFL4	OR8B4	SNTG1
ABCF2	CPM	IGFLR1	OR8B8	SNTG2
ABCF3	CPN1	IGFN1	OR8B12	SNTN
ABCG1	CPN2	IGHA1	OR8D1	SNU13
ABCG2	CPNE1	IGHA2	OR8D2	SNUPN
ABCG4	CPNE2	IGHD	OR8D4	SNURF
ABCG5	CPNE3	IGHD1OR15-1A	OR8G1	SNW1
ABCG8	CPNE4	IGHD1OR15-1B	OR8G2P	SNX1
ABHD1	CPNE5	IGHD1-1	OR8G5	SNX2
ABHD2	CPNE6	IGHD1-7	OR8H1	SNX3
ABHD3	CPNE7	IGHD1-14	OR8H2	SNX4
ABHD4	CPNE8	IGHD1-20	OR8H3	SNX5
ABHD5	CPNE9	IGHD1-26	OR8I2	SNX6
ABHD6	CPO	IGHD2OR15-2A	OR8J1	SNX7

ABHD8	CPOX	IGHD2OR15-2B	OR8J3	SNX8
ABHD10	CPPED1	IGHD2-2	OR8K1	SNX9
ABHD11	CPQ	IGHD2-8	OR8K3	SNX10
ABHD12	CPS1	IGHD2-15	OR8K5	SNX11
ABHD12B	CPSF1	IGHD2-21	OR8S1	SNX12
ABHD13	CPSF2	IGHD3OR15-3A	OR8U1	SNX13
ABHD14A	CPSF3	IGHD3OR15-3B	OR9A2	SNX14
ABHD14A-ACY1	CPSF4	IGHD3-3	OR9A4	SNX15
ABHD14B	CPSF4L	IGHD3-9	OR9G1	SNX16
ABHD15	CPSF6	IGHD3-10	OR9G4	SNX17
ABHD16A	CPSF7	IGHD3-16	OR9I1	SNX18
ABHD16B	CPT1A	IGHD3-22	OR9K2	SNX19
ABHD17A	CPT1B	IGHD4OR15-4A	OR9Q1	SNX20
ABHD17B	CPT1C	IGHD4OR15-4B	OR9Q2	SNX21
ABHD17C	CPT2	IGHD4-4	OR10A2	SNX22
ABHD18	CPTP	IGHD4-11	OR10A3	SNX24
ABI1	CPVL	IGHD4-17	OR10A4	SNX25
ABI2	CPXCR1	IGHD4-23	OR10A5	SNX27
ABI3	CPXM1	IGHD5OR15-5A	OR10A6	SNX29
ABI3BP	CPXM2	IGHD5OR15-5B	OR10A7	SNX30
ABITRAM	CPZ	IGHD5-5	OR10AD1	SNX31
ABL1	CR1	IGHD5-12	OR10AG1	SNX32
ABL2	CR1L	IGHD5-18	OR10C1	SNX33
ABLIM1	CR2	IGHD5-24	OR10D3	SOAT1
ABLIM2	CR589904.2	IGHD6-6	OR10G2	SOAT2
ABLIM3	CRABP1	IGHD6-13	OR10G3	SOBP
ABO	CRABP2	IGHD6-19	OR10G4	SOCS1
ABR	CRACD	IGHD6-25	OR10G6	SOCS2
ABRA	CRACR2A	IGHD7-27	OR10G7	SOCS3
ABRACL	CRACR2B	IGHE	OR10G8	SOCS4
ABRAXAS1	CRADD	IGHG1	OR10G9	SOCS5
ABRAXAS2	CRAMP1	IGHG2	OR10H1	SOCS6
ABT1	CRAT	IGHG3	OR10H2	SOCS7
ABTB1	CRB1	IGHG4	OR10H3	SOD1
ABTB2	CRB2	IGHJ1	OR10H4	SOD2
AC000093.1	CRB3	IGHJ2	OR10H5	SOD3
AC000120.3	CRBN	IGHJ3	OR10J1	SOGA1
AC000120.4	CRCP	IGHJ4	OR10J3	SOGA3
AC001226.2	CRCT1	IGHJ5	OR10J4	SOHLH1
AC002094.3	CREB1	IGHJ6	OR10J5	SOHLH2
AC002310.4	CREB3	IGHM	OR10K1	SON
AC002316.1	CREB3L1	IGHMBP2	OR10K2	SORBS1

AC002985.1	CREB3L2	IGHV1OR15-1	OR10P1	SORBS2
AC002996.1	CREB3L3	IGHV1OR15-9	OR10Q1	SORBS3
AC003002.1	CREB3L4	IGHV1OR21-1	OR10R2	SORCS1
AC003002.2	CREB5	IGHV1-2	OR10S1	SORCS2
AC003002.3	CREBBP	IGHV1-3	OR10T2	SORCS3
AC003005.1	CREBL2	IGHV1-18	OR10V1	SORD
AC003006.1	CREBRF	IGHV1-24	OR10W1	SORL1
AC003688.2	CREBZF	IGHV1-45	OR10X1	SORT1
AC004076.1	CREG1	IGHV1-46	OR10Z1	SOS1
AC004080.3	CREG2	IGHV1-58	OR11A1	SOS2
AC004151.1	CRELD1	IGHV1-69	OR11G2	SOST
AC004223.3	CRELD2	IGHV1-69D	OR11H1	SOSTDC1
AC004593.2	CREM	IGHV1-69-2	OR11H2	SOWAHA
AC004687.2	CRH	IGHV2OR16-5	OR11H4	SOWAHB
AC004691.2	CRHBP	IGHV2-5	OR11H6	SOWAHC
AC004706.3	CRHR1	IGHV2-26	OR11H7	SOWAHD
AC004805.1	CRHR2	IGHV2-70	OR11H12	SOX1
AC004832.3	CRIM1	IGHV2-70D	OR11L1	SOX2
AC004922.1	CRIP1	IGHV3OR15-7	OR12D1	SOX3
AC004997.1	CRIP2	IGHV3OR16-8	OR12D2	SOX4
AC005020.2	CRIP3	IGHV3OR16-9	OR12D3	SOX5
AC005041.1	CRIPAK	IGHV3OR16-10	OR13A1	SOX6
AC005154.5	CRIPT	IGHV3OR16-12	OR13C2	SOX7
AC005258.1	CRISP1	IGHV3OR16-13	OR13C3	SOX8
AC005261.1	CRISP2	IGHV3-7	OR13C4	SOX9
AC005324.3	CRISP3	IGHV3-11	OR13C5	SOX10
AC005324.4	CRISPLD1	IGHV3-13	OR13C8	SOX11
AC005520.3	CRISPLD2	IGHV3-15	OR13C9	SOX12
AC005551.1	CRK	IGHV3-16	OR13D1	SOX13
AC005670.2	CRKL	IGHV3-20	OR13F1	SOX14
AC005697.1	CRLF1	IGHV3-21	OR13G1	SOX15
AC005702.1	CRLF2	IGHV3-23	OR13H1	SOX17
AC005726.1	CRLF3	IGHV3-30	OR13J1	SOX18
AC005747.1	CRLS1	IGHV3-33	OR14A2	SOX21
AC005832.4	CRMP1	IGHV3-35	OR14A16	SOX30
AC005833.1	CRNDE	IGHV3-38	OR14C36	SP1
AC005837.2	CRNKL1	IGHV3-43	OR14I1	SP2
AC005943.1	CRNN	IGHV3-48	OR14J1	SP3
AC006030.1	CROCC	IGHV3-49	OR14K1	SP4
AC006059.2	CROCC2	IGHV3-53	OR51A2	SP5
AC006064.6	CROT	IGHV3-64	OR51A4	SP6
AC006254.1	CRP	IGHV3-64D	OR51A7	SP7



AC006486.1	CRPPA	IGHV3-66	OR51B2	SP8
AC006538.2	CRTAC1	IGHV3-69-1	OR51B4	SP9
AC006978.2	CRTAM	IGHV3-72	OR51B5	SP100
AC007040.2	CRTAP	IGHV3-73	OR51B6	SP110
AC007192.1	CRTC1	IGHV3-74	OR51C1P	SP140
AC007244.1	CRTC2	IGHV4OR15-8	OR51D1	SP140L
AC007326.4	CRTC3	IGHV4-4	OR51E1	SPA17
AC007375.2	CRX	IGHV4-28	OR51E2	SPAAR
AC007731.5	CRY1	IGHV4-30-2	OR51F1	SPACA1
AC007846.2	CRY2	IGHV4-31	OR51F2	SPACA3
AC007906.2	CRYAA	IGHV4-34	OR51G1	SPACA4
AC007998.2	CRYAA2	IGHV4-39	OR51G2	SPACA5
AC008012.1	CRYAB	IGHV4-59	OR51H1	SPACA5B
AC008073.3	CRYBA1	IGHV4-61	OR51I1	SPACA6
AC008162.2	CRYBA2	IGHV5-10-1	OR51I2	SPACA7
AC008397.1	CRYBA4	IGHV5-51	OR51J1	SPACA9
AC008397.2	CRYBB1	IGHV6-1	OR51L1	SPAG1
AC008403.1	CRYBB2	IGHV7-4-1	OR51M1	SPAG4
AC008481.3	CRYBB3	IGHV7-81	OR51Q1	SPAG5
AC008537.1	CRYBG1	IGIP	OR51S1	SPAG6
AC008575.1	CRYBG2	IGKC	OR51T1	SPAG7
AC008581.2	CRYBG3	IGKJ1	OR51V1	SPAG8
AC008676.3	CRYGA	IGKJ2	OR52A1	SPAG9
AC008687.1	CRYGB	IGKJ3	OR52A5	SPAG11A
AC008687.4	CRYGC	IGKJ4	OR52B2	SPAG11B
AC008687.8	CRYGD	IGKJ5	OR52B4	SPAG16
AC008695.1	CRYGN	IGKV1D-8	OR52B6	SPAG17
AC008750.8	CRYGS	IGKV1D-12	OR52D1	SPAM1
AC008758.1	CRYL1	IGKV1D-13	OR52E1	SPANXA1
AC008758.5	CRYM	IGKV1D-16	OR52E2	SPANXA2
AC008758.6	CRYZ	IGKV1D-17	OR52E4	SPANXB1
AC008763.2	CRYZL1	IGKV1D-33	OR52E5	SPANXC
AC008763.3	CRYZL2P- SEC16B	IGKV1D-37	OR52E6	SPANXD
AC008764.1	CS	IGKV1D-39	OR52E8	SPANXN1
AC008764.4	CSAD	IGKV1D-42	OR52H1	SPANXN2
AC008770.1	CSAG1	IGKV1D-43	OR52I1	SPANXN3
AC008770.2	CSAG2	IGKV1OR2-108	OR52I2	SPANXN4
AC008770.4	CSAG3	IGKV1-5	OR52J3	SPANXN5
AC008870.1	CSDC2	IGKV1-6	OR52K1	SPARC
AC008878.1	CSDE1	IGKV1-8	OR52K2	SPARCL1
AC008878.2	CSE1L	IGKV1-9	OR52L1	SPART



AC008878.3	CSF1	IGKV1-12	OR52M1	SPAST
AC008982.1	CSF1R	IGKV1-13	OR52N1	SPATA1
AC009070.1	CSF2	IGKV1-16	OR52N2	SPATA2
AC009133.6	CSF2RA	IGKV1-17	OR52N4	SPATA2L
AC009163.3	CSF2RB	IGKV1-27	OR52N5	SPATA3
AC009163.5	CSF3	IGKV1-33	OR52R1	SPATA4
AC009412.1	CSF3R	IGKV1-37	OR52W1	SPATA5
AC009690.1	CSGALNACT1	IGKV1-39	OR52Z1	SPATA5L1
AC009690.3	CSGALNACT2	IGKV2D-24	OR56A1	SPATA6
AC009779.4	CSH1	IGKV2D-26	OR56A3	SPATA6L
AC009879.2	CSH2	IGKV2D-28	OR56A4	SPATA7
AC009879.3	CSHL1	IGKV2D-29	OR56A5	SPATA8
AC010132.3	CSK	IGKV2D-30	OR56B1	SPATA9
AC010197.2	CSKMT	IGKV2D-40	OR56B4	SPATA12
AC010255.3	CSMD1	IGKV2-24	ORAI1	SPATA13
AC010319.2	CSMD2	IGKV2-28	ORAI2	SPATA16
AC010323.1	CSMD3	IGKV2-30	ORAI3	SPATA17
AC010325.1	CSN1S1	IGKV2-40	ORC1	SPATA18
AC010326.1	CSN2	IGKV3D-7	ORC2	SPATA19
AC010326.3	CSN3	IGKV3D-11	ORC3	SPATA20
AC010327.2	CSNK1A1	IGKV3D-15	ORC4	SPATA21
AC010422.3	CSNK1A1L	IGKV3D-20	ORC5	SPATA22
AC010422.5	CSNK1D	IGKV3OR2-268	ORC6	SPATA24
AC010422.6	CSNK1E	IGKV3-7	ORM1	SPATA25
AC010422.8	CSNK1G1	IGKV3-11	ORM2	SPATA31A1
AC010463.1	CSNK1G2	IGKV3-15	ORMDL1	SPATA31A3
AC010522.1	CSNK1G3	IGKV3-20	ORMDL2	SPATA31A5
AC010531.1	CSNK2A1	IGKV4-1	ORMDL3	SPATA31A6
AC010542.3	CSNK2A2	IGKV5-2	OS9	SPATA31A7
AC010547.4	CSNK2A3	IGKV6D-21	OSBP	SPATA31C1
AC010615.4	CSNK2B	IGKV6D-41	OSBP2	SPATA31C2
AC010616.1	CSNKA2IP	IGKV6-21	OSBPL1A	SPATA31D1
AC010619.2	CSPG4	IGLC1	OSBPL2	SPATA31D3
AC010646.1	CSPG5	IGLC2	OSBPL3	SPATA31D4
AC011005.1	CSPP1	IGLC3	OSBPL5	SPATA31E1
AC011195.3	CSRNP1	IGLC7	OSBPL6	SPATA32
AC011330.3	CSRNP2	IGLJ1	OSBPL7	SPATA33
AC011448.1	CSRNP3	IGLJ2	OSBPL8	SPATA45
AC011452.2	CSRP1	IGLJ3	OSBPL9	SPATA46
AC011455.2	CSRP2	IGLJ4	OSBPL10	SPATA48
AC011462.1	CSRP3	IGLJ5	OSBPL11	SPATC1
AC011473.4	CST1	IGLJ6	OSCAR	SPATC1L

AC011479.2	CST2	IGLJ7	OSCP1	SPATS1
AC011498.4	CST3	IGLL1	OSER1	SPATS2
AC011499.1	CST4	IGLL5	OSGEP	SPATS2L
AC011511.1	CST5	IGLON5	OSGEPL1	SPC24
AC011511.4	CST6	IGLV1-36	OSGIN1	SPC25
AC011530.1	CST7	IGLV1-40	OSGIN2	SPCS1
AC012184.2	CST8	IGLV1-44	OSM	SPCS2
AC012213.5	CST9	IGLV1-47	OSMR	SPCS3
AC012254.2	CST9L	IGLV1-50	OSR1	SPDEF
AC012309.1	CST11	IGLV1-51	OSR2	SPDL1
AC012488.2	CSTA	IGLV2-8	OST4	SPDYA
AC012531.3	CSTB	IGLV2-11	OSTC	SPDYC
AC012651.1	CSTF1	IGLV2-14	OSTF1	SPDYE1
AC013271.1	CSTF2	IGLV2-18	OSTM1	SPDYE2
AC013394.1	CSTF2T	IGLV2-23	OSTN	SPDYE2B
AC013470.2	CSTF3	IGLV2-33	OTC	SPDYE3
AC013489.1	CSTL1	IGLV3-1	OTOA	SPDYE4
AC013717.1	CT45A1	IGLV3-9	OTOF	SPDYE5
AC015688.4	CT45A2	IGLV3-10	OTOG	SPDYE6
AC015802.6	CT45A3	IGLV3-12	OTOGL	SPDYE8P
AC015813.2	CT45A5	IGLV3-16	OTOL1	SPDYE9P
AC017083.3	CT45A6	IGLV3-19	OTOP1	SPDYE11
AC018362.3	CT45A7	IGLV3-21	OTOP2	SPDYE16
AC018512.1	CT45A8	IGLV3-22	OTOP3	SPDYE17
AC018523.2	CT45A9	IGLV3-25	OTOR	SPDYE18
AC018630.2	CT45A10	IGLV3-27	OTOS	SPDYE21P
AC018709.1	CT47A1	IGLV3-32	OTP	SPECC1
AC018755.2	CT47A2	IGLV4-3	OTUB1	SPECC1L
AC018809.3	CT47A3	IGLV4-60	OTUB2	SPECC1L- ADORA2A
AC019117.4	CT47A4	IGLV4-69	OTUD1	SPEF1
AC019257.8	CT47A5	IGLV5-37	OTUD3	SPEF2
AC020636.2	CT47A6	IGLV5-45	OTUD4	SPEG
AC020907.6	CT47A7	IGLV5-48	OTUD5	SPEGNB
AC020909.1	CT47A8	IGLV5-52	OTUD6A	SPEM1
AC020915.5	CT47A9	IGLV6-57	OTUD6B	SPEM2
AC020922.1	CT47A10	IGLV7-43	OTUD7A	SPEM3
AC020929.1	CT47A11	IGLV7-46	OTUD7B	SPEN
AC021066.1	CT47A12	IGLV8-61	OTULIN	SPERT
AC021072.1	CT47B1	IGLV9-49	OTULINL	SPESP1
AC021087.5	CT55	IGLV10-54	OTX1	SPG7
AC021092.2	CT62	IGLV11-55	OTX2	SPG11

AC021660.3	CT83	IGSF1	OVCA2	SPG21
AC022137.3	CTAG1A	IGSF3	OVCH1	SPHAR
AC022335.1	CTAG1B	IGSF5	OVCH2	SPHK1
AC022384.1	CTAG2	IGSF6	OVGP1	SPHK2
AC022400.7	CTAGE1	IGSF8	OVOL1	SPHKAP
AC022414.1	CTAGE4	IGSF9	OVOL2	SPI1
AC022415.3	CTAGE6	IGSF9B	OVOL3	SPIB
AC022506.1	CTAGE8	IGSF10	OXA1L	SPIC
AC022826.2	CTAGE9	IGSF11	OXCT1	SPICE1
AC022966.1	CTAGE15	IGSF21	OXCT2	SPIDR
AC023055.1	CTBP1	IGSF22	OXER1	SPIN1
AC023490.7	CTBP2	IGSF23	OXGR1	SPIN2A
AC024558.2	CTBS	IHH	OXLD1	SPIN2B
AC024592.3	CTC1	IK	OXNAD1	SPIN3
AC025165.3	CTCF	IKBIP	OXR1	SPIN4
AC025165.6	CTCFL	IKBKB	OXSM	SPINDOC
AC025263.2	CTDNEP1	IKBKE	OXSR1	SPINK1
AC025283.2	CTDP1	IKBKG	OXT	SPINK2
AC025287.4	CTDSP1	IKZF1	OXTR	SPINK4
AC026316.4	CTDSP2	IKZF2	P2RX1	SPINK5
AC026464.1	CTDSPL	IKZF3	P2RX2	SPINK6
AC026464.3	CTDSPL2	IKZF4	P2RX3	SPINK7
AC026464.4	CTF1	IKZF5	P2RX4	SPINK8
AC026464.6	CTGF	IL1A	P2RX5	SPINK9
AC026740.3	CTH	IL1B	P2RX5-TAX1BP3	SPINK13
AC026786.1	CTHRC1	IL1F10	P2RX6	SPINK14
AC026954.2	CTIF	IL1R1	P2RX7	SPINT1
AC027644.4	CTLA4	IL1R2	P2RY1	SPINT2
AC027796.3	CTNNA1	IL1RAP	P2RY2	SPINT3
AC034102.2	CTNNA2	IL1RAPL1	P2RY4	SPINT4
AC034228.3	CTNNA3	IL1RAPL2	P2RY6	SPIRE1
AC036214.3	CTNNAL1	IL1RL1	P2RY8	SPIRE2
AC037459.1	CTNNB1	IL1RL2	P2RY10	SPN
AC040160.1	CTNNBIP1	IL1RN	P2RY11	SPNS1
AC040162.1	CTNNBL1	IL2	P2RY12	SPNS2
AC046185.1	CTNND1	IL2RA	P2RY13	SPNS3
AC048338.1	CTNND2	IL2RB	P2RY14	SPO11
AC048338.2	CTNS	IL2RG	P3H1	SPOCD1
AC053503.6	CTPS1	IL3	P3H2	SPOCK1
AC055811.2	CTPS2	IL3RA	P3H3	SPOCK2
AC055839.2	CTR9	IL4	P3H4	SPOCK3
AC058822.1	CTRB1	IL4I1	P3R3URF	SPON1

AC067752.1	CTRB2	IL4R	P3R3URF- PIK3R3	SPON2
AC067968.1	CTRC	IL5	P4HA1	SPOP
AC068234.1	CTRL	IL5RA	P4HA2	SPOPL
AC068533.4	CTSA	IL6	P4HA3	SPOUT1
AC068547.1	CTSB	IL6R	P4HB	SPP1
AC068580.4	CTSC	IL6ST	P4HTM	SPP2
AC068631.3	CTSD	IL7	PA2G4	SPPL2A
AC068775.1	CTSE	IL7R	PAAF1	SPPL2B
AC068831.8	CTSF	IL9	PABPC1	SPPL2C
AC068896.3	CTSG	IL9R	PABPC1L	SPPL3
AC068946.1	CTSH	IL10	PABPC1L2A	SPR
AC068946.2	CTSK	IL10RA	PABPC1L2B	SPRED1
AC069257.4	CTSL	IL10RB	PABPC3	SPRED2
AC069288.1	CTSO	IL11	PABPC4	SPRED3
AC069368.1	CTSS	IL11RA	PABPC4L	SPRN
AC069444.2	CTSV	IL12A	PABPC5	SPRR1A
AC069503.2	CTSW	IL12B	PABPN1	SPRR1B
AC072022.2	CTSZ	IL12RB1	PABPN1L	SPRR2A
AC073082.1	CTTN	IL12RB2	PACC1	SPRR2B
AC073111.4	CTTNBP2	IL13	PACRG	SPRR2D
AC073283.3	CTTNBP2NL	IL13RA1	PACRGL	SPRR2E
AC073508.2	CTU1	IL13RA2	PACS1	SPRR2F
AC073585.2	CTU2	IL15	PACS2	SPRR2G
AC073610.2	CTXN1	IL15RA	PACSIN1	SPRR3
AC073612.1	CTXN2	IL16	PACSIN2	SPRR4
AC073896.1	CTXN3	IL17A	PACSIN3	SPRR5
AC074143.1	CTXND1	IL17B	PADI1	SPRTN
AC078927.1	CTXND2	IL17C	PADI2	SPRY1
AC079447.1	CU639417.1	IL17D	PADI3	SPRY2
AC079594.2	CUBN	IL17F	PADI4	SPRY3
AC080128.3	CUEDC1	IL17RA	PADI6	SPRY4
AC083800.1	CUEDC2	IL17RB	PAEP	SPRYD3
AC083977.1	CUL1	IL17RC	PAF1	SPRYD4
AC084121.5	CUL2	IL17RD	PAFAH1B1	SPRYD7
AC084121.6	CUL3	IL17RE	PAFAH1B2	SPSB1
AC084121.7	CUL4A	IL17REL	PAFAH1B3	SPSB2
AC084121.8	CUL4B	IL18	PAFAH2	SPSB3
AC084121.9	CUL5	IL18BP	PAG1	SPSB4
AC084121.11	CUL7	IL18R1	PAGE1	SPTA1
AC084121.12	CUL9	IL18RAP	PAGE2	SPTAN1
AC084121.13	CUTA	IL19	PAGE2B	SPTB

AC084337.2	CUTC	IL20	PAGE3	SPTBN1
AC087289.3	CUX1	IL20RA	PAGE4	SPTBN2
AC087498.1	CUX2	IL20RB	PAGE5	SPTBN4
AC087632.2	CUZD1	IL21	PAGR1	SPTBN5
AC087721.2	CWC15	IL21R	PAH	SPTLC1
AC090004.1	CWC22	IL22	PAICS	SPTLC2
AC090227.2	CWC25	IL22RA1	PAIP1	SPTLC3
AC090360.1	CWC27	IL22RA2	PAIP2	SPTSSA
AC090517.4	CWF19L1	IL23A	PAIP2B	SPTSSB
AC090527.3	CWF19L2	IL23R	PAK1	SPTY2D1
AC091167.2	CWH43	IL24	PAK1IP1	SPTY2D10S
AC091167.6	CX3CL1	IL25	PAK2	SPX
AC091167.7	CX3CR1	IL26	PAK3	SPZ1
AC091230.1	CXADR	IL27	PAK4	SQLE
AC091551.1	CXCL1	IL27RA	PAK5	SQOR
AC091959.3	CXCL2	IL31	PAK6	SQSTM1
AC092017.3	CXCL3	IL31RA	PALB2	SRA1
AC092042.3	CXCL5	IL32	PALD1	SRARP
AC092073.1	CXCL6	IL33	PALLD	SRBD1
AC092111.3	CXCL8	IL34	PALM	SRC
AC092143.1	CXCL9	IL36A	PALM2	SRCAP
AC092279.1	CXCL10	IL36B	PALM2AKAP2	SRCIN1
AC092329.3	CXCL11	IL36G	PALM2-AKAP2	SRD5A1
AC092442.1	CXCL12	IL36RN	PALM3	SRD5A2
AC092587.1	CXCL13	IL37	PALMD	SRD5A3
AC092647.5	CXCL14	ILDR1	PAM	SREBF1
AC092718.3	CXCL16	ILDR2	PAM16	SREBF2
AC092718.8	CXCL17	ILF2	PAMR1	SREK1
AC092835.1	CXCR1	ILF3	PAN2	SREK1IP1
AC093012.1	CXCR2	ILK	PAN3	SRF
AC093155.3	CXCR3	ILKAP	PANK1	SRFBP1
AC093227.2	CXCR4	ILRUN	PANK2	SRGAP1
AC093323.1	CXCR5	ILVBL	PANK3	SRGAP2
AC093423.3	CXCR6	IMMP1L	PANK4	SRGAP2B
AC093512.2	CXXC1	IMMP2L	PANO1	SRGAP2C
AC093525.1	CXXC4	IMMT	PANX1	SRGAP3
AC093525.2	CXXC5	IMP3	PANX2	SRGN
AC093668.1	CXorf21	IMP4	PANX3	SRI
AC093827.5	CXorf36	IMPA1	PAOX	SRL
AC093884.1	CXorf38	IMPA2	PAPLN	SRM
AC093899.2	CXorf40A	IMPACT	PAPOLA	SRMS
AC096887.1	CXorf40B	IMPAD1	PAPOLB	SRP9

AC097104.1	CXorf49	IMPDH1	PAPOLG	SRP14
AC097625.2	CXorf49B	IMPDH2	PAPPA	SRP19
AC097634.4	CXorf51A	IMPG1	PAPPA2	SRP54
AC097636.2	CXorf51B	IMPG2	PAPSS1	SRP68
AC097637.1	CXorf56	INA	PAPSS2	SRP72
AC098484.3	CXorf57	INAFM1	PAQR3	SRPK1
AC098582.1	CXorf58	INAFM2	PAQR4	SRPK2
AC098588.2	CXorf65	INAVA	PAQR5	SRPK3
AC098650.1	CXorf66	INCA1	PAQR6	SRPRA
AC098850.3	CXorf67	INCENP	PAQR7	SRPRB
AC099489.1	CYB5A	INF2	PAQR8	SRPX
AC099811.2	CYB5B	ING1	PAQR9	SRPX2
AC099850.3	CYB5D1	ING2	PARD3	SRR
AC100868.1	CYB5D2	ING3	PARD3B	SRRD
AC104109.3	CYB5R1	ING4	PARD6A	SRRM1
AC104304.2	CYB5R2	ING5	PARD6B	SRRM2
AC104389.5	CYB5R3	INHA	PARD6G	SRRM3
AC104389.6	CYB5R4	INHBA	PARG	SRRM4
AC104452.1	CYB5RL	INHBB	PARK7	SRRM5
AC104472.3	CYB561	INHBC	PARL	SRRT
AC104532.1	CYB561A3	INHBE	PARM1	SRSF1
AC104581.2	CYB561D1	INIP	PARN	SRSF2
AC105052.1	CYB561D2	INKA1	PARP1	SRSF3
AC105052.3	CYBA	INKA2	PARP2	SRSF4
AC106741.2	CYBB	INMT	PARP3	SRSF5
AC106886.6	CYBC1	INMT-MINDY4	PARP4	SRSF6
AC107871.1	CYBRD1	INO80	PARP6	SRSF7
AC107959.5	CYC1	INO80B	PARP8	SRSF8
AC108488.2	CYCS	INO80B-WBP1	PARP9	SRSF9
AC108941.2	CYFIP1	INO80C	PARP10	SRSF10
AC109583.1	CYFIP2	INO80D	PARP11	SRSF11
AC110275.1	CYGB	INO80E	PARP12	SRSF12
AC112128.1	CYHR1	INPP1	PARP14	SRXN1
AC112229.3	CYLC1	INPP4A	PARP15	SRY
AC112504.2	CYLC2	INPP4B	PARP16	SS18
AC113189.9	CYLD	INPP5A	PARPBP	SS18L1
AC113348.1	CYP1A1	INPP5B	PARS2	SS18L2
AC113348.2	CYP1A2	INPP5D	PARVA	SSB
AC113554.1	CYP1B1	INPP5E	PARVB	SSBP1
AC114267.1	CYP2A6	INPP5F	PARVG	SSBP2
AC114490.2	CYP2A7	INPP5J	PASD1	SSBP3
AC114490.3	CYP2A13	INPP5K	PASK	SSBP4

AC115220.1	CYP2B6	INPPL1	PATE1	SSC4D
AC116366.3	CYP2C8	INS	PATE2	SSC5D
AC117378.1	CYP2C9	INSC	PATE3	SSFA2
AC117457.1	CYP2C18	INSIG1	PATE4	SSH1
AC118281.1	CYP2C19	INSIG2	PATJ	SSH2
AC118470.1	CYP2D6	INSL3	PATL1	SSH3
AC118549.1	CYP2D7	INSL4	PATL2	SSMEM1
AC118553.2	CYP2E1	INSL5	PATZ1	SSNA1
AC119396.1	CYP2F1	INSL6	PAWR	SSPN
AC119674.2	CYP2J2	INSM1	PAX1	SSR1
AC119676.1	CYP2R1	INSM2	PAX2	SSR2
AC120057.2	CYP2S1	INSR	PAX3	SSR3
AC120114.4	CYP2U1	INSRR	PAX4	SSR4
AC124312.1	CYP2W1	INSYN1	PAX5	SSRP1
AC126283.2	CYP3A4	INSYN2	PAX6	SSSCA1
AC127029.3	CYP3A5	INSYN2A	PAX7	SST
AC129492.3	CYP3A7	INSYN2B	PAX8	SSTR1
AC131160.1	CYP3A7- CYP3A51P	INS-IGF2	PAX9	SSTR2
AC132217.2	CYP3A43	INTS1	PAXBP1	SSTR3
AC134669.1	CYP4A11	INTS2	PAXIP1	SSTR4
AC134684.8	CYP4A22	INTS3	PAXX	SSTR5
AC134684.9	CYP4B1	INTS4	PBDC1	SSU72
AC134684.11	CYP4F2	INTS5	PBK	SSU72P2
AC134980.3	CYP4F3	INTS6	PBLD	SSU72P3
AC135050.2	CYP4F8	INTS6L	PBOV1	SSU72P4
AC135068.1	CYP4F11	INTS7	PBRM1	SSU72P5
AC135068.2	CYP4F12	INTS8	PBX1	SSU72P7
AC135068.3	CYP4F22	INTS9	PBX2	SSU72P8
AC135068.8	CYP4V2	INTS10	PBX3	SSUH2
AC135178.3	CYP4X1	INTS11	PBX4	SSX1
AC136428.1	CYP4Z1	INTS12	PBXIP1	SSX2
AC137834.1	CYP7A1	INTS13	PC	SSX2B
AC138647.1	CYP7B1	INTS14	PCARE	SSX2IP
AC138696.1	CYP8B1	INTU	PCBD1	SSX3
AC138811.2	CYP11A1	INVS	PCBD2	SSX4
AC138894.1	CYP11B1	IP6K1	PCBP1	SSX4B
AC138969.1	CYP11B2	IP6K2	PCBP2	SSX5
AC139491.7	CYP17A1	IP6K3	PCBP3	SSX7
AC139530.2	CYP19A1	IPCEF1	PCBP4	ST3GAL1
AC140504.1	CYP20A1	IPMK	PCCA	ST3GAL2
AC142391.1	CYP21A2	IPO4	PCCB	ST3GAL3



AC144573.1	CYP24A1	IPO5	PCDH1	ST3GAL4
AC187653.1	CYP26A1	IPO7	PCDH7	ST3GAL5
AC211486.10	CYP26B1	IPO8	PCDH8	ST3GAL6
AC211486.11	CYP26C1	IPO9	PCDH9	ST5
AC211486.12	CYP27A1	IPO11	PCDH10	ST6GAL1
AC231656.1	CYP27B1	IPO13	PCDH11X	ST6GAL2
AC231657.3	CYP27C1	IPP	PCDH11Y	ST6GALNAC1
AC233723.1	CYP39A1	IPPK	PCDH12	ST6GALNAC2
AC233992.2	CYP46A1	IQANK1	PCDH15	ST6GALNAC3
AC235565.2	CYP51A1	IQCA1	PCDH17	ST6GALNAC4
AC236972.4	CYR61	IQCA1L	PCDH18	ST6GALNAC5
AC242842.3	CYREN	IQCB1	PCDH19	ST6GALNAC6
AC243547.3	CYRIA	IQCC	PCDH20	ST7
AC243967.1	CYRIB	IQCD	PCDHA1	ST7L
AC244197.3	CYS1	IQCE	PCDHA2	ST8SIA1
AC244517.10	CYSLTR1	IQCF1	PCDHA3	ST8SIA2
AC245033.1	CYSLTR2	IQCF2	PCDHA4	ST8SIA3
AC245748.1	CYSRT1	IQCF3	PCDHA5	ST8SIA4
AC253536.7	CYSTM1	IQCF5	PCDHA6	ST8SIA5
AC253572.1	CYTH1	IQCF6	PCDHA7	ST8SIA6
ACAA1	CYTH2	IQCG	PCDHA8	ST13
ACAA2	CYTH3	IQCH	PCDHA9	ST14
ACACA	CYTH4	IQCJ	PCDHA10	ST18
ACACB	CYTIP	IQCJ-SCHIP1	PCDHA11	ST20
ACAD8	CYTL1	IQCK	PCDHA12	ST20-MTHFS
ACAD9	CYYR1	IQCM	PCDHA13	STAB1
ACAD10	CZIB	IQCN	PCDHAC1	STAB2
ACAD11	D2HGDH	IQGAP1	PCDHAC2	STAC
ACADL	DAAM1	IQGAP2	PCDHACT	STAC2
ACADM	DAAM2	IQGAP3	PCDHB1	STAC3
ACADS	DAB1	IQSEC1	PCDHB2	STAG1
ACADSB	DAB2	IQSEC2	PCDHB3	STAG2
ACADVL	DAB2IP	IQSEC3	PCDHB4	STAG3
ACAN	DACH1	IQUB	PCDHB5	STAM
ACAP1	DACH2	IRAK1	PCDHB6	STAM2
ACAP2	DACT1	IRAK1BP1	PCDHB7	STAMPB
ACAP3	DACT2	IRAK2	PCDHB8	STAMBPL1
ACAT1	DACT3	IRAK3	PCDHB9	STAP1
ACAT2	DAD1	IRAK4	PCDHB10	STAP2
ACBD3	DAG1	IREB2	PCDHB11	STAR
ACBD4	DAGLA	IRF1	PCDHB12	STARD3
ACBD5	DAGLB	IRF2	PCDHB13	STARD3NL

ACBD6	DALRD3	IRF2BP1	PCDHB14	STARD4
ACBD7	DAND5	IRF2BP2	PCDHB15	STARD5
ACCS	DAO	IRF2BPL	PCDHB16	STARD6
ACCSL	DAOA	IRF3	PCDHGA1	STARD7
ACD	DAP	IRF4	PCDHGA2	STARD8
ACE	DAP3	IRF5	PCDHGA3	STARD9
ACE2	DAPK1	IRF6	PCDHGA4	STARD10
ACER1	DAPK2	IRF7	PCDHGA5	STARD13
ACER2	DAPK3	IRF8	PCDHGA6	STAT1
ACER3	DAPL1	IRF9	PCDHGA7	STAT2
ACHE	DAPP1	IRGC	PCDHGA8	STAT3
ACIN1	DARS	IRGM	PCDHGA9	STAT4
ACKR1	DARS1	IRGQ	PCDHGA10	STAT5A
ACKR2	DARS2	IRS1	PCDHGA11	STAT5B
ACKR3	DAW1	IRS2	PCDHGA12	STAT6
ACKR4	DAXX	IRS4	PCDHGB1	STATH
ACLY	DAZ1	IRX1	PCDHGB2	STAU1
ACMSD	DAZ2	IRX2	PCDHGB3	STAU2
ACO1	DAZ3	IRX3	PCDHGB4	STBD1
ACO2	DAZ4	IRX4	PCDHGB5	STC1
ACOD1	DAZAP1	IRX5	PCDHGB6	STC2
ACOT1	DAZAP2	IRX6	PCDHGB7	STEAP1
ACOT2	DAZL	ISCA1	PCDHGC3	STEAP1B
ACOT4	DBF4	ISCA2	PCDHGC4	STEAP2
ACOT6	DBF4B	ISCU	PCDHGC5	STEAP3
ACOT7	DBH	ISG15	PCED1A	STEAP4
ACOT8	DBI	ISG20	PCED1B	STH
ACOT9	DBN1	ISG20L2	PCF11	STIL
ACOT11	DBNDD1	ISL1	PCGF1	STIM1
ACOT12	DBNDD2	ISL2	PCGF2	STIM2
ACOT13	DBNL	ISLR	PCGF3	STIMATE
ACOX1	DBP	ISLR2	PCGF5	STIMATE- MUSTN1
ACOX2	DBR1	ISM1	PCGF6	STING1
ACOX3	DBT	ISM2	PCID2	STIP1
ACOXL	DBX1	ISOC1	PCIF1	STK3
ACP1	DBX2	ISOC2	PCK1	STK4
ACP2	DCAF1	IST1	PCK2	STK10
ACP3	DCAF4	ISX	PCLAF	STK11
ACP4	DCAF4L1	ISY1	PCLO	STK11IP
ACP5	DCAF4L2	ISY1-RAB43	PCM1	STK16
ACP6	DCAF5	ISYNA1	PCMT1	STK17A

ACP7	DCAF6	ITCH	PCMTD1	STK17B
ACPP	DCAF7	ITFG1	PCMTD2	STK19
ACR	DCAF8	ITFG2	PCNA	STK24
ACRBP	DCAF8L1	ITGA1	PCNP	STK25
ACRV1	DCAF8L2	ITGA2	PCNT	STK26
ACSBG1	DCAF10	ITGA2B	PCNX1	STK31
ACSBG2	DCAF11	ITGA3	PCNX2	STK32A
ACSF2	DCAF12	ITGA4	PCNX3	STK32B
ACSF3	DCAF12L1	ITGA5	PCNX4	STK32C
ACSL1	DCAF12L2	ITGA6	PCOLCE	STK33
ACSL3	DCAF13	ITGA7	PCOLCE2	STK35
ACSL4	DCAF15	ITGA8	PCOTH	STK36
ACSL5	DCAF16	ITGA9	PCP2	STK38
ACSL6	DCAF17	ITGA10	PCP4	STK38L
ACSM1	DCAKD	ITGA11	PCP4L1	STK39
ACSM2A	DCANP1	ITGAD	PCSK1	STK40
ACSM2B	DCBLD1	ITGAE	PCSK1N	STKLD1
ACSM3	DCBLD2	ITGAL	PCSK2	STMN1
ACSM4	DCC	ITGAM	PCSK4	STMN2
ACSM5	DCD	ITGAV	PCSK5	STMN3
ACSM6	DCDC1	ITGAX	PCSK6	STMN4
ACSS1	DCDC2	ITGB1	PCSK7	STMND1
ACSS2	DCDC2B	ITGB1BP1	PCSK9	STMP1
ACSS3	DCDC2C	ITGB1BP2	PCTP	STN1
ACTA1	DCHS1	ITGB2	PCYOX1	STOM
ACTA2	DCHS2	ITGB3	PCYOX1L	STOML1
ACTB	DCK	ITGB3BP	PCYT1A	STOML2
ACTBL2	DCLK1	ITGB4	PCYT1B	STOML3
ACTC1	DCLK2	ITGB5	PCYT2	STON1
ACTG1	DCLK3	ITGB6	PDAP1	STON1-GTF2A1L
ACTG2	DCLRE1A	ITGB7	PDC	STON2
ACTL6A	DCLRE1B	ITGB8	PDCD1	STOX1
ACTL6B	DCLRE1C	ITGBL1	PDCD1LG2	STOX2
ACTL7A	DCN	ITIH1	PDCD2	STPG1
ACTL7B	DCP1A	ITIH2	PDCD2L	STPG2
ACTL8	DCP1B	ITIH3	PDCD4	STPG3
ACTL9	DCP2	ITIH4	PDCD5	STPG4
ACTL10	DCPS	ITIH5	PDCD6	STRA6
ACTN1	DCST1	ITIH6	PDCD6IP	STRA8
ACTN2	DCST2	ITK	PDCD7	STRADA
ACTN3	DCSTAMP	ITLN1	PDCD10	STRADB
ACTN4	DCT	ITLN2	PDCD11	STRAP

ACTR1A	DCTD	ITM2A	PDCL	STRBP
ACTR1B	DCTN1	ITM2B	PDCL2	STRC
ACTR2	DCTN2	ITM2C	PDCL3	STRIP1
ACTR3	DCTN3	ITPA	PDE1A	STRIP2
ACTR3B	DCTN4	ITPK1	PDE1B	STRIT1
ACTR3C	DCTN5	ITPKA	PDE1C	STRN
ACTR5	DCTN6	ITPKB	PDE2A	STRN3
ACTR6	DCTPP1	ITPKC	PDE3A	STRN4
ACTR8	DCUN1D1	ITPR1	PDE3B	STS
ACTR10	DCUN1D2	ITPR2	PDE4A	STT3A
ACTRT1	DCUN1D3	ITPR3	PDE4B	STT3B
ACTRT2	DCUN1D4	ITPRID1	PDE4C	STUB1
ACTRT3	DCUN1D5	ITPRID2	PDE4D	STUM
ACVR1	DCX	ITPRIP	PDE4DIP	STX1A
ACVR1B	DCXR	ITPRIPL1	PDE5A	STX1B
ACVR1C	DDA1	ITPRIPL2	PDE6A	STX2
ACVR2A	DDAH1	ITSN1	PDE6B	STX3
ACVR2B	DDAH2	ITSN2	PDE6C	STX4
ACVRL1	DDB1	IVD	PDE6D	STX5
ACY1	DDB2	IVL	PDE6G	STX6
ACY3	DDC	IVNS1ABP	PDE6H	STX7
ACYP1	DDHD1	IWS1	PDE7A	STX8
ACYP2	DDHD2	IYD	PDE7B	STX10
AD000671.1	DDI1	IZUMO1	PDE8A	STX11
AD000671.2	DDI2	IZUMO1R	PDE8B	STX12
ADA	DDIAS	IZUMO2	PDE9A	STX16
ADA2	DDIT3	IZUMO3	PDE10A	STX16-NPEPL1
ADAD1	DDIT4	IZUMO4	PDE11A	STX17
ADAD2	DDIT4L	JADE1	PDE12	STX18
ADAL	DDN	JADE2	PDF	STX19
ADAM2	DDO	JADE3	PDGFA	STXBP1
ADAM7	DDOST	JAG1	PDGFB	STXBP2
ADAM8	DDR1	JAG2	PDGFC	STXBP3
ADAM9	DDR2	JAGN1	PDGFD	STXBP4
ADAM10	DDRGK1	JAK1	PDGFRA	STXBP5
ADAM11	DDT	JAK2	PDGFRB	STXBP5L
ADAM12	DDTL	JAK3	PDGFRL	STXBP6
ADAM15	DDX1	JAKMIP1	PDHA1	STYK1
ADAM17	DDX3X	JAKMIP2	PDHA2	STYX
ADAM18	DDX3Y	JAKMIP3	PDHB	STYXL1
ADAM19	DDX4	JAM2	PDHX	SUB1
ADAM20	DDX5	JAM3	PDIA2	SUCLA2

ADAM21	DDX6	JAML	PDIA3	SUCLG1
ADAM22	DDX10	JARID2	PDIA4	SUCLG2
ADAM23	DDX11	JAZF1	PDIA5	SUCNR1
ADAM28	DDX17	JCAD	PDIA6	SUCO
ADAM29	DDX18	JCHAIN	PDIK1L	SUDS3
ADAM30	DDX19A	JDP2	PDILT	SUFU
ADAM32	DDX19B	JHY	PDK1	SUGCT
ADAM33	DDX20	JKAMP	PDK2	SUGP1
ADAMDEC1	DDX21	JMJD1C	PDK3	SUGP2
ADAMTS1	DDX23	JMJD4	PDK4	SUGT1
ADAMTS2	DDX24	JMJD6	PDLIM1	SULF1
ADAMTS3	DDX25	JMJD7	PDLIM2	SULF2
ADAMTS4	DDX27	JMJD7-PLA2G4B	PDLIM3	SULT1A1
ADAMTS5	DDX28	JMJD8	PDLIM4	SULT1A2
ADAMTS6	DDX31	JMY	PDLIM5	SULT1A3
ADAMTS7	DDX39A	JOSD1	PDLIM7	SULT1A4
ADAMTS8	DDX39B	JOSD2	PDP1	SULT1B1
ADAMTS9	DDX41	JPH1	PDP2	SULT1C2
ADAMTS10	DDX42	JPH2	PDPK1	SULT1C3
ADAMTS12	DDX43	JPH3	PDPN	SULT1C4
ADAMTS13	DDX46	JPH4	PDPR	SULT1E1
ADAMTS14	DDX47	JPT1	PDRG1	SULT2A1
ADAMTS15	DDX49	JPT2	PDS5A	SULT2B1
ADAMTS16	DDX50	JRK	PDS5B	SULT4A1
ADAMTS17	DDX51	JRKL	PDSS1	SULT6B1
ADAMTS18	DDX52	JSRP1	PDSS2	SUMF1
ADAMTS19	DDX53	JTB	PDX1	SUMF2
ADAMTS20	DDX54	JUN	PDXDC1	SUMO1
ADAMTSL1	DDX55	JUNB	PDXK	SUMO2
ADAMTSL2	DDX56	JUND	PDXP	SUMO3
ADAMTSL3	DDX58	JUP	PDYN	SUMO4
ADAMTSL4	DDX59	KAAG1	PDZD2	SUN1
ADAMTSL5	DDX60	KALRN	PDZD3	SUN2
ADAP1	DDX60L	KANK1	PDZD4	SUN3
ADAP2	DEAF1	KANK2	PDZD7	SUN5
ADAR	DEC1	KANK3	PDZD8	SUOX
ADARB1	DECR1	KANK4	PDZD9	SUPT3H
ADARB2	DECR2	KANSL1	PDZD11	SUPT4H1
ADAT1	DEDD	KANSL1L	PDZK1	SUPT5H
ADAT2	DEDD2	KANSL2	PDZK1IP1	SUPT6H
ADAT3	DEF6	KANSL3	PDZRN3	SUPT7L
ADCK1	DEF8	KANTR	PDZRN4	SUPT16H

ADCK2	DEFA1	KARS	PEA15	SUPT20H
ADCK5	DEFA1B	KARS1	PEAK1	SUPT20HL1
ADCY1	DEFA3	KAT2A	PEAK3	SUPT20HL2
ADCY2	DEFA4	KAT2B	PEAR1	SUPV3L1
ADCY3	DEFA5	KAT5	PEBP1	SURF1
ADCY4	DEFA6	KAT6A	PEBP4	SURF2
ADCY5	DEFB1	KAT6B	PECAM1	SURF4
ADCY6	DEFB4A	KAT7	PECR	SURF6
ADCY7	DEFB4B	KAT8	PEF1	SUSD1
ADCY8	DEFB103A	KAT14	PEG3	SUSD2
ADCY9	DEFB103B	KATNA1	PEG10	SUSD3
ADCY10	DEFB104A	KATNAL1	PELI1	SUSD4
ADCYAP1	DEFB104B	KATNAL2	PELI2	SUSD5
ADCYAP1R1	DEFB105A	KATNB1	PELI3	SUSD6
ADD1	DEFB105B	KATNBL1	PELO	SUV39H1
ADD2	DEFB106A	KAZALD1	PELP1	SUV39H2
ADD3	DEFB106B	KAZN	PEMT	SUZ12
ADGB	DEFB107A	KBTBD2	PENK	SV2A
ADGRA1	DEFB107B	KBTBD3	PEPD	SV2B
ADGRA2	DEFB108B	KBTBD4	PER1	SV2C
ADGRA3	DEFB109B	KBTBD6	PER2	SVBP
ADGRB1	DEFB110	KBTBD7	PER3	SVEP1
ADGRB2	DEFB112	KBTBD8	PERCC1	SVIL
ADGRB3	DEFB113	KBTBD11	PERM1	SVIP
ADGRD1	DEFB114	KBTBD12	PERP	SVOP
ADGRD2	DEFB115	KBTBD13	PES1	SVOPL
ADGRE1	DEFB116	KCMF1	PET100	SWAP70
ADGRE2	DEFB118	KCNA1	PET117	SWI5
ADGRE3	DEFB119	KCNA2	PEX1	SWSAP1
ADGRE5	DEFB121	KCNA3	PEX2	SWT1
ADGRF1	DEFB123	KCNA4	PEX3	SYAP1
ADGRF2	DEFB124	KCNA5	PEX5	SYBU
ADGRF3	DEFB125	KCNA6	PEX5L	SYCE1
ADGRF4	DEFB126	KCNA7	PEX6	SYCE1L
ADGRF5	DEFB127	KCNA10	PEX7	SYCE2
ADGRG1	DEFB128	KCNAB1	PEX10	SYCE3
ADGRG2	DEFB129	KCNAB2	PEX11A	SYCN
ADGRG3	DEFB130A	KCNAB3	PEX11B	SYCP1
ADGRG4	DEFB130B	KCNB1	PEX11G	SYCP2
ADGRG5	DEFB131A	KCNB2	PEX12	SYCP2L
ADGRG6	DEFB131B	KCNC1	PEX13	SYCP3
ADGRG7	DEFB132	KCNC2	PEX14	SYDE1

ADGRL1	DEFB133	KCNC3	PEX16	SYDE2
ADGRL2	DEFB134	KCNC4	PEX19	SYF2
ADGRL3	DEFB135	KCND1	PEX26	SYK
ADGRL4	DEFB136	KCND2	PF4	SYMPK
ADGRV1	DEGS1	KCND3	PF4V1	SYN1
ADH1A	DEGS2	KCNE1	PFAS	SYN2
ADH1B	DEK	KCNE1B	PFDN1	SYN3
ADH1C	DELE1	KCNE2	PFDN2	SYNC
ADH4	DENND1A	KCNE3	PFDN4	SYNCRIP
ADH5	DENND1B	KCNE4	PFDN5	SYNDIG1
ADH6	DENND1C	KCNE5	PFDN6	SYNDIG1L
ADH7	DENND2A	KCNF1	PFKFB1	SYNE1
ADHFE1	DENND2B	KCNG1	PFKFB2	SYNE2
ADI1	DENND2C	KCNG2	PFKFB3	SYNE3
ADIG	DENND2D	KCNG3	PFKFB4	SYNE4
ADIPOQ	DENND3	KCNG4	PFKL	SYNGAP1
ADIPOR1	DENND4A	KCNH1	PFKM	SYNGR1
ADIPOR2	DENND4B	KCNH2	PFKP	SYNGR2
ADIRF	DENND4C	KCNH3	PFN1	SYNGR3
ADK	DENND5A	KCNH4	PFN2	SYNGR4
ADM	DENND5B	KCNH5	PFN3	SYNJ1
ADM2	DENND6A	KCNH6	PFN4	SYNJ2
ADM5	DENND6B	KCNH7	PGA3	SYNJ2BP
ADNP	DENND10	KCNH8	PGA4	SYNJ2BP-COX16
ADNP2	DENND11	KCNIP1	PGA5	SYNM
ADO	DENR	KCNIP2	PGAM1	SYNPO
ADORA1	DEPDC1	KCNIP3	PGAM2	SYNPO2
ADORA2A	DEPDC1B	KCNIP4	PGAM4	SYNPO2L
ADORA2B	DEPDC4	KCNJ1	PGAM5	SYNPR
ADORA3	DEPDC5	KCNJ2	PGAP1	SYNRG
ADPGK	DEPDC7	KCNJ3	PGAP2	SYPL1
ADPRH	DEPP1	KCNJ4	PGAP3	SYPL2
ADPRHL1	DEPTOR	KCNJ5	PGAP4	SYPL1
ADPRHL2	DERA	KCNJ6	PGAP6	SYPL2
ADPRM	DERL1	KCNJ8	PGBD1	SYS1
ADPRS	DERL2	KCNJ9	PGBD2	SYS1-DBNDD2
ADRA1A	DERL3	KCNJ10	PGBD3	SYT1
ADRA1B	DERPC	KCNJ11	PGBD4	SYT2
ADRA1D	DES	KCNJ12	PGBD5	SYT3
ADRA2A	DESI1	KCNJ13	PGC	SYT4
ADRA2B	DESI2	KCNJ14	PGD	SYT5
ADRA2C	DET1	KCNJ15	PGF	SYT6
				SYT7



ADRB1	DEUP1	KCNJ16	PGGHG	SYT8
ADRB2	DEXI	KCNJ18	PGGT1B	SYT9
ADRB3	DFFA	KCNK1	PGK1	SYT10
ADRM1	DFFB	KCNK2	PGK2	SYT11
ADSL	DGAT1	KCNK3	PGLS	SYT12
ADSS	DGAT2	KCNK4	PGLYRP1	SYT13
ADSS1	DGAT2L6	KCNK5	PGLYRP2	SYT14
ADSS2	DGCR2	KCNK6	PGLYRP3	SYT15
ADSSL1	DGCR6	KCNK7	PGLYRP4	SYT16
ADTRP	DGCR6L	KCNK9	PGM1	SYT17
AEBP1	DGCR8	KCNK10	PGM2	SYTL1
AEBP2	DGKA	KCNK12	PGM2L1	SYTL2
AEN	DGKB	KCNK13	PGM3	SYTL3
AES	DGKD	KCNK15	PGM5	SYTL4
AF196969.1	DGKE	KCNK16	PGP	SYTL5
AF241726.2	DGKG	KCNK17	PGPEP1	SYVN1
AFAP1	DGKH	KCNK18	PGPEP1L	SZRD1
AFAP1L1	DGKI	KCNMA1	PGR	SZT2
AFAP1L2	DGKK	KCNMB1	PGRMC1	TAAR1
AFDN	DGKQ	KCNMB2	PGRMC2	TAAR2
AFF1	DGKZ	KCNMB3	PGS1	TAAR5
AFF2	DGLUCY	KCNMB4	PHACTR1	TAAR6
AFF3	DGUOK	KCNN1	PHACTR2	TAAR8
AFF4	DHCR7	KCNN2	PHACTR3	TAAR9
AFG1L	DHCR24	KCNN3	PHACTR4	TAB1
AFG3L2	DHDDS	KCNN4	PHAX	TAB2
AFM	DHDH	KCNQ1	PHB	TAB3
AFMID	DHFR	KCNQ2	PHB2	TAC1
AFP	DHFR2	KCNQ3	PHC1	TAC3
AFTPH	DHH	KCNQ4	PHC2	TAC4
AGA	DHODH	KCNQ5	PHC3	TACC1
AGAP1	DHPS	KCNRG	PHETA1	TACC2
AGAP2	DHRS1	KCNS1	PHETA2	TACC3
AGAP3	DHRS2	KCNS2	PHEX	TACO1
AGAP4	DHRS3	KCNS3	PHF1	TACR1
AGAP5	DHRS4	KCNT1	PHF2	TACR2
AGAP6	DHRS4L1	KCNT2	PHF3	TACR3
AGAP9	DHRS4L2	KCNU1	PHF5A	TACSTD2
AGAP11	DHRS7	KCNV1	PHF6	TADA1
AGBL1	DHRS7B	KCNV2	PHF7	TADA2A
AGBL2	DHRS7C	KCP	PHF8	TADA2B
AGBL3	DHRS9	KCTD1	PHF10	TADA3

AGBL4	DHRS11	KCTD2	PHF11	TAF1
AGBL5	DHRS12	KCTD3	PHF12	TAF1A
AGER	DHRS13	KCTD4	PHF13	TAF1B
AGFG1	DHRSX	KCTD5	PHF14	TAF1C
AGFG2	DHTKD1	KCTD6	PHF19	TAF1D
AGGF1	DHX8	KCTD7	PHF20	TAF1L
AGK	DHX9	KCTD8	PHF20L1	TAF2
AGL	DHX15	KCTD9	PHF21A	TAF3
AGMAT	DHX16	KCTD10	PHF21B	TAF4
AGMO	DHX29	KCTD11	PHF23	TAF4B
AGO1	DHX30	KCTD12	PHF24	TAF5
AGO2	DHX32	KCTD13	PHGDH	TAF5L
AGO3	DHX33	KCTD14	PHGR1	TAF6
AGO4	DHX34	KCTD15	PHIP	TAF6L
AGPAT1	DHX35	KCTD16	PHKA1	TAF7
AGPAT2	DHX36	KCTD17	PHKA2	TAF7L
AGPAT3	DHX37	KCTD18	PHKB	TAF8
AGPAT4	DHX38	KCTD19	PHKG1	TAF9
AGPAT5	DHX40	KCTD20	PHKG2	TAF9B
AGPS	DHX57	KCTD21	PHLDA1	TAF10
AGR2	DHX58	KDELC1	PHLDA2	TAF11
AGR3	DIABLO	KDELC2	PHLDA3	TAF11L2
AGRN	DIAPH1	KDELR1	PHLDB1	TAF11L3
AGRP	DIAPH2	KDELR2	PHLDB2	TAF11L4
AGT	DIAPH3	KDELR3	PHLDB3	TAF11L5
AGTPBP1	DICER1	KDF1	PHLPP1	TAF11L6
AGTR1	DIDO1	KDM1A	PHLPP2	TAF11L7
AGTR2	DIMT1	KDM1B	PHOSPHO1	TAF11L8
AGTRAP	DIO1	KDM2A	PHOSPHO2	TAF11L9
AGXT	DIO2	KDM2B	PHOSPHO2- KLHL23	TAF11L10
AGXT2	DIO3	KDM3A	PHOX2A	TAF11L11
AHCTF1	DIP2A	KDM3B	PHOX2B	TAF11L12
AHCY	DIP2B	KDM4A	PHPT1	TAF11L13
AHCYL1	DIP2C	KDM4B	PHRF1	TAF11L14
AHCYL2	DIPK1A	KDM4C	PHTF1	TAF12
AHDC1	DIPK1B	KDM4D	PHTF2	TAF13
AHI1	DIPK1C	KDM4E	PHYH	TAF15
AHNAK	DIPK2A	KDM4F	PHYHD1	TAF1A
AHNAK2	DIPK2B	KDM5A	PHYHIP	TAF1A2
AHR	DIRAS1	KDM5B	PHYHIPL	TAF1A3
AHRR	DIRAS2	KDM5C	PHYKPL	TAF1A4

AHSA1	DIRAS3	KDM5D	PI3	TAF5
AHSG	DIRC1	KDM6A	PI4K2A	TAGAP
AHSP	DIRC2	KDM6B	PI4K2B	TAGLN
AICDA	DIS3	KDM7A	PI4KA	TAGLN2
AIDA	DIS3L	KDM8	PI4KB	TAGLN3
AIF1	DIS3L2	KDR	PI15	TAL1
AIF1L	DISC1	KDSR	PI16	TAL2
AIFM1	DISP1	KEAP1	PIANP	TALDO1
AIFM2	DISP2	KEL	PIAS1	TAMM41
AIFM3	DISP3	KERA	PIAS2	TANC1
AIG1	DIXDC1	KHDC1	PIAS3	TANC2
AIM2	DKC1	KHDC1L	PIAS4	TANGO2
AIMP1	DKK1	KHDC3L	PIBF1	TANGO6
AIMP2	DKK2	KHDC4	PICALM	TANK
AIP	DKK3	KHDRBS1	PICK1	TAOK1
AIPL1	DKK4	KHDRBS2	PID1	TAOK2
AIRE	DKKL1	KHDRBS3	PIDD1	TAOK3
AJAP1	DLAT	KHK	PIEZO1	TAP1
AJM1	DLC1	KHNYN	PIEZO2	TAP2
AJUBA	DLD	KHSRP	PIF1	TAPBP
AK1	DLEC1	KIAA0040	PIFO	TAPBPL
AK2	DLEU7	KIAA0100	PIGA	TAPT1
AK3	DLG1	KIAA0232	PIGB	TARBP1
AK4	DLG2	KIAA0319	PIGBOS1	TARBP2
AK5	DLG3	KIAA0319L	PIGC	TARDBP
AK6	DLG4	KIAA0355	PIGF	TARM1
AK7	DLG5	KIAA0391	PIGG	TARP
AK8	DLGAP1	KIAA0408	PIGH	TARS
AK9	DLGAP2	KIAA0513	PIGK	TARS1
AKAIN1	DLGAP3	KIAA0556	PIGL	TARS2
AKAP1	DLGAP4	KIAA0586	PIGM	TARS3
AKAP2	DLGAP5	KIAA0753	PIGN	TARSL2
AKAP3	DLK1	KIAA0754	PIGO	TAS1R1
AKAP4	DLK2	KIAA0825	PIGP	TAS1R2
AKAP5	DLL1	KIAA0895	PIGQ	TAS1R3
AKAP6	DLL3	KIAA0895L	PIGR	TAS2R1
AKAP7	DLL4	KIAA0930	PIGS	TAS2R3
AKAP8	DLST	KIAA1024	PIGT	TAS2R4
AKAP8L	DLX1	KIAA1024L	PIGU	TAS2R5
AKAP9	DLX2	KIAA1107	PIGV	TAS2R7
AKAP10	DLX3	KIAA1109	PIGW	TAS2R8
AKAP11	DLX4	KIAA1143	PIGX	TAS2R9

AKAP12	DLX5	KIAA1147	PIGY	TAS2R10
AKAP13	DLX6	KIAA1191	PIGZ	TAS2R13
AKAP14	DMAC1	KIAA1210	PIH1D1	TAS2R14
AKAP17A	DMAC2	KIAA1211	PIH1D2	TAS2R16
AKIP1	DMAC2L	KIAA1211L	PIH1D3	TAS2R19
AKIRIN1	DMAP1	KIAA1217	PIK3AP1	TAS2R20
AKIRIN2	DMBT1	KIAA1257	PIK3C2A	TAS2R30
AKNA	DMBX1	KIAA1324	PIK3C2B	TAS2R31
AKNAD1	DMC1	KIAA1324L	PIK3C2G	TAS2R38
AKR1A1	DMD	KIAA1328	PIK3C3	TAS2R39
AKR1B1	DMGDH	KIAA1522	PIK3CA	TAS2R40
AKR1B10	DMKN	KIAA1549	PIK3CB	TAS2R41
AKR1B15	DMP1	KIAA1549L	PIK3CD	TAS2R42
AKR1C1	DMPK	KIAA1551	PIK3CG	TAS2R43
AKR1C2	DMRT1	KIAA1586	PIK3IP1	TAS2R46
AKR1C3	DMRT2	KIAA1614	PIK3R1	TAS2R50
AKR1C4	DMRT3	KIAA1671	PIK3R2	TAS2R60
AKR1C8P	DMRTA1	KIAA1755	PIK3R3	TASOR
AKR1D1	DMRTA2	KIAA1841	PIK3R4	TASOR2
AKR1E2	DMRTB1	KIAA1958	PIK3R5	TASP1
AKR7A2	DMRTC1	KIAA2012	PIK3R6	TAT
AKR7A3	DMRTC1B	KIAA2013	PIKFYVE	TATDN1
AKR7L	DMRTC2	KIAA2026	PILRA	TATDN2
AKT1	DMTF1	KIDINS220	PILRB	TATDN3
AKT1S1	DMTN	KIF1A	PIM1	TAX1BP1
AKT2	DMWD	KIF1B	PIM2	TAX1BP3
AKT3	DMXL1	KIF1BP	PIM3	TAZ
AKTIP	DMXL2	KIF1C	PIMREG	TBATA
AL020996.2	DNA2	KIF2A	PIN1	TBC1D1
AL021546.1	DNAAF1	KIF2B	PIN4	TBC1D2
AL021997.3	DNAAF2	KIF2C	PINK1	TBC1D2B
AL022238.4	DNAAF3	KIF3A	PINLYP	TBC1D3
AL022312.1	DNAAF4	KIF3B	PINX1	TBC1D3B
AL022318.4	DNAAF5	KIF3C	PIP	TBC1D3C
AL024498.2	DNAH1	KIF4A	PIP4K2A	TBC1D3D
AL031315.1	DNAH2	KIF4B	PIP4K2B	TBC1D3E
AL031681.3	DNAH3	KIF5A	PIP4K2C	TBC1D3F
AL031708.1	DNAH5	KIF5B	PIP4P1	TBC1D3G
AL031777.2	DNAH6	KIF5C	PIP4P2	TBC1D3H
AL031847.2	DNAH7	KIF6	PIP5K1A	TBC1D3I
AL033529.1	DNAH8	KIF7	PIP5K1B	TBC1D3J
AL034430.1	DNAH9	KIF9	PIP5K1C	TBC1D3K

AL034430.2	DNAH10	KIF11	PIP5KL1	TBC1D3L
AL035078.4	DNAH11	KIF12	PIPOX	TBC1D4
AL035425.3	DNAH12	KIF13A	PIR	TBC1D5
AL035460.1	DNAH14	KIF13B	PIRT	TBC1D7
AL035461.4	DNAH17	KIF14	PISD	TBC1D7- LOC100130357
AL035699.1	DNAI1	KIF15	PITHD1	TBC1D8
AL049629.2	DNAI2	KIF16B	PITPNA	TBC1D8B
AL049634.2	DNAJA1	KIF17	PITPNB	TBC1D9
AL049650.2	DNAJA2	KIF18A	PITPNC1	TBC1D9B
AL049697.1	DNAJA3	KIF18B	PITPNM1	TBC1D10A
AL049779.1	DNAJA4	KIF19	PITPNM2	TBC1D10B
AL049834.1	DNAJB1	KIF20A	PITPNM3	TBC1D10C
AL049839.2	DNAJB2	KIF20B	PITRM1	TBC1D12
AL049844.1	DNAJB3	KIF21A	PITX1	TBC1D13
AL049844.3	DNAJB4	KIF21B	PITX2	TBC1D14
AL096711.2	DNAJB5	KIF22	PITX3	TBC1D15
AL096814.1	DNAJB6	KIF23	PIWIL1	TBC1D16
AL109810.2	DNAJB7	KIF24	PIWIL2	TBC1D17
AL109811.3	DNAJB8	KIF25	PIWIL3	TBC1D19
AL109827.1	DNAJB9	KIF26A	PIWIL4	TBC1D20
AL110118.2	DNAJB11	KIF26B	PJA1	TBC1D21
AL117339.5	DNAJB12	KIF27	PJA2	TBC1D22A
AL117348.2	DNAJB13	KIFAP3	PJVK	TBC1D22B
AL117350.1	DNAJB14	KIFBP	PKD1	TBC1D23
AL121594.1	DNAJC1	KIFC1	PKD1L1	TBC1D24
AL121753.1	DNAJC2	KIFC2	PKD1L2	TBC1D25
AL121758.1	DNAJC3	KIFC3	PKD1L3	TBC1D26
AL121845.2	DNAJC4	KIN	PKD2	TBC1D28
AL121845.3	DNAJC5	KIR2DL1	PKD2L1	TBC1D29
AL121899.2	DNAJC5B	KIR2DL3	PKD2L2	TBC1D30
AL121900.1	DNAJC5G	KIR2DL4	PKDCC	TBC1D31
AL132671.2	DNAJC6	KIR2DS4	PKDREJ	TBC1D32
AL132780.3	DNAJC7	KIR3DL1	PKHD1	TBCA
AL133352.1	DNAJC8	KIR3DL2	PKHD1L1	TBCB
AL133353.2	DNAJC9	KIR3DL3	PKIA	TBCC
AL133410.3	DNAJC10	KIRREL1	PKIB	TBCCD1
AL133500.1	DNAJC11	KIRREL2	PKIG	TBCD
AL135905.2	DNAJC12	KIRREL3	PKLR	TBCE
AL136295.1	DNAJC13	KISS1	PKM	TBCEL
AL136295.3	DNAJC14	KISS1R	PKMYT1	TBCK
AL136295.4	DNAJC15	KIT	PKN1	TBK1

AL136295.5	DNAJC16	KITLG	PKN2	TBKBP1
AL136454.1	DNAJC17	KIZ	PKN3	TBL1X
AL136531.2	DNAJC18	KL	PKNOX1	TBL1XR1
AL138752.2	DNAJC19	KLB	PKNOX2	TBL1Y
AL138899.3	DNAJC21	KLC1	PKP1	TBL2
AL139011.2	DNAJC22	KLC2	PKP2	TBL3
AL139142.2	DNAJC24	KLC3	PKP3	TBP
AL139260.3	DNAJC25	KLC4	PKP4	TBPL1
AL139300.1	DNAJC25-GNG10	KLF1	PLA1A	TBPL2
AL139353.1	DNAJC27	KLF2	PLA2G1B	TBR1
AL157392.5	DNAJC28	KLF3	PLA2G2A	TBRG1
AL157935.3	DNAJC30	KLF4	PLA2G2C	TBRG4
AL159141.1	DNAL1	KLF5	PLA2G2D	TBX1
AL159163.1	DNAL4	KLF6	PLA2G2E	TBX2
AL160269.1	DNALI1	KLF7	PLA2G2F	TBX3
AL160272.2	DNASE1	KLF8	PLA2G3	TBX4
AL162231.1	DNASE1L1	KLF9	PLA2G4A	TBX5
AL162231.3	DNASE1L2	KLF10	PLA2G4B	TBX6
AL162377.3	DNASE1L3	KLF11	PLA2G4C	TBX10
AL162417.1	DNASE2	KLF12	PLA2G4D	TBX15
AL162596.1	DNASE2B	KLF13	PLA2G4E	TBX18
AL163195.3	DND1	KLF14	PLA2G4F	TBX19
AL163636.3	DNER	KLF15	PLA2G5	TBX20
AL353572.3	DNHD1	KLF16	PLA2G6	TBX21
AL353579.1	DNLZ	KLF17	PLA2G7	TBX22
AL353588.1	DNM1	KLF18	PLA2G10	TBXA2R
AL354761.1	DNM1L	KLHDC1	PLA2G12A	TBXAS1
AL355102.2	DNM2	KLHDC2	PLA2G12B	TBXT
AL355312.6	DNM3	KLHDC3	PLA2G15	TC2N
AL355315.1	DNMBP	KLHDC4	PLA2G16	TCAF1
AL355385.2	DNMT1	KLHDC7A	PLA2R1	TCAF2
AL355916.3	DNMT3A	KLHDC7B	PLAA	TCAF2C
AL355987.1	DNMT3B	KLHDC8A	PLAAT1	TCAIM
AL355987.3	DNMT3L	KLHDC8B	PLAAT2	TCAP
AL357075.4	DNPEP	KLHDC9	PLAAT3	TCEA1
AL357673.1	DNPH1	KLHDC10	PLAAT4	TCEA2
AL358075.4	DNTT	KLHL1	PLAAT5	TCEA3
AL358113.1	DNTTIP1	KLHL2	PLAC1	TCEAL1
AL358472.6	DNTTIP2	KLHL3	PLAC8	TCEAL2
AL358472.7	DOC2A	KLHL4	PLAC8L1	TCEAL3
AL359092.3	DOC2B	KLHL5	PLAC9	TCEAL4
AL359736.1	DOCK1	KLHL6	PLAG1	TCEAL5

AL359922.1	DOCK2	KLHL7	PLAGL1	TCEAL6
AL360181.3	DOCK3	KLHL8	PLAGL2	TCEAL7
AL365205.1	DOCK4	KLHL9	PLAT	TCEAL8
AL365214.2	DOCK5	KLHL10	PLAU	TCEAL9
AL365232.1	DOCK6	KLHL11	PLAUR	TCEANC
AL365273.2	DOCK7	KLHL12	PLB1	TCEANC2
AL391650.1	DOCK8	KLHL13	PLBD1	TCERG1
AL391987.1	DOCK9	KLHL14	PLBD2	TCERG1L
AL391987.2	DOCK10	KLHL15	PLCB1	TCF3
AL441992.3	DOCK11	KLHL17	PLCB2	TCF4
AL445238.1	DOHH	KLHL18	PLCB3	TCF7
AL445423.3	DOK1	KLHL20	PLCB4	TCF7L1
AL445524.2	DOK2	KLHL21	PLCD1	TCF7L2
AL445685.3	DOK3	KLHL22	PLCD3	TCF12
AL445989.1	DOK4	KLHL23	PLCD4	TCF15
AL451007.3	DOK5	KLHL24	PLCE1	TCF19
AL451062.4	DOK6	KLHL25	PLCG1	TCF20
AL451136.1	DOK7	KLHL26	PLCG2	TCF21
AL512310.1	DOLK	KLHL28	PLCH1	TCF23
AL512428.1	DOLPP1	KLHL29	PLCH2	TCF24
AL512506.3	DONSON	KLHL30	PLCL1	TCF25
AL512785.2	DOP1A	KLHL31	PLCL2	TCFL5
AL513165.2	DOP1B	KLHL32	PLCXD1	TCHH
AL583836.1	DOPEY1	KLHL33	PLCXD2	TCHHL1
AL589666.1	DOPEY2	KLHL34	PLCXD3	TCHP
AL590132.1	DOT1L	KLHL35	PLCZ1	TCIM
AL590560.2	DPAGT1	KLHL36	PLD1	TCIRG1
AL590764.2	DPCD	KLHL38	PLD2	TCL1A
AL591806.4	DPEP1	KLHL40	PLD3	TCL1B
AL592490.1	DPEP2	KLHL41	PLD4	TCN1
AL603764.2	DPEP2NB	KLHL42	PLD5	TCN2
AL603832.3	DPEP3	KLK1	PLD6	TCOF1
AL627230.1	DPF1	KLK2	PLEC	TCP1
AL627230.5	DPF2	KLK3	PLEK	TCP10
AL645922.1	DPF3	KLK4	PLEK2	TCP10L
AL645941.2	DPH1	KLK5	PLEKHA1	TCP10L2
AL662884.4	DPH2	KLK6	PLEKHA2	TCP11
AL662899.3	DPH3	KLK7	PLEKHA3	TCP11L1
AL662899.4	DPH3P1	KLK8	PLEKHA4	TCP11L2
AL669918.1	DPH5	KLK9	PLEKHA5	TCP11X1
AL672142.1	DPH6	KLK10	PLEKHA6	TCP11X2
AL691442.2	DPH7	KLK11	PLEKHA7	TCTA



AL713999.1	DPM1	KLK12	PLEKHA8	TCTE1
AL772284.2	DPM2	KLK13	PLEKHB1	TCTE3
AL807752.6	DPM3	KLK14	PLEKHB2	TCTEX1D1
AL807752.7	DPP3	KLK15	PLEKHD1	TCTEX1D2
AL845331.2	DPP4	KLKB1	PLEKHF1	TCTEX1D4
AL928654.3	DPP6	KLLN	PLEKHF2	TCTN1
AL929554.2	DPP7	KLRB1	PLEKHG1	TCTN2
ALAD	DPP8	KLRC1	PLEKHG2	TCTN3
ALAS1	DPP9	KLRC2	PLEKHG3	TDG
ALAS2	DPP10	KLRC3	PLEKHG4	TDGF1
ALB	DPPA2	KLRC4	PLEKHG4B	TDO2
ALCAM	DPPA3	KLRC4-KLRK1	PLEKHG5	TDP1
ALDH1A1	DPPA4	KLRD1	PLEKHG6	TDP2
ALDH1A2	DPPA5	KLRF1	PLEKHG7	TDRD1
ALDH1A3	DPRX	KLRF2	PLEKHH1	TDRD3
ALDH1B1	DPT	KLRG1	PLEKHH2	TDRD5
ALDH1L1	DPY19L1	KLRG2	PLEKHH3	TDRD6
ALDH1L2	DPY19L2	KLRK1	PLEKHJ1	TDRD7
ALDH2	DPY19L3	KMO	PLEKHM1	TDRD9
ALDH3A1	DPY19L4	KMT2A	PLEKHM2	TDRD10
ALDH3A2	DPY30	KMT2B	PLEKHM3	TDRD12
ALDH3B1	DPYD	KMT2C	PLEKHN1	TDRD15
ALDH3B2	DPYS	KMT2D	PLEKHO1	TDRKH
ALDH4A1	DPYSL2	KMT2E	PLEKHO2	TDRP
ALDH5A1	DPYSL3	KMT5A	PLEKHS1	TEAD1
ALDH6A1	DPYSL4	KMT5B	PLET1	TEAD2
ALDH7A1	DPYSL5	KMT5C	PLG	TEAD3
ALDH8A1	DQX1	KNCN	PLGLB1	TEAD4
ALDH9A1	DR1	KNDC1	PLGLB2	TEC
ALDH16A1	DRAM1	KNG1	PLGRKT	TECPR1
ALDH18A1	DRAM2	KNL1	PLIN1	TECPR2
ALDOA	DRAP1	KNOP1	PLIN2	TECR
ALDOB	DRAXIN	KNSTRN	PLIN3	TECRL
ALDOC	DRC1	KNTC1	PLIN4	TECTA
ALG1	DRC3	KPNA1	PLIN5	TECTB
ALG1L	DRC7	KPNA2	PLK1	TEDC1
ALG1L2	DRD1	KPNA3	PLK2	TEDC2
ALG2	DRD2	KPNA4	PLK3	TEDDM1
ALG3	DRD3	KPNA5	PLK4	TEF
ALG5	DRD4	KPNA6	PLK5	TEFM
ALG6	DRD5	KPNA7	PLLP	TEK
ALG8	DRG1	KPNB1	PLN	TEKT1

ALG9	DRG2	KPRP	PLOD1	TEKT2
ALG10	DRGX	KPTN	PLOD2	TEKT3
ALG10B	DRICH1	KRAS	PLOD3	TEKT4
ALG11	DROSHA	KRBA1	PLP1	TEKT5
ALG12	DRP2	KRBA2	PLP2	TELO2
ALG13	DSC1	KRBOX1	PLPBP	TEN1
ALG14	DSC2	KRBOX4	PLPP1	TEN1-CDK3
ALK	DSC3	KRCC1	PLPP2	TENM1
ALKAL1	DSCAM	KREMEN1	PLPP3	TENM2
ALKAL2	DSCAML1	KREMEN2	PLPP4	TENM3
ALKBH1	DSCC1	KRI1	PLPP5	TENM4
ALKBH2	DSE	KRIT1	PLPP6	TENT2
ALKBH3	DSEL	KRR1	PLPP7	TENT4A
ALKBH4	DSG1	KRT1	PLPPR1	TENT4B
ALKBH5	DSG2	KRT2	PLPPR2	TENT5A
ALKBH6	DSG3	KRT3	PLPPR3	TENT5B
ALKBH7	DSG4	KRT4	PLPPR4	TENT5C
ALKBH8	DSN1	KRT5	PLPPR5	TENT5D
ALLC	DSP	KRT6A	PLRG1	TEP1
ALMS1	DSPP	KRT6B	PLS1	TEPP
ALOX5	DST	KRT6C	PLS3	TEPSIN
ALOX5AP	DSTN	KRT7	PLSCR1	TERB1
ALOX12	DSTYK	KRT8	PLSCR2	TERB2
ALOX12B	DTD1	KRT9	PLSCR3	TERF1
ALOX15	DTD2	KRT10	PLSCR4	TERF2
ALOX15B	DTHD1	KRT12	PLSCR5	TERF2IP
ALOXE3	DTL	KRT13	PLTP	TERT
ALPG	DTNA	KRT14	PLVAP	TES
ALPI	DTNB	KRT15	PLXDC1	TESC
ALPK1	DTNBP1	KRT16	PLXDC2	TESK1
ALPK2	DTWD1	KRT17	PLXNA1	TESK2
ALPK3	DTWD2	KRT18	PLXNA2	TESMIN
ALPL	DTX1	KRT19	PLXNA3	TESPA1
ALPP	DTX2	KRT20	PLXNA4	TET1
ALS2	DTX3	KRT23	PLXNB1	TET2
ALS2CL	DTX3L	KRT24	PLXNB2	TET3
ALS2CR12	DTX4	KRT25	PLXNB3	TEX2
ALX1	DTYMK	KRT26	PLXNC1	TEX9
ALX3	DUOX1	KRT27	PLXND1	TEX10
ALX4	DUOX2	KRT28	PM20D1	TEX11
ALYREF	DUOXA1	KRT31	PM20D2	TEX12
AMACR	DUOXA2	KRT32	PMAIP1	TEX13A

AMBN	DUPD1	KRT33A	PMCH	TEX13B
AMBP	DUS1L	KRT33B	PMEL	TEX13C
AMBRA1	DUS2	KRT34	PMEPA1	TEX13D
AMD1	DUS3L	KRT35	PMF1	TEX14
AMDHD1	DUS4L	KRT36	PMF1-BGLAP	TEX15
AMDHD2	DUS4L-BCAP29	KRT37	PMFBP1	TEX19
AMELX	DUSP1	KRT38	PMIS2	TEX22
AMELY	DUSP2	KRT39	PML	TEX26
AMER1	DUSP3	KRT40	PMM1	TEX28
AMER2	DUSP4	KRT71	PMM2	TEX29
AMER3	DUSP5	KRT72	PMP2	TEX30
AMFR	DUSP6	KRT73	PMP22	TEX33
AMH	DUSP7	KRT74	PMPCA	TEX35
AMHR2	DUSP8	KRT75	PMPCB	TEX36
AMIGO1	DUSP9	KRT76	PMS1	TEX37
AMIGO2	DUSP10	KRT77	PMS2	TEX38
AMIGO3	DUSP11	KRT78	PMVK	TEX43
AMMECR1	DUSP12	KRT79	PNCK	TEX44
AMMECR1L	DUSP13	KRT80	PNISR	TEX45
AMN	DUSP14	KRT81	PNKD	TEX46
AMN1	DUSP15	KRT82	PNKP	TEX47
AMOT	DUSP16	KRT83	PNLDC1	TEX48
AMOTL1	DUSP18	KRT84	PNLIP	TEX49
AMOTL2	DUSP19	KRT85	PNLIPRP1	TEX50
AMPD1	DUSP21	KRT86	PNLIPRP3	TEX51
AMPD2	DUSP22	KRT222	PNMA1	TEX52
AMPD3	DUSP23	KRTAP1-1	PNMA2	TEX53
AMPH	DUSP26	KRTAP1-3	PNMA3	TEX54
AMT	DUSP27	KRTAP1-4	PNMA5	TEX55
AMTN	DUSP28	KRTAP1-5	PNMA6A	TEX101
AMY1A	DUT	KRTAP2-1	PNMA6E	TEX261
AMY1B	DUX4	KRTAP2-2	PNMA6F	TEX264
AMY1C	DUXA	KRTAP2-3	PNMA8A	TF
AMY2A	DUXB	KRTAP2-4	PNMA8B	TFAM
AMY2B	DVL1	KRTAP3-1	PNMA8C	TFAP2A
AMZ1	DVL2	KRTAP3-2	PNMT	TFAP2B
AMZ2	DVL3	KRTAP3-3	PNN	TFAP2C
ANAPC1	DWOF	KRTAP4-1	PNO1	TFAP2D
ANAPC2	DXO	KRTAP4-2	PNOC	TFAP2E
ANAPC4	DYDC1	KRTAP4-3	PNP	TFAP4
ANAPC5	DYDC2	KRTAP4-4	PNPLA1	TFB1M
ANAPC7	DYM	KRTAP4-5	PNPLA2	TFB2M

ANAPC10	DYNAP	KRTAP4-6	PNPLA3	TFCP2
ANAPC11	DYNC1H1	KRTAP4-7	PNPLA4	TFCP2L1
ANAPC13	DYNC1I1	KRTAP4-8	PNPLA5	TFDP1
ANAPC15	DYNC1I2	KRTAP4-9	PNPLA6	TFDP2
ANAPC16	DYNC1LI1	KRTAP4-11	PNPLA7	TFDP3
ANG	DYNC1LI2	KRTAP4-12	PNPLA8	TFE3
ANGEL1	DYNC2H1	KRTAP4-16	PNPO	TFEB
ANGEL2	DYNC2LI1	KRTAP5-1	PNPT1	TFEC
ANGPT1	DYNLL1	KRTAP5-2	PNRC1	TFF1
ANGPT2	DYNLL2	KRTAP5-3	PNRC2	TFF2
ANGPT4	DYNLRB1	KRTAP5-4	POC1A	TFF3
ANGPTL1	DYNLRB2	KRTAP5-5	POC1B	TFG
ANGPTL2	DYNLT1	KRTAP5-6	POC1B-GALNT4	TFIP11
ANGPTL3	DYNLT3	KRTAP5-7	POC5	TFPI
ANGPTL4	DYRK1A	KRTAP5-8	PODN	TFPI2
ANGPTL5	DYRK1B	KRTAP5-9	PODNL1	TFPT
ANGPTL6	DYRK2	KRTAP5-10	PODXL	TFR2
ANGPTL7	DYRK3	KRTAP5-11	PODXL2	TFRC
ANGPTL8	DYRK4	KRTAP6-1	POF1B	TG
ANHX	DYSF	KRTAP6-2	POFUT1	TGDS
ANK1	DYTN	KRTAP6-3	POFUT2	TGFA
ANK2	DZANK1	KRTAP7-1	POGK	TGFB1
ANK3	DZIP1	KRTAP8-1	POGLUT1	TGFB1I1
ANKAR	DZIP1L	KRTAP9-1	POGLUT2	TGFB2
ANKDD1A	DZIP3	KRTAP9-2	POGLUT3	TGFB3
ANKDD1B	E2F1	KRTAP9-3	POGZ	TGFBI
ANKEF1	E2F2	KRTAP9-4	POLA1	TGFBR1
ANKFN1	E2F3	KRTAP9-6	POLA2	TGFBR2
ANKFY1	E2F4	KRTAP9-7	POLB	TGFBR3
ANKH	E2F5	KRTAP9-8	POLD1	TGFBR3L
ANKHD1	E2F6	KRTAP9-9	POLD2	TGFBRAP1
ANKHD1- EIF4EBP3	E2F7	KRTAP10-1	POLD3	TGIF1
ANKIB1	E2F8	KRTAP10-2	POLD4	TGIF2
ANKK1	E4F1	KRTAP10-3	POLDIP2	TGIF2LX
ANKLE1	EAF1	KRTAP10-4	POLDIP3	TGIF2LY
ANKLE2	EAF2	KRTAP10-5	POLE	TGIF2-RAB5IF
ANKMY1	EAPP	KRTAP10-6	POLE2	TGM1
ANKMY2	EARS2	KRTAP10-7	POLE3	TGM2
ANKRA2	EBAG9	KRTAP10-8	POLE4	TGM3
ANKRD1	EBF1	KRTAP10-9	POLG	TGM4
ANKRD2	EBF2	KRTAP10-10	POLG2	TGM5

ANKRD6	EBF3	KRTAP10-11	POLH	TGM6
ANKRD7	EBF4	KRTAP10-12	POLI	TGM7
ANKRD9	EBI3	KRTAP11-1	POLK	TGOLN2
ANKRD10	EBLN1	KRTAP12-1	POLL	TGS1
ANKRD11	EBLN2	KRTAP12-2	POLM	TH
ANKRD12	EBNA1BP2	KRTAP12-3	POLN	THADA
ANKRD13A	EBP	KRTAP12-4	POLQ	THAP1
ANKRD13B	EBPL	KRTAP13-1	POLR1A	THAP2
ANKRD13C	ECD	KRTAP13-2	POLR1B	THAP3
ANKRD13D	ECE1	KRTAP13-3	POLR1C	THAP4
ANKRD16	ECE2	KRTAP13-4	POLR1D	THAP5
ANKRD17	ECEL1	KRTAP15-1	POLR1E	THAP6
ANKRD18A	ECH1	KRTAP16-1	POLR2A	THAP7
ANKRD18B	ECHDC1	KRTAP17-1	POLR2B	THAP8
ANKRD20A1	ECHDC2	KRTAP19-1	POLR2C	THAP9
ANKRD20A2	ECHDC3	KRTAP19-2	POLR2D	THAP10
ANKRD20A3	ECHS1	KRTAP19-3	POLR2E	THAP11
ANKRD20A4	ECI1	KRTAP19-4	POLR2F	THAP12
ANKRD22	ECI2	KRTAP19-5	POLR2G	THBD
ANKRD23	ECM1	KRTAP19-6	POLR2H	THBS1
ANKRD24	ECM2	KRTAP19-7	POLR2I	THBS2
ANKRD26	ECPAS	KRTAP19-8	POLR2J	THBS3
ANKRD27	ECRG4	KRTAP20-1	POLR2J2	THBS4
ANKRD28	ECSCR	KRTAP20-2	POLR2J3	THEG
ANKRD29	ECSIT	KRTAP20-3	POLR2K	THEG5
ANKRD30A	ECT2	KRTAP20-4	POLR2L	THEGL
ANKRD30B	ECT2L	KRTAP21-1	POLR2M	THEM4
ANKRD30BL	EDA	KRTAP21-2	POLR3A	THEM5
ANKRD31	EDA2R	KRTAP21-3	POLR3B	THEM6
ANKRD33	EDAR	KRTAP22-1	POLR3C	THEMIS
ANKRD33B	EDARADD	KRTAP22-2	POLR3D	THEMIS2
ANKRD34A	EDC3	KRTAP23-1	POLR3E	THG1L
ANKRD34B	EDC4	KRTAP24-1	POLR3F	THNSL1
ANKRD34C	EDDM3A	KRTAP25-1	POLR3G	THNSL2
ANKRD35	EDDM3B	KRTAP26-1	POLR3GL	THOC1
ANKRD36	EDDM13	KRTAP27-1	POLR3H	THOC2
ANKRD36B	EDEM1	KRTAP29-1	POLR3K	THOC3
ANKRD36C	EDEM2	KRTCAP2	POLRMT	THOC5
ANKRD37	EDEM3	KRTCAP3	POM121	THOC6
ANKRD39	EDF1	KRTDAP	POM121C	THOC7
ANKRD40	EDIL3	KSR1	POM121L2	THOP1
ANKRD40CL	EDN1	KSR2	POM121L12	THPO

ANKRD42	EDN2	KTI12	POMC	THRA
ANKRD44	EDN3	KTN1	POMGNT1	THRAP3
ANKRD45	EDNRA	KXD1	POMGNT2	THRB
ANKRD46	EDNRB	KY	POMK	THRSP
ANKRD49	EDRF1	KYAT1	POMP	THSD1
ANKRD50	EEA1	KYAT3	POMT1	THSD4
ANKRD52	EED	KYNU	POMT2	THSD7A
ANKRD53	EEF1A1	L1CAM	POMZP3	THSD7B
ANKRD54	EEF1A2	L1TD1	PON1	THSD8
ANKRD55	EEF1AKMT1	L2HGDH	PON2	THTPA
ANKRD60	EEF1AKMT2	L3HYPDH	PON3	THUMPD1
ANKRD61	EEF1AKMT3	L3MBTL1	POP1	THUMPD2
ANKRD62	EEF1AKMT4	L3MBTL2	POP4	THUMPD3
ANKRD63	EEF1AKMT4- ECE2	L3MBTL3	POP5	THY1
ANKRD65	EEF1AKNMT	L3MBTL4	POP7	THYN1
ANKRD66	EEF1B2	L34079.1	POPDC2	TIA1
ANKS1A	EEF1D	LACC1	POPDC3	TIAF1
ANKS1B	EEF1E1	LACRT	POR	TIAL1
ANKS3	EEF1E1- BLOC1S5	LACTB	PORCN	TIAM1
ANKS4B	EEF1G	LACTB2	POSTN	TIAM2
ANKS6	EEF2	LACTBL1	POT1	TICAM1
ANKUB1	EEF2K	LAD1	POTEA	TICAM2
ANKZF1	EEF2KMT	LAG3	POTEB	TICRR
ANLN	EEFSEC	LAGE3	POTEB2	TIE1
ANO1	EEPD1	LAIR1	POTEB3	TIFA
ANO2	EFCAB1	LAIR2	POTEC	TIFAB
ANO3	EFCAB2	LALBA	POTED	TIGAR
ANO4	EFCAB3	LAMA1	POTEE	TIGD1
ANO5	EFCAB5	LAMA2	POTEF	TIGD2
ANO6	EFCAB6	LAMA3	POTEG	TIGD3
ANO7	EFCAB7	LAMA4	POTEH	TIGD4
ANO8	EFCAB8	LAMA5	POTEI	TIGD5
ANO9	EFCAB9	LAMB1	POTEJ	TIGD6
ANO10	EFCAB10	LAMB2	POTEM	TIGD7
ANOS1	EFCAB11	LAMB3	POU1F1	TIGIT
ANP32A	EFCAB12	LAMB4	POU2AF1	TIMD4
ANP32B	EFCAB13	LAMC1	POU2F1	TIMELESS
ANP32C	EFCAB14	LAMC2	POU2F2	TIMM8A
ANP32D	EFCC1	LAMC3	POU2F3	TIMM8B
ANP32E	EFEMP1	LAMP1	POU3F1	TIMM9
ANPEP	EFEMP2	LAMP2	POU3F2	TIMM10

ANTKMT	EFHB	LAMP3	POU3F3	TIMM10B
ANTXR1	EFHC1	LAMP5	POU3F4	TIMM13
ANTXR2	EFHC2	LAMTOR1	POU4F1	TIMM17A
ANTXRL	EFHD1	LAMTOR2	POU4F2	TIMM17B
ANXA1	EFHD2	LAMTOR3	POU4F3	TIMM21
ANXA2	EFL1	LAMTOR4	POU5F1	TIMM22
ANXA2R	EFNA1	LAMTOR5	POU5F1B	TIMM23
ANXA3	EFNA2	LANCL1	POU5F2	TIMM23B
ANXA4	EFNA3	LANCL2	POU6F1	TIMM29
ANXA5	EFNA4	LANCL3	POU6F2	TIMM44
ANXA6	EFNA5	LAP3	PP2D1	TIMM50
ANXA7	EFNB1	LAPTM4A	PPA1	TIMMDC1
ANXA8	EFNB2	LAPTM4B	PPA2	TIMP1
ANXA8L1	EFNB3	LAPTM5	PPAN	TIMP2
ANXA9	EFR3A	LARGE1	PPAN-P2RY11	TIMP3
ANXA10	EFR3B	LARGE2	PPARA	TIMP4
ANXA11	EFS	LARP1	PPARD	TINAG
ANXA13	EFTUD2	LARP1B	PPARG	TINAGL1
AOAH	EGF	LARP4	PPARGC1A	TINCR
AOC1	EGFL6	LARP4B	PPARGC1B	TINF2
AOC2	EGFL7	LARP6	PPAT	TIPARP
AOC3	EGFL8	LARP7	PPBP	TIPIN
AOPEP	EGFLAM	LARS	PPCDC	TIPRL
AOX1	EGFR	LARS1	PPCS	TIRAP
AP1AR	EGLN1	LARS2	PPDPF	TJAP1
AP1B1	EGLN2	LAS1L	PPDPFL	TJP1
AP1G1	EGLN3	LASP1	PPEF1	TJP2
AP1G2	EGR1	LAT	PPEF2	TJP3
AP1M1	EGR2	LAT2	PPFIA1	TK1
AP1M2	EGR3	LATS1	PPFIA2	TK2
AP1S1	EGR4	LATS2	PPFIA3	TKFC
AP1S2	EHBP1	LAX1	PPFIA4	TKT
AP1S3	EHBP1L1	LAYN	PPFIBP1	TKTL1
AP2A1	EHD1	LBH	PPFIBP2	TKTL2
AP2A2	EHD2	LBHD1	PPHLN1	TLCD1
AP2B1	EHD3	LBHD2	PPIA	TLCD2
AP2M1	EHD4	LBP	PPIAL4A	TLCD3A
AP2S1	EHF	LBR	PPIAL4C	TLCD3B
AP3B1	EHHADH	LBX1	PPIAL4D	TLCD4
AP3B2	EHMT1	LBX2	PPIAL4E	TLCD4-RWDD3
AP3D1	EHMT2	LCA5	PPIAL4F	TLCD5
AP3M1	EI24	LCA5L	PPIAL4G	TLDC1



AP3M2	EID1	LCAT	PPIAL4H	TLDC2
AP3S1	EID2	LCE1A	PPIB	TLE1
AP3S2	EID2B	LCE1B	PPIC	TLE2
AP4B1	EID3	LCE1C	PPID	TLE3
AP4E1	EIF1	LCE1D	PPIE	TLE4
AP4M1	EIF1AD	LCE1E	PPIF	TLE5
AP4S1	EIF1AX	LCE1F	PPIG	TLE6
AP5B1	EIF1AY	LCE2A	PPIH	TLE7
AP5M1	EIF1B	LCE2B	PPIL1	TLK1
AP5S1	EIF2A	LCE2C	PPIL2	TLK2
AP5Z1	EIF2AK1	LCE2D	PPIL3	TLL1
AP000295.1	EIF2AK2	LCE3A	PPIL4	TLL2
AP000311.1	EIF2AK3	LCE3B	PPIL6	TLN1
AP000350.4	EIF2AK4	LCE3C	PPIP5K1	TLN2
AP000471.1	EIF2B1	LCE3D	PPIP5K2	TLNRD1
AP000552.6	EIF2B2	LCE3E	PPL	TLR1
AP000646.1	EIF2B3	LCE4A	PPM1A	TLR2
AP000721.1	EIF2B4	LCE5A	PPM1B	TLR3
AP000781.2	EIF2B5	LCE6A	PPM1D	TLR4
AP000812.4	EIF2D	LCK	PPM1E	TLR5
AP000812.5	EIF2S1	LCLAT1	PPM1F	TLR6
AP000944.5	EIF2S2	LCMT1	PPM1G	TLR7
AP001267.5	EIF2S3	LCMT2	PPM1H	TLR8
AP001273.2	EIF2S3B	LCN1	PPM1J	TLR9
AP001453.5	EIF3A	LCN2	PPM1K	TLR10
AP001458.2	EIF3B	LCN6	PPM1L	TLX1
AP001781.2	EIF3C	LCN8	PPM1M	TLX2
AP001931.1	EIF3CL	LCN9	PPM1N	TLX3
AP001931.2	EIF3D	LCN10	PPME1	TM2D1
AP002373.1	EIF3E	LCN12	PPOX	TM2D2
AP002495.1	EIF3F	LCN15	PPP1CA	TM2D3
AP002512.3	EIF3G	LCNL1	PPP1CB	TM4SF1
AP002748.5	EIF3H	LCOR	PPP1CC	TM4SF4
AP002884.2	EIF3I	LCORL	PPP1R1A	TM4SF5
AP002990.1	EIF3J	LCP1	PPP1R1B	TM4SF18
AP003071.5	EIF3K	LCP2	PPP1R1C	TM4SF19
AP003108.2	EIF3L	LCT	PPP1R2	TM4SF19- TCTEX1D2
AP003419.1	EIF3M	LCTL	PPP1R2B	TM4SF20
AP006333.1	EIF4A1	LDAH	PPP1R2C	TM6SF1
APAF1	EIF4A2	LDB1	PPP1R3A	TM6SF2
APBA1	EIF4A3	LDB2	PPP1R3B	TM7SF2

APBA2	EIF4B	LDB3	PPP1R3C	TM7SF3
APBA3	EIF4E	LDHA	PPP1R3D	TM9SF1
APBB1	EIF4E1B	LDHAL6A	PPP1R3E	TM9SF2
APBB1IP	EIF4E2	LDHAL6B	PPP1R3F	TM9SF3
APBB2	EIF4E3	LDHB	PPP1R3G	TM9SF4
APBB3	EIF4EBP1	LDHC	PPP1R7	TMA7
APC	EIF4EBP2	LDHD	PPP1R8	TMA16
APC2	EIF4EBP3	LDLR	PPP1R9A	TMBIM1
APCDD1	EIF4ENIF1	LDLRAD1	PPP1R9B	TMBIM4
APCDD1L	EIF4G1	LDLRAD2	PPP1R10	TMBIM6
APCS	EIF4G2	LDLRAD3	PPP1R11	TMC1
APEH	EIF4G3	LDLRAD4	PPP1R12A	TMC2
APELA	EIF4H	LDLRAP1	PPP1R12B	TMC3
APEX1	EIF5	LDOC1	PPP1R12C	TMC4
APEX2	EIF5A	LEAP2	PPP1R13B	TMC5
APH1A	EIF5A2	LECT2	PPP1R13L	TMC6
APH1B	EIF5AL1	LEF1	PPP1R14A	TMC7
API5	EIF5B	LEFTY1	PPP1R14B	TMC8
APIP	EIF6	LEFTY2	PPP1R14C	TMCC1
APLF	EIPR1	LEKR1	PPP1R14D	TMCC2
APLN	ELAC1	LERP1	PPP1R15A	TMCC3
APLNR	ELAC2	LEMD1	PPP1R15B	TMCO1
APLP1	ELANE	LEMD2	PPP1R16A	TMCO2
APLP2	ELAVL1	LEMD3	PPP1R16B	TMCO3
APMAP	ELAVL2	LENEP	PPP1R17	TMCO4
APOA1	ELAVL3	LENG1	PPP1R18	TMCO5A
APOA2	ELAVL4	LENG8	PPP1R21	TMCO6
APOA4	ELF1	LENG9	PPP1R26	TMDD1
APOA5	ELF2	LEO1	PPP1R27	TMED1
APOB	ELF3	LEP	PPP1R32	TMED2
APOBEC1	ELF4	LEPR	PPP1R35	TMED3
APOBEC2	ELF5	LEPROT	PPP1R36	TMED4
APOBEC3A	ELFN1	LEPROTL1	PPP1R37	TMED5
APOBEC3B	ELFN2	LETM1	PPP1R42	TMED6
APOBEC3C	ELK1	LETM2	PPP2CA	TMED7
APOBEC3D	ELK3	LETMD1	PPP2CB	TMED7-TICAM2
APOBEC3F	ELK4	LEUTX	PPP2R1A	TMED8
APOBEC3G	ELL	LEXM	PPP2R1B	TMED9
APOBEC3H	ELL2	LFNG	PPP2R2A	TMED10
APOBEC4	ELL3	LGALS1	PPP2R2B	TMEFF1
APOBR	ELMO1	LGALS2	PPP2R2C	TMEFF2
APOC1	ELMO2	LGALS3	PPP2R2D	TMEM8A

APOC2	ELMO3	LGALS3BP	PPP2R3A	TMEM8B
APOC3	ELMOD1	LGALS4	PPP2R3B	TMEM9
APOC4	ELMOD2	LGALS7	PPP2R3C	TMEM9B
APOC4-APOC2	ELMOD3	LGALS7B	PPP2R5A	TMEM11
APOD	ELMSAN1	LGALS8	PPP2R5B	TMEM14A
APOE	ELN	LGALS9	PPP2R5C	TMEM14B
APOF	ELOA	LGALS9B	PPP2R5D	TMEM14C
APOH	ELOA2	LGALS9C	PPP2R5E	TMEM17
APOL1	ELOA3	LGALS12	PPP3CA	TMEM18
APOL2	ELOA3B	LGALS13	PPP3CB	TMEM19
APOL3	ELOA3C	LGALS14	PPP3CC	TMEM25
APOL4	ELOA3D	LGALS16	PPP3R1	TMEM26
APOL5	ELOB	LGALSL	PPP3R2	TMEM30A
APOL6	ELOC	LGI1	PPP4C	TMEM30B
APOLD1	ELOF1	LGI2	PPP4R1	TMEM31
APOM	ELOVL1	LGI3	PPP4R2	TMEM33
APOO	ELOVL2	LGI4	PPP4R3A	TMEM35A
APOOL	ELOVL3	LGMN	PPP4R3B	TMEM35B
APOPT1	ELOVL4	LGR4	PPP4R3C	TMEM37
APP	ELOVL5	LGR5	PPP4R4	TMEM38A
APPBP2	ELOVL6	LGR6	PPP5C	TMEM38B
APPL1	ELOVL7	LGSN	PPP5D1	TMEM39A
APPL2	ELP1	LHB	PPP6C	TMEM39B
APRT	ELP2	LHCGR	PPP6R1	TMEM40
APTX	ELP3	LHFPL1	PPP6R2	TMEM41A
AQP1	ELP4	LHFPL2	PPP6R3	TMEM41B
AQP2	ELP5	LHFPL3	PPRC1	TMEM42
AQP3	ELP6	LHFPL4	PPT1	TMEM43
AQP4	ELSPBP1	LHFPL5	PPT2	TMEM44
AQP5	EMB	LHFPL6	PPT2-EGFL8	TMEM45A
AQP6	EMC1	LHPP	PPTC7	TMEM45B
AQP7	EMC2	LHX1	PPWD1	TMEM47
AQP8	EMC3	LHX2	PPY	TMEM50A
AQP9	EMC4	LHX3	PQBP1	TMEM50B
AQP10	EMC6	LHX4	PQLC1	TMEM51
AQP11	EMC7	LHX5	PQLC2	TMEM52
AQP12A	EMC8	LHX6	PQLC2L	TMEM52B
AQP12B	EMC9	LHX8	PQLC3	TMEM53
AQR	EMC10	LHX9	PRAC1	TMEM54
AR	EMCN	LIAS	PRAC2	TMEM56
ARAF	EMD	LIF	PRADC1	TMEM56-RWDD3
ARAP1	EME1	LIFR	PRAF2	TMEM59

ARAP2	EME2	LIG1	PRAG1	TMEM59L
ARAP3	EMG1	LIG3	PRAM1	TMEM60
ARC	EMID1	LIG4	PRAME	TMEM61
ARCN1	EMILIN1	LILRA1	PRAMEF1	TMEM62
AREG	EMILIN2	LILRA2	PRAMEF2	TMEM63A
AREL1	EMILIN3	LILRA4	PRAMEF4	TMEM63B
ARF1	EML1	LILRA5	PRAMEF5	TMEM63C
ARF3	EML2	LILRA6	PRAMEF6	TMEM64
ARF4	EML3	LILRB1	PRAMEF7	TMEM65
ARF5	EML4	LILRB2	PRAMEF8	TMEM67
ARF6	EML5	LILRB3	PRAMEF9	TMEM68
ARFGAP1	EML6	LILRB4	PRAMEF10	TMEM69
ARFGAP2	EMP1	LILRB5	PRAMEF11	TMEM70
ARFGAP3	EMP2	LIM2	PRAMEF12	TMEM71
ARFGEF1	EMP3	LIMA1	PRAMEF13	TMEM72
ARFGEF2	EMSY	LIMCH1	PRAMEF14	TMEM74
ARFGEF3	EMX1	LIMD1	PRAMEF15	TMEM74B
ARFIP1	EMX2	LIMD2	PRAMEF17	TMEM79
ARFIP2	EN1	LIME1	PRAMEF18	TMEM80
ARFRP1	EN2	LIMK1	PRAMEF19	TMEM81
ARG1	ENAH	LIMK2	PRAMEF20	TMEM82
ARG2	ENAM	LIMS1	PRAMEF25	TMEM86A
ARGFX	ENC1	LIMS2	PRAMEF26	TMEM86B
ARGLU1	ENDOD1	LIMS3	PRAMEF27	TMEM87A
ARHGAP1	ENDOG	LIMS4	PRAMEF33	TMEM87B
ARHGAP4	ENDOU	LIN7A	PRAP1	TMEM88
ARHGAP5	ENDOV	LIN7B	PRB1	TMEM88B
ARHGAP6	ENG	LIN7C	PRB2	TMEM89
ARHGAP8	ENGASE	LIN9	PRB3	TMEM91
ARHGAP9	ENHO	LIN28A	PRB4	TMEM92
ARHGAP10	ENKD1	LIN28B	PRC1	TMEM94
ARHGAP11A	ENKUR	LIN37	PRCC	TMEM95
ARHGAP11A- SCG5	ENO1	LIN52	PRCD	TMEM97
ARHGAP11B	ENO2	LIN54	PRCP	TMEM98
ARHGAP12	ENO3	LINC00514	PRDM1	TMEM99
ARHGAP15	ENO4	LINC00634	PRDM2	TMEM100
ARHGAP17	ENOPH1	LINC00672	PRDM4	TMEM101
ARHGAP18	ENOSF1	LINC01638	PRDM5	TMEM102
ARHGAP19	ENOX1	LINC01862	PRDM6	TMEM104
ARHGAP19- SLIT1	ENOX2	LINC02203	PRDM7	TMEM105

ARHGAP20	ENPEP	LINC02210- CRHR1	PRDM8	TMEM106A
ARHGAP21	ENPP1	LINC02218	PRDM9	TMEM106B
ARHGAP22	ENPP2	LINC02801	PRDM10	TMEM106C
ARHGAP23	ENPP3	LINGO1	PRDM11	TMEM107
ARHGAP24	ENPP4	LINGO2	PRDM12	TMEM108
ARHGAP25	ENPP5	LINGO3	PRDM13	TMEM109
ARHGAP26	ENPP6	LINGO4	PRDM14	TMEM110- MUSTN1
ARHGAP27	ENPP7	LINS1	PRDM15	TMEM114
ARHGAP28	ENSA	LIPA	PRDM16	TMEM115
ARHGAP29	ENTHD1	LIPC	PRDX1	TMEM116
ARHGAP30	ENTPD1	LIPE	PRDX2	TMEM117
ARHGAP31	ENTPD2	LIPF	PRDX3	TMEM119
ARHGAP32	ENTPD3	LIPG	PRDX4	TMEM120A
ARHGAP33	ENTPD4	LIPH	PRDX5	TMEM120B
ARHGAP35	ENTPD5	LIPI	PRDX6	TMEM121
ARHGAP36	ENTPD6	LIPJ	PREB	TMEM121B
ARHGAP39	ENTPD7	LIPK	PRELID1	TMEM123
ARHGAP40	ENTPD8	LIPM	PRELID2	TMEM125
ARHGAP42	ENTR1	LIPN	PRELID3A	TMEM126A
ARHGAP44	ENY2	LIPT1	PRELID3B	TMEM126B
ARHGAP45	EOGT	LIPT2	PRELP	TMEM127
ARHGDIA	EOLA1	LITAF	PREP	TMEM128
ARHGDIB	EOLA2	LITAFD	PREPL	TMEM129
ARHGDIG	EOMES	LIX1	PREX1	TMEM130
ARHGFE1	EP300	LIX1L	PREX2	TMEM131
ARHGFE2	EP400	LKAAEAR1	PRF1	TMEM131L
ARHGFE3	EPAS1	LLCFC1	PRG2	TMEM132A
ARHGFE4	EPB41	LLGL1	PRG3	TMEM132B
ARHGFE5	EPB41L1	LLGL2	PRG4	TMEM132C
ARHGFE6	EPB41L2	LLPH	PRH1	TMEM132D
ARHGFE7	EPB41L3	LMAN1	PRH1-TAS2R14	TMEM132E
ARHGFE9	EPB41L4A	LMAN1L	PRH2	TMEM134
ARHGFE10	EPB41L4B	LMAN2	PRICKLE1	TMEM135
ARHGFE10L	EPB41L5	LMAN2L	PRICKLE2	TMEM136
ARHGFE11	EPB42	LMBR1	PRICKLE3	TMEM138
ARHGFE12	EPC1	LMBR1L	PRICKLE4	TMEM139
ARHGFE15	EPC2	LMBRD1	PRIM1	TMEM140
ARHGFE16	EPCAM	LMBRD2	PRIM2	TMEM141
ARHGFE17	EPDR1	LMCD1	PRIMA1	TMEM143
ARHGFE18	EPG5	LMF1	PRIMPOL	TMEM144
ARHGFE19	EPGN	LMF2	PRKAA1	TMEM145

ARHGEF25	EPHA1	LMLN	PRKAA2	TMEM147
ARHGEF26	EPHA2	LMLN2	PRKAB1	TMEM150A
ARHGEF28	EPHA3	LMNA	PRKAB2	TMEM150B
ARHGEF33	EPHA4	LMNB1	PRKACA	TMEM150C
ARHGEF35	EPHA5	LMNB2	PRKACB	TMEM151A
ARHGEF37	EPHA6	LMNTD1	PRKACG	TMEM151B
ARHGEF38	EPHA7	LMNTD2	PRKAG1	TMEM154
ARHGEF39	EPHA8	LMO1	PRKAG2	TMEM155
ARHGEF40	EPHA10	LMO2	PRKAG3	TMEM156
ARID1A	EPHB1	LMO3	PRKAR1A	TMEM158
ARID1B	EPHB2	LMO4	PRKAR1B	TMEM159
ARID2	EPHB3	LMO7	PRKAR2A	TMEM160
ARID3A	EPHB4	LMOD1	PRKAR2B	TMEM161A
ARID3B	EPHB6	LMOD2	PRKCA	TMEM161B
ARID3C	EPHX1	LMOD3	PRKCB	TMEM163
ARID4A	EPHX2	LMTK2	PRKCD	TMEM164
ARID4B	EPHX3	LMTK3	PRKCE	TMEM165
ARID5A	EPHX4	LMX1A	PRKCG	TMEM167A
ARID5B	EPM2A	LMX1B	PRKCH	TMEM167B
ARIH1	EPM2AIP1	LNP1	PRKCI	TMEM168
ARIH2	EPN1	LNPEP	PRKCQ	TMEM169
ARIH2OS	EPN2	LNPK	PRKCSH	TMEM170A
ARL1	EPN3	LNX1	PRKCZ	TMEM170B
ARL2	EPO	LNX2	PRKD1	TMEM171
ARL2BP	EPOP	LOC149373	PRKD2	TMEM173
ARL2-SNX15	EPOR	LOC150051	PRKD3	TMEM174
ARL3	EPPIN	LOC283710	PRKDC	TMEM175
ARL4A	EPPIN-WFDC6	LOC284898	PRKG1	TMEM176A
ARL4C	EPPK1	LOC388282	PRKG2	TMEM176B
ARL4D	EPRS	LOC388813	PRKN	TMEM177
ARL5A	EPRS1	LOC389199	PRKRA	TMEM178A
ARL5B	EPS8	LOC389602	PRKRIP1	TMEM178B
ARL5C	EPS8L1	LOC389895	PRKX	TMEM179
ARL6	EPS8L2	LOC390877	PRKY	TMEM179B
ARL6IP1	EPS8L3	LOC400499	PRL	TMEM181
ARL6IP4	EPS15	LOC441155	PRLH	TMEM182
ARL6IP5	EPS15L1	LOC643802	PRLHR	TMEM183A
ARL6IP6	EPSTI1	LOC644090	PRLR	TMEM183B
ARL8A	EPX	LOC645177	PRM1	TMEM184A
ARL8B	EPYC	LOC645188	PRM2	TMEM184B
ARL9	EQTN	LOC645202	PRM3	TMEM184C
ARL10	ERAL1	LOC647264	PRMT1	TMEM185A

ARL11	ERAP1	LOC728392	PRMT2	TMEM185B
ARL13A	ERAP2	LOC730098	PRMT3	TMEM186
ARL13B	ERAS	LOC730183	PRMT5	TMEM187
ARL14	ERBB2	LOC100128108	PRMT6	TMEM189
ARL14EP	ERBB3	LOC100128242	PRMT7	TMEM189- UBE2V1
ARL14EPL	ERBB4	LOC100129307	PRMT8	TMEM190
ARL15	ERBIN	LOC100129484	PRMT9	TMEM191B
ARL16	ERC1	LOC100129697	PRND	TMEM191C
ARL17A	ERC2	LOC100131107	PRNP	TMEM192
ARL17B	ERCC1	LOC100132202	PROB1	TMEM196
ARMC1	ERCC2	LOC100133315	PROC	TMEM198
ARMC2	ERCC3	LOC100287036	PROCA1	TMEM199
ARMC3	ERCC4	LOC100287896	PROCR	TMEM200A
ARMC4	ERCC5	LOC100289561	PRODH	TMEM200B
ARMC5	ERCC6	LOC100505502	PRODH2	TMEM200C
ARMC6	ERCC6L	LOC100505841	PROK1	TMEM201
ARMC7	ERCC6L2	LOC100506422	PROK2	TMEM202
ARMC8	ERCC8	LOC100996413	PROKR1	TMEM203
ARMC9	EREG	LOC100996842	PROKR2	TMEM204
ARMC10	ERF	LOC101059915	PROM1	TMEM205
ARMC12	ERFE	LOC101927572	PROM2	TMEM206
ARMCX1	ERFL	LOC101928120	PROP1	TMEM207
ARMCX2	ERG	LOC101928436	PRORP	TMEM208
ARMCX3	ERG28	LOC101928764	PRORY	TMEM209
ARMCX4	ERGIC1	LOC101928841	PROS1	TMEM210
ARMCX5	ERGIC2	LOC101929372	PROSER1	TMEM211
ARMCX5- GPRASP2	ERGIC3	LOC102723360	PROSER2	TMEM212
ARMCX6	ERH	LOC102723899	PROSER3	TMEM213
ARMH1	ERI1	LOC102723971	PROX1	TMEM214
ARMH2	ERI2	LOC102723996	PROX2	TMEM215
ARMH3	ERI3	LOC102724159	PROZ	TMEM216
ARMH4	ERICH1	LOC102724219	PRPF3	TMEM217
ARMS2	ERICH2	LOC102724265	PRPF4	TMEM218
ARMT1	ERICH3	LOC102724488	PRPF4B	TMEM219
ARNT	ERICH4	LOC102724843	PRPF6	TMEM220
ARNT2	ERICH5	LOC102724951	PRPF8	TMEM221
ARNTL	ERICH6	LOC102724957	PRPF18	TMEM222
ARNTL2	ERICH6B	LOC105369274	PRPF19	TMEM223
ARPC1A	ERLEC1	LOC105370980	PRPF31	TMEM225
ARPC1B	ERLIN1	LOC105372977	PRPF38A	TMEM225B
ARPC2	ERLIN2	LOC105376731	PRPF38B	TMEM229A

ARPC3	ERMAP	LOC105378696	PRPF39	TMEM229B
ARPC4	ERMARD	LOC105378979	PRPF40A	TMEM230
ARPC4-TTLL3	ERMN	LOC107984974	PRPF40B	TMEM231
ARPC5	ERMP1	LOC107986453	PRPH	TMEM232
ARPC5L	ERN1	LOC110117498	PRPH2	TMEM233
ARPIN	ERN2	LOC110117498-PIK3R3	PRPS1	TMEM234
ARPIN-AP3S2	ERO1A	LOC112577516	PRPS1L1	TMEM235
ARPP19	ERO1B	LOC112577592	PRPS2	TMEM236
ARPP21	ERP27	LOC112694756	PRPSAP1	TMEM237
ARR3	ERP29	LOC114483834	PRPSAP2	TMEM238
ARRB1	ERP44	LOC114841035	PRR3	TMEM238L
ARRB2	ERRFI1	LOC114841037	PRR4	TMEM239
ARRDC1	ERV3-1	LONP1	PRR5	TMEM240
ARRDC2	ERV3-1-ZNF117	LONP2	PRR5L	TMEM241
ARRDC3	ERVFRD-1	LONRF1	PRR5-ARHGAP8	TMEM242
ARRDC4	ERVH48-1	LONRF2	PRR7	TMEM243
ARRDC5	ERVK3-1	LONRF3	PRR9	TMEM244
ARSA	ERVMER34-1	LOR	PRR11	TMEM245
ARSB	ERVV-1	LORICRIN	PRR12	TMEM246
ARSD	ERVV-2	LOX	PRR13	TMEM247
ARSE	ERVW-1	LOXHD1	PRR14	TMEM248
ARSF	ESAM	LOXL1	PRR14L	TMEM249
ARSG	ESCO1	LOXL2	PRR15	TMEM250
ARSH	ESCO2	LOXL3	PRR15L	TMEM251
ARSI	ESD	LOXL4	PRR16	TMEM252
ARSJ	ESF1	LPA	PRR18	TMEM253
ARSK	ESM1	LPAR1	PRR19	TMEM254
ARSL	ESPL1	LPAR2	PRR20A	TMEM255A
ART1	ESPN	LPAR3	PRR20B	TMEM255B
ART3	ESPNL	LPAR4	PRR20C	TMEM256
ART4	ESR1	LPAR5	PRR20D	TMEM256-PLSCR3
ART5	ESR2	LPAR6	PRR20E	TMEM258
ARTN	ESRP1	LPCAT1	PRR20G	TMEM259
ARV1	ESRP2	LPCAT2	PRR22	TMEM260
ARVCF	ESRRA	LPCAT3	PRR23A	TMEM262
ARX	ESRRB	LPCAT4	PRR23B	TMEM263
AS3MT	ESRRG	LPGAT1	PRR23C	TMEM265
ASAH1	ESS2	LPIN1	PRR23D1	TMEM266
ASAH2	ESX1	LPIN2	PRR23D2	TMEM267
ASAH2B	ESYT1	LPIN3	PRR25	TMEM268
ASAP1	ESYT2	LPL	PRR26	TMEM269



ASAP2	ESYT3	LPO	PRR27	TMEM270
ASAP3	ETAA1	LPP	PRR29	TMEM271
ASB1	ETDA	LPXN	PRR30	TMEM272
ASB2	ETDB	LRAT	PRR32	TMEM273
ASB3	ETDC	LRATD1	PRR33	TMEM275
ASB4	ETF1	LRATD2	PRR34	TMF1
ASB5	ETFA	LRBA	PRR35	TMIE
ASB6	ETFB	LRCH1	PRR36	TMIGD1
ASB7	ETFBKMT	LRCH2	PRRC1	TMIGD2
ASB8	ETFDH	LRCH3	PRRC2A	TMIGD3
ASB9	ETFRF1	LRCH4	PRRC2B	TMLHE
ASB10	ETHE1	LRCOL1	PRRC2C	TMOD1
ASB11	ETNK1	LRFN1	PRRG1	TMOD2
ASB12	ETNK2	LRFN2	PRRG2	TMOD3
ASB13	ETNPPL	LRFN3	PRRG3	TMOD4
ASB14	ETS1	LRFN4	PRRG4	TMPO
ASB15	ETS2	LRFN5	PRRT1	TMPPE
ASB16	ETV1	LRG1	PRRT1B	TMPRSS2
ASB17	ETV2	LRGUK	PRRT2	TMPRSS3
ASB18	ETV3	LRIF1	PRRT3	TMPRSS4
ASCC1	ETV3L	LRIG1	PRRT4	TMPRSS5
ASCC2	ETV4	LRIG2	PRRX1	TMPRSS6
ASCC3	ETV5	LRIG3	PRRX2	TMPRSS7
ASCL1	ETV6	LRIT1	PRSS1	TMPRSS9
ASCL2	ETV7	LRIT2	PRSS2	TMPRSS11A
ASCL3	EVA1A	LRIT3	PRSS3	TMPRSS11B
ASCL4	EVA1B	LRMDA	PRSS8	TMPRSS11D
ASCL5	EVA1C	LRMP	PRSS12	TMPRSS11E
ASDURF	EVC	LRP1	PRSS16	TMPRSS11F
ASF1A	EVC2	LRP1B	PRSS21	TMPRSS12
ASF1B	EVI2A	LRP2	PRSS22	TMPRSS13
ASGR1	EVI2B	LRP2BP	PRSS23	TMPRSS15
ASGR2	EVI5	LRP3	PRSS27	TMSB4X
ASH1L	EVI5L	LRP4	PRSS33	TMSB4Y
ASH2L	EVL	LRP5	PRSS35	TMSB10
ASIC1	EVPL	LRP5L	PRSS36	TMSB15A
ASIC2	EVPLL	LRP6	PRSS37	TMSB15B
ASIC3	EVX1	LRP8	PRSS38	TMTC1
ASIC4	EVX2	LRP10	PRSS41	TMTC2
ASIC5	EWSR1	LRP11	PRSS42	TMTC3
ASIP	EXD1	LRP12	PRSS45	TMTC4
ASL	EXD2	LRPAP1	PRSS45P	TMUB1

ASMT	EXD3	LRPPRC	PRSS47	TMUB2
ASMTL	EXO1	LRR1	PRSS48	TMX1
ASNA1	EXO5	LRRC1	PRSS50	TMX2
ASNS	EXOC1	LRRC2	PRSS51	TMX3
ASNSD1	EXOC1L	LRRC3	PRSS53	TMX4
ASPA	EXOC2	LRRC3B	PRSS54	TNC
ASPDH	EXOC3	LRRC3C	PRSS55	TNF
ASPG	EXOC3L1	LRRC4	PRSS56	TNFAIP1
ASPH	EXOC3L2	LRRC4B	PRSS57	TNFAIP2
ASPHD1	EXOC3L4	LRRC4C	PRSS58	TNFAIP3
ASPHD2	EXOC4	LRRC6	PRTFDC1	TNFAIP6
ASPM	EXOC5	LRRC7	PRTG	TNFAIP8
ASPN	EXOC6	LRRC8A	PRTN3	TNFAIP8L1
ASPRV1	EXOC6B	LRRC8B	PRUNE1	TNFAIP8L2
ASPSCR1	EXOC7	LRRC8C	PRUNE2	TNFAIP8L2-SCNM1
ASRGL1	EXOC8	LRRC8D	PRX	TNFAIP8L3
ASS1	EXOG	LRRC8E	PRXL2A	TNFRSF1A
ASTE1	EXOSC1	LRRC9	PRXL2B	TNFRSF1B
ASTL	EXOSC2	LRRC10	PRXL2C	TNFRSF4
ASTN1	EXOSC3	LRRC10B	PRY	TNFRSF6B
ASTN2	EXOSC4	LRRC14	PRY2	TNFRSF8
ASXL1	EXOSC5	LRRC14B	PRYP3	TNFRSF9
ASXL2	EXOSC6	LRRC15	PSAP	TNFRSF10A
ASXL3	EXOSC7	LRRC17	PSAPL1	TNFRSF10B
ASZ1	EXOSC8	LRRC18	PSAT1	TNFRSF10C
ATAD1	EXOSC9	LRRC19	PSCA	TNFRSF10D
ATAD2	EXOSC10	LRRC20	PSD	TNFRSF11A
ATAD2B	EXPH5	LRRC23	PSD2	TNFRSF11B
ATAD3A	EXT1	LRRC24	PSD3	TNFRSF12A
ATAD3B	EXT2	LRRC25	PSD4	TNFRSF13B
ATAD3C	EXTL1	LRRC26	PSEN1	TNFRSF13C
ATAD5	EXTL2	LRRC27	PSEN2	TNFRSF14
ATAT1	EXTL3	LRRC28	PSENN	TNFRSF17
ATCAY	EYA1	LRRC29	PSG1	TNFRSF18
ATE1	EYA2	LRRC30	PSG2	TNFRSF19
ATF1	EYA3	LRRC31	PSG3	TNFRSF21
ATF2	EYA4	LRRC32	PSG4	TNFRSF25
ATF3	EYS	LRRC34	PSG5	TNFSF4
ATF4	EZH1	LRRC36	PSG6	TNFSF8
ATF5	EZH2	LRRC37A	PSG7	TNFSF9
ATF6	EZH1P	LRRC37A2	PSG8	TNFSF10

ATF6B	EZR	LRRC37A3	PSG9	TNFSF11
ATF7	F2	LRRC37B	PSG11	TNFSF12
ATF7IP	F2R	LRRC38	PSIP1	TNFSF12- TNFSF13
ATF7IP2	F2RL1	LRRC39	PSKH1	TNFSF13
ATF7-NPFF	F2RL2	LRRC40	PSKH2	TNFSF13B
ATG2A	F2RL3	LRRC41	PSMA1	TNFSF14
ATG2B	F3	LRRC42	PSMA2	TNFSF15
ATG3	F5	LRRC43	PSMA3	TNFSF18
ATG4A	F7	LRRC45	PSMA4	TNIK
ATG4B	F8	LRRC46	PSMA5	TNIP1
ATG4C	F8A1	LRRC47	PSMA6	TNIP2
ATG4D	F8A2	LRRC49	PSMA7	TNIP3
ATG5	F8A3	LRRC52	PSMA8	TNK1
ATG7	F9	LRRC53	PSMB1	TNK2
ATG9A	F10	LRRC55	PSMB2	TNKS
ATG9B	F11	LRRC56	PSMB3	TNKS1BP1
ATG10	F11R	LRRC57	PSMB4	TNKS2
ATG12	F12	LRRC58	PSMB5	TNMD
ATG13	F13A1	LRRC59	PSMB6	TNN
ATG14	F13B	LRRC61	PSMB7	TNNC1
ATG16L1	FA2H	LRRC63	PSMB8	TNNC2
ATG16L2	FAAH	LRRC66	PSMB9	TNNI1
ATG101	FAAH2	LRRC69	PSMB10	TNNI2
ATIC	FAAP20	LRRC70	PSMB11	TNNI3
ATL1	FAAP24	LRRC71	PSMC1	TNNI3K
ATL2	FAAP100	LRRC72	PSMC2	TNNT1
ATL3	FABP1	LRRC73	PSMC3	TNNT2
ATM	FABP2	LRRC74A	PSMC3IP	TNNT3
ATMIN	FABP3	LRRC74B	PSMC4	TNP1
ATN1	FABP4	LRRC75A	PSMC5	TNP2
ATOH1	FABP5	LRRC75B	PSMC6	TNPO1
ATOH7	FABP6	LRRC1	PSMD1	TNPO2
ATOH8	FABP7	LRRD1	PSMD2	TNPO3
ATOX1	FABP9	LRRFIP1	PSMD3	TNR
ATP1A1	FABP12	LRRFIP2	PSMD4	TNRC6A
ATP1A2	FADD	LRRIQ1	PSMD5	TNRC6B
ATP1A3	FADS1	LRRIQ3	PSMD6	TNRC6C
ATP1A4	FADS2	LRRIQ4	PSMD7	TNRC18
ATP1B1	FADS3	LRRK1	PSMD8	TNS1
ATP1B2	FADS6	LRRK2	PSMD9	TNS2
ATP1B3	FAF1	LRRN1	PSMD10	TNS3

ATP1B4	FAF2	LRRN2	PSMD11	TNS4
ATP2A1	FAH	LRRN3	PSMD12	TNXB
ATP2A2	FAHD1	LRRN4	PSMD13	TOB1
ATP2A3	FAHD2A	LRRN4CL	PSMD14	TOB2
ATP2B1	FAHD2B	LRRTM1	PSME1	TOE1
ATP2B2	FAIM	LRRTM2	PSME2	TOGARAM1
ATP2B3	FAIM2	LRRTM3	PSME3	TOGARAM2
ATP2B4	FAM3A	LRRTM4	PSME3IP1	TOLLIP
ATP2C1	FAM3B	LRSAM1	PSME4	TOM1
ATP2C2	FAM3C	LRTM1	PSMF1	TOM1L1
ATP4A	FAM3D	LRTM2	PSMG1	TOM1L2
ATP4B	FAM8A1	LRTOMT	PSMG2	TOMM5
ATP5F1A	FAM9A	LRWD1	PSMG3	TOMM6
ATP5F1B	FAM9B	LSAMP	PSMG4	TOMM7
ATP5F1C	FAM9C	LSG1	PSORS1C1	TOMM20
ATP5F1D	FAM13A	LSM1	PSORS1C2	TOMM20L
ATP5F1E	FAM13B	LSM2	PSPC1	TOMM22
ATP5IF1	FAM13C	LSM3	PSPH	TOMM34
ATP5MC1	FAM19A1	LSM4	PSPN	TOMM40
ATP5MC2	FAM19A2	LSM5	PSRC1	TOMM40L
ATP5MC3	FAM19A3	LSM6	PSTK	TOMM70
ATP5MD	FAM19A4	LSM7	PSTPIP1	TONSL
ATP5ME	FAM19A5	LSM8	PSTPIP2	TOP1
ATP5MF	FAM20A	LSM10	PTAFR	TOP1MT
ATP5MF-PTCD1	FAM20B	LSM11	PTAR1	TOP2A
ATP5MG	FAM20C	LSM12	PTBP1	TOP2B
ATP5MGL	FAM24A	LSM14A	PTBP2	TOP3A
ATP5MPL	FAM24B	LSM14B	PTBP3	TOP3B
ATP5PB	FAM25A	LSMEM1	PTCD1	TOPAZ1
ATP5PD	FAM25C	LSMEM2	PTCD2	TOPBP1
ATP5PF	FAM25E	LSP1	PTCD3	TOPORS
ATP5PO	FAM25G	LSR	PTCH1	TOR1A
ATP5S	FAM32A	LSS	PTCH2	TOR1AIP1
ATP6AP1	FAM43A	LST1	PTCHD1	TOR1AIP2
ATP6AP1L	FAM43B	LTA	PTCHD3	TOR1B
ATP6AP2	FAM45A	LTA4H	PTCHD4	TOR2A
ATP6V0A1	FAM47A	LTB	PTCRA	TOR3A
ATP6V0A2	FAM47B	LTB4R	PTDSS1	TOR4A
ATP6V0A4	FAM47C	LTB4R2	PTDSS2	TOX
ATP6V0B	FAM47E	LTBP1	PTEN	TOX2
ATP6V0C	FAM47E-STBD1	LTBP2	PTER	TOX3
ATP6V0D1	FAM49A	LTBP3	PTF1A	TOX4

ATP6V0D2	FAM49B	LTBP4	PTGDR	TP53
ATP6V0E1	FAM50A	LTBR	PTGDR2	TP53AIP1
ATP6V0E2	FAM50B	LTC4S	PTGDS	TP53BP1
ATP6V1A	FAM53A	LTF	PTGER1	TP53BP2
ATP6V1B1	FAM53B	LTK	PTGER2	TP53I3
ATP6V1B2	FAM53C	LTN1	PTGER3	TP53I11
ATP6V1C1	FAM57A	LTO1	PTGER4	TP53I13
ATP6V1C2	FAM57B	LTV1	PTGES	TP53INP1
ATP6V1D	FAM69A	LUC7L	PTGES2	TP53INP2
ATP6V1E1	FAM69B	LUC7L2	PTGES3	TP53RK
ATP6V1E2	FAM69C	LUC7L3	PTGES3L	TP53TG3
ATP6V1F	FAM71A	LUM	PTGES3L- AARSD1	TP53TG3B
ATP6V1FNB	FAM71B	LURAP1	PTGFR	TP53TG3C
ATP6V1G1	FAM71C	LURAP1L	PTGFRN	TP53TG3D
ATP6V1G2	FAM71D	LUZP1	PTGIR	TP53TG3E
ATP6V1G2- DDX39B	FAM71E1	LUZP2	PTGIS	TP53TG3F
ATP6V1G3	FAM71E2	LUZP4	PTGR1	TP53TG5
ATP6V1H	FAM71F1	LUZP6	PTGR2	TP63
ATP7A	FAM71F2	LVRN	PTGS1	TP73
ATP7B	FAM72A	LXN	PTGS2	TPBG
ATP8A1	FAM72B	LY6D	PTH	TPBGL
ATP8A2	FAM72C	LY6E	PTH1R	TPCN1
ATP8B1	FAM72D	LY6G5B	PTH2	TPCN2
ATP8B2	FAM76A	LY6G5C	PTH2R	TPD52
ATP8B3	FAM76B	LY6G6C	PTHLH	TPD52L1
ATP8B4	FAM78A	LY6G6D	PTK2	TPD52L2
ATP9A	FAM78B	LY6G6E	PTK2B	TPD52L3
ATP9B	FAM81A	LY6G6F	PTK6	TPGS1
ATP10A	FAM81B	LY6G6F-LY6G6D	PTK7	TPGS2
ATP10B	FAM83A	LY6H	PTMA	TPH1
ATP10D	FAM83B	LY6K	PTMS	TPH2
ATP11A	FAM83C	LY6L	PTN	TPI1
ATP11B	FAM83D	LY9	PTOV1	TPK1
ATP11C	FAM83E	LY75	PTP4A1	TPM1
ATP12A	FAM83F	LY75-CD302	PTP4A2	TPM2
ATP13A1	FAM83G	LY86	PTP4A3	TPM3
ATP13A2	FAM83H	LY96	PTPA	TPM4
ATP13A3	FAM84A	LYAR	PTPDC1	TPMT
ATP13A4	FAM84B	LYG1	PTPMT1	TPO
ATP13A5	FAM86B1	LYG2	PTPN1	TPP1
ATP23	FAM86B2	LYL1	PTPN2	TPP2

ATPAF1	FAM86C1	LYN	PTPN3	TPPP
ATPAF2	FAM89A	LYNX1	PTPN4	TPPP2
ATPCKMT	FAM89B	LYNX1-SLURP2	PTPN5	TPPP3
ATR	FAM90A1	LYPD1	PTPN6	TPR
ATRAID	FAM90A26	LYPD2	PTPN7	TPRA1
ATRIP	FAM91A1	LYPD3	PTPN9	TPRG1
ATRN	FAM92A	LYPD4	PTPN11	TPRG1L
ATRN1	FAM92B	LYPD5	PTPN12	TPRKB
ATRX	FAM95C	LYPD6	PTPN13	TPRN
ATXN1	FAM98A	LYPD6B	PTPN14	TPRX1
ATXN1L	FAM98B	LYPD8	PTPN18	TPSAB1
ATXN2	FAM98C	LYPLA1	PTPN20	TPSB2
ATXN2L	FAM102A	LYPLA2	PTPN21	TPSD1
ATXN3	FAM102B	LYPLAL1	PTPN22	TPSG1
ATXN3L	FAM104A	LYRM1	PTPN23	TPST1
ATXN7	FAM104B	LYRM2	PTPRA	TPST2
ATXN7L1	FAM106A	LYRM4	PTPRB	TPT1
ATXN7L2	FAM106B	LYRM7	PTPRC	TPTE
ATXN7L3	FAM106C	LYRM9	PTPRCAP	TPTE2
ATXN7L3B	FAM107A	LYSMD1	PTPRD	TPTEP2-CSNK1E
ATXN10	FAM107B	LYSMD2	PTPRE	TPX2
AUH	FAM110A	LYSMD3	PTPRF	TRA2A
AUNIP	FAM110B	LYSMD4	PTPRG	TRA2B
AUP1	FAM110C	LYST	PTPRH	TRABD
AURKA	FAM110D	LYVE1	PTPRJ	TRABD2A
AURKAIP1	FAM111A	LYZ	PTPRK	TRABD2B
AURKB	FAM111B	LYZL1	PTPRM	TRAC
AURKC	FAM114A1	LYZL2	PTPRN	TRADD
AUTS2	FAM114A2	LYZL4	PTPRN2	TRAF1
AVEN	FAM117A	LYZL6	PTPRO	TRAF2
AVIL	FAM117B	LZIC	PTPRQ	TRAF3
AVL9	FAM118A	LZTFL1	PTPRR	TRAF3IP1
AVP	FAM118B	LZTR1	PTPRS	TRAF3IP2
AVPI1	FAM120A	LZTS1	PTPRT	TRAF3IP3
AVPR1A	FAM120AOS	LZTS2	PTPRU	TRAF4
AVPR1B	FAM120B	LZTS3	PTPRZ1	TRAF5
AVPR2	FAM120C	M1AP	PTRH1	TRAF6
AWAT1	FAM122A	M6PR	PTRH2	TRAF7
AWAT2	FAM122B	MAATS1	PTRHD1	TRAFD1
AXDND1	FAM122C	MAB21L1	PTS	TRAIP
AXIN1	FAM124A	MAB21L2	PTTG1	TRAJ1
AXIN2	FAM124B	MAB21L3	PTTG1P	TRAJ2

AXL	FAM126A	MAB21L4	PTTG2	TRAJ3
AZGP1	FAM126B	MACC1	PTX3	TRAJ4
AZI2	FAM129A	MACF1	PTX4	TRAJ5
AZIN1	FAM129B	MACIR	PUDP	TRAJ6
AZIN2	FAM129C	MACO1	PUF60	TRAJ7
AZU1	FAM131A	MACROD1	PUM1	TRAJ8
B2M	FAM131B	MACROD2	PUM2	TRAJ9
B3GALNT1	FAM131C	MACROH2A1	PUM3	TRAJ10
B3GALNT2	FAM133A	MACROH2A2	PURA	TRAJ11
B3GALT1	FAM133B	MAD1L1	PURB	TRAJ12
B3GALT2	FAM135A	MAD2L1	PURG	TRAJ13
B3GALT4	FAM135B	MAD2L1BP	PUS1	TRAJ14
B3GALT5	FAM136A	MAD2L2	PUS3	TRAJ15
B3GALT6	FAM149A	MADCAM1	PUS7	TRAJ16
B3GAT1	FAM149B1	MADD	PUS7L	TRAJ17
B3GAT2	FAM151A	MAEA	PUS10	TRAJ18
B3GAT3	FAM151B	MAEL	PUSL1	TRAJ19
B3GLCT	FAM153A	MAF	PVALB	TRAJ20
B3GNT2	FAM153B	MAF1	PVALEF	TRAJ21
B3GNT3	FAM153C	MAFA	PVR	TRAJ22
B3GNT4	FAM155A	MAFB	PVRIG	TRAJ23
B3GNT5	FAM155B	MAFF	PWP1	TRAJ24
B3GNT6	FAM156A	MAFG	PWP2	TRAJ25
B3GNT7	FAM156B	MAFK	PWWP2A	TRAJ26
B3GNT8	FAM160A1	MAG	PWWP2B	TRAJ27
B3GNT9	FAM160A2	MAGEA1	PWWP3A	TRAJ28
B3GNT10	FAM160B1	MAGEA2	PWWP3B	TRAJ29
B3GNTL1	FAM160B2	MAGEA2B	PXDC1	TRAJ30
B4GALNT1	FAM161A	MAGEA3	PXDN	TRAJ31
B4GALNT2	FAM161B	MAGEA4	PXDNL	TRAJ32
B4GALNT3	FAM162A	MAGEA5	PXK	TRAJ33
B4GALNT4	FAM162B	MAGEA6	PXMP2	TRAJ34
B4GALT1	FAM163A	MAGEA8	PXMP4	TRAJ35
B4GALT2	FAM163B	MAGEA9	PXN	TRAJ36
B4GALT3	FAM166A	MAGEA9B	PXT1	TRAJ37
B4GALT4	FAM166B	MAGEA10	PXYLP1	TRAJ38
B4GALT5	FAM166C	MAGEA10- MAGEA5	PYCARD	TRAJ39
B4GALT6	FAM167A	MAGEA11	PYCR1	TRAJ40
B4GALT7	FAM167B	MAGEA12	PYCR2	TRAJ41
B4GAT1	FAM168A	MAGEB1	PYCR3	TRAJ42
B9D1	FAM168B	MAGEB2	PYDC1	TRAJ43

B9D2	FAM169A	MAGEB3	PYDC2	TRAJ44
BAALC	FAM169B	MAGEB4	PYDC5	TRAJ45
BAAT	FAM170A	MAGEB5	PYGB	TRAJ46
BABAM1	FAM170B	MAGEB6	PYGL	TRAJ47
BABAM2	FAM171A1	MAGEB6B	PYGM	TRAJ48
BACE1	FAM171A2	MAGEB10	PYGO1	TRAJ49
BACE2	FAM171B	MAGEB16	PYGO2	TRAJ50
BACH1	FAM172A	MAGEB17	PYHIN1	TRAJ52
BACH2	FAM173A	MAGEB18	PYM1	TRAJ53
BAD	FAM173B	MAGEC1	PYROXD1	TRAJ54
BAG1	FAM174A	MAGEC2	PYROXD2	TRAJ56
BAG2	FAM174B	MAGEC3	PYURF	TRAJ57
BAG3	FAM174C	MAGED1	PYY	TRAJ58
BAG4	FAM177A1	MAGED2	PZP	TRAJ59
BAG5	FAM177B	MAGED4	QARS	TRAJ61
BAG6	FAM178B	MAGED4B	QARS1	TRAK1
BAGE2	FAM180A	MAGEE1	QDPR	TRAK2
BAHCC1	FAM180B	MAGEE2	QKI	TRAM1
BAHD1	FAM181A	MAGEF1	QPCT	TRAM1L1
BAIAP2	FAM181B	MAGEH1	QPCTL	TRAM2
BAIAP2L1	FAM183A	MAGEL2	QPRT	TRANK1
BAIAP2L2	FAM184A	MAGI1	QRF	TRAP1
BAIAP3	FAM184B	MAGI2	QRFPR	TRAPPC1
BAK1	FAM185A	MAGI3	QRICH1	TRAPPC2
BAMBI	FAM186A	MAGIX	QRICH2	TRAPPC2B
BANF1	FAM186B	MAGOH	QRSL1	TRAPPC2L
BANF2	FAM187A	MAGOHB	QSER1	TRAPPC3
BANK1	FAM187B	MAGT1	QSOX1	TRAPPC3L
BANP	FAM189A1	MAIP1	QSOX2	TRAPPC4
BAP1	FAM189A2	MAJIN	QTRT1	TRAPPC5
BARD1	FAM189B	MAK	QTRT2	TRAPPC6A
BARHL1	FAM192A	MAK16	R3HCC1	TRAPPC6B
BARHL2	FAM193A	MAL	R3HCC1L	TRAPPC8
BARX1	FAM193B	MAL2	R3HDM1	TRAPPC9
BARX2	FAM198A	MALL	R3HDM2	TRAPPC10
BASP1	FAM198B	MALRD1	R3HDM4	TRAPPC11
BATF	FAM199X	MALSU1	R3HDML	TRAPPC12
BATF2	FAM200A	MALT1	RAB1A	TRAPPC13
BATF3	FAM200B	MAMDC2	RAB1B	TRARG1
BAX	FAM204A	MAMDC4	RAB2A	TRAT1
BAZ1A	FAM205A	MAML1	RAB2B	TRAV1-1
BAZ1B	FAM205C	MAML2	RAB3A	TRAV1-2



BAZ2A	FAM206A	MAML3	RAB3B	TRAV2
BAZ2B	FAM207A	MAMLD1	RAB3C	TRAV3
BBC3	FAM208A	MAMSTR	RAB3D	TRAV4
BBIP1	FAM208B	MAN1A1	RAB3GAP1	TRAV5
BBOF1	FAM209A	MAN1A2	RAB3GAP2	TRAV6
BBOX1	FAM209B	MAN1B1	RAB3IL1	TRAV7
BBS1	FAM210A	MAN1C1	RAB3IP	TRAV8-1
BBS2	FAM210B	MAN2A1	RAB4A	TRAV8-2
BBS4	FAM213A	MAN2A2	RAB4B	TRAV8-3
BBS5	FAM214A	MAN2B1	RAB4B-EGLN2	TRAV8-4
BBS7	FAM214B	MAN2B2	RAB5A	TRAV8-6
BBS9	FAM216A	MAN2C1	RAB5B	TRAV8-7
BBS10	FAM216B	MANBA	RAB5C	TRAV9-1
BBS12	FAM217A	MANBAL	RAB5IF	TRAV9-2
BBX	FAM217B	MANEA	RAB6A	TRAV10
BCAM	FAM218A	MANEAL	RAB6B	TRAV12-1
BCAN	FAM219A	MANF	RAB6C	TRAV12-2
BCAP29	FAM219B	MANSC1	RAB6D	TRAV12-3
BCAP31	FAM220A	MANSC4	RAB7A	TRAV13-1
BCAR1	FAM221A	MAOA	RAB7B	TRAV13-2
BCAR3	FAM221B	MAOB	RAB8A	TRAV14DV4
BCAS1	FAM222A	MAP1A	RAB8B	TRAV16
BCAS2	FAM222B	MAP1B	RAB9A	TRAV17
BCAS3	FAM227A	MAP1LC3A	RAB9B	TRAV18
BCAS4	FAM227B	MAP1LC3B	RAB10	TRAV19
BCAT1	FAM228A	MAP1LC3B2	RAB11A	TRAV20
BCAT2	FAM228B	MAP1LC3C	RAB11B	TRAV21
BCCIP	FAM229A	MAP1S	RAB11FIP1	TRAV22
BCDIN3D	FAM229B	MAP2	RAB11FIP2	TRAV23DV6
BCHE	FAM234A	MAP2K1	RAB11FIP3	TRAV24
BCKDHA	FAM234B	MAP2K2	RAB11FIP4	TRAV25
BCKDHB	FAM236A	MAP2K3	RAB11FIP5	TRAV26-1
BCKDK	FAM236B	MAP2K4	RAB12	TRAV26-2
BCL2	FAM236C	MAP2K5	RAB13	TRAV27
BCL2A1	FAM236D	MAP2K6	RAB14	TRAV29DV5
BCL2L1	FAM237A	MAP2K7	RAB15	TRAV30
BCL2L2	FAM237B	MAP3K1	RAB17	TRAV34
BCL2L2-PABPN1	FAM240A	MAP3K2	RAB18	TRAV35
BCL2L10	FAM240B	MAP3K3	RAB19	TRAV36DV7
BCL2L11	FAM240C	MAP3K4	RAB20	TRAV38-1
BCL2L12	FAM241A	MAP3K5	RAB21	TRAV38-2DV8
BCL2L13	FAM241B	MAP3K6	RAB22A	TRAV39

BCL2L14	FAM243A	MAP3K7	RAB23	TRAV40
BCL2L15	FAM243B	MAP3K7CL	RAB24	TRAV41
BCL3	FAN1	MAP3K8	RAB25	TRBC1
BCL6	FANCA	MAP3K9	RAB26	TRBC2
BCL6B	FANCB	MAP3K10	RAB27A	TRBD1
BCL7A	FANCC	MAP3K11	RAB27B	TRBD2
BCL7B	FANCD2	MAP3K12	RAB28	TRBJ1-1
BCL7C	FANCD2OS	MAP3K13	RAB29	TRBJ1-2
BCL9	FANCE	MAP3K14	RAB30	TRBJ1-3
BCL9L	FANCF	MAP3K15	RAB31	TRBJ1-4
BCL10	FANCG	MAP3K19	RAB32	TRBJ1-5
BCL11A	FANCI	MAP3K20	RAB33A	TRBJ1-6
BCL11B	FANCL	MAP3K21	RAB33B	TRBJ2-1
BCLAF1	FANCM	MAP4	RAB34	TRBJ2-2
BCLAF3	FANK1	MAP4K1	RAB35	TRBJ2-2P
BCO1	FAP	MAP4K2	RAB36	TRBJ2-3
BCO2	FAR1	MAP4K3	RAB37	TRBJ2-4
BCOR	FAR2	MAP4K4	RAB38	TRBJ2-5
BCORL1	FARP1	MAP4K5	RAB39A	TRBJ2-6
BCR	FARP2	MAP6	RAB39B	TRBJ2-7
BCS1L	FARS2	MAP6D1	RAB40A	TRBV2
BDH1	FARSA	MAP7	RAB40AL	TRBV3-1
BDH2	FARSB	MAP7D1	RAB40B	TRBV4-1
BDKRB1	FAS	MAP7D2	RAB40C	TRBV4-2
BDKRB2	FASLG	MAP7D3	RAB41	TRBV5-1
BDNF	FASN	MAP9	RAB42	TRBV5-3
BDP1	FASTK	MAP10	RAB43	TRBV5-4
BEAN1	FASTKD1	MAP11	RAB44	TRBV5-5
BECN1	FASTKD2	MAPK1	RABAC1	TRBV5-6
BECN2	FASTKD3	MAPK1IP1L	RABEP1	TRBV5-7
BEGAIN	FASTKD5	MAPK3	RABEP2	TRBV6-1
BEND2	FAT1	MAPK4	RABEPK	TRBV6-2
BEND3	FAT2	MAPK6	RABGAP1	TRBV6-3
BEND4	FAT3	MAPK7	RABGAP1L	TRBV6-4
BEND5	FAT4	MAPK8	RABGEF1	TRBV6-5
BEND6	FATE1	MAPK8IP1	RABGGTA	TRBV6-6
BEND7	FAU	MAPK8IP2	RABGGTB	TRBV6-7
BEST1	FAXC	MAPK8IP3	RABIF	TRBV6-8
BEST2	FAXDC2	MAPK9	RABL2A	TRBV7-1
BEST3	FBF1	MAPK10	RABL2B	TRBV7-2
BEST4	FBH1	MAPK11	RABL3	TRBV7-3
BET1	FBL	MAPK12	RABL6	TRBV7-4

BET1L	FBLIM1	MAPK13	RAC1	TRBV7-6
BEX1	FBLL1	MAPK14	RAC2	TRBV7-7
BEX2	FBLN1	MAPK15	RAC3	TRBV7-9
BEX3	FBLN2	MAPKAP1	RACGAP1	TRBV9
BEX4	FBLN5	MAPKAPK2	RACK1	TRBV10-1
BEX5	FBLN7	MAPKAPK3	RAD1	TRBV10-2
BFAR	FBN1	MAPKAPK5	RAD9A	TRBV10-3
BFSP1	FBN2	MAPKBP1	RAD9B	TRBV11-1
BFSP2	FBN3	MAPRE1	RAD17	TRBV11-2
BGLAP	FBP1	MAPRE2	RAD18	TRBV11-3
BGN	FBP2	MAPRE3	RAD21	TRBV12-3
BHLHA9	FBRS	MAPT	RAD21L1	TRBV12-4
BHLHA15	FBRSL1	MARC1	RAD23A	TRBV12-5
BHLHB9	FBXL2	MARC2	RAD23B	TRBV13
BHLHE22	FBXL3	MARCH1	RAD50	TRBV14
BHLHE23	FBXL4	MARCH2	RAD51	TRBV15
BHLHE40	FBXL5	MARCH3	RAD51AP1	TRBV16
BHLHE41	FBXL6	MARCH4	RAD51AP2	TRBV17
BHMG1	FBXL7	MARCH5	RAD51B	TRBV18
BHMT	FBXL8	MARCH6	RAD51C	TRBV19
BHMT2	FBXL12	MARCH7	RAD51D	TRBV20OR9-2
BICC1	FBXL13	MARCH8	RAD52	TRBV20-1
BICD1	FBXL14	MARCH9	RAD54B	TRBV23-1
BICD2	FBXL15	MARCH10	RAD54L	TRBV24-1
BICDL1	FBXL16	MARCH11	RAD54L2	TRBV25-1
BICDL2	FBXL17	MARCHF1	RADIL	TRBV27
BICRA	FBXL18	MARCHF2	RADX	TRBV28
BICRAL	FBXL19	MARCHF3	RAE1	TRBV29-1
BID	FBXL20	MARCHF4	RAET1E	TRBV30
BIK	FBXL22	MARCHF5	RAET1G	TRDC
BIN1	FBXO2	MARCHF6	RAET1L	TRDD1
BIN2	FBXO3	MARCHF7	RAF1	TRDD2
BIN3	FBXO4	MARCHF8	RAG1	TRDD3
BIRC2	FBXO5	MARCHF9	RAG2	TRDJ1
BIRC3	FBXO6	MARCHF10	RAI1	TRDJ2
BIRC5	FBXO7	MARCHF11	RAI2	TRDJ3
BIRC6	FBXO8	MARCKS	RAI14	TRDJ4
BIRC7	FBXO9	MARCKSL1	RALA	TRDMT1
BIRC8	FBXO10	MARCO	RALB	TRDN
BIVM	FBXO11	MARCOL	RALBP1	TRDV1
BIVM-ERCC5	FBXO15	MARF1	RALGAPA1	TRDV2
BLACAT1	FBXO16	MARK1	RALGAPA2	TRDV3

BLCAP	FBXO17	MARK2	RALGAPB	TREH
BLID	FBXO21	MARK3	RALGDS	TREM1
BLK	FBXO22	MARK4	RALGPS1	TREM2
BLM	FBXO24	MARS	RALGPS2	TREML1
BLMH	FBXO25	MARS1	RALY	TREML2
BLNK	FBXO27	MARS2	RALYL	TREML4
BLOC1S1	FBXO28	MARVELD1	RAMAC	TRERF1
BLOC1S2	FBXO30	MARVELD2	RAMACL	TREX1
BLOC1S3	FBXO31	MARVELD3	RAMP1	TREX2
BLOC1S4	FBXO32	MAS1	RAMP2	TRGC1
BLOC1S5	FBXO33	MAS1L	RAMP3	TRGC2
BLOC1S5- TXNDC5	FBXO34	MASP1	RAN	TRGJ1
BLOC1S6	FBXO36	MASP2	RANBP1	TRGJ2
BLVRA	FBXO38	MAST1	RANBP2	TRGJP
BLVRB	FBXO39	MAST2	RANBP3	TRGJP1
BLZF1	FBXO40	MAST3	RANBP3L	TRGJP2
BMERB1	FBXO41	MAST4	RANBP6	TRGV1
BMF	FBXO42	MASTL	RANBP9	TRGV2
BMI1	FBXO43	MAT1A	RANBP10	TRGV3
BMP1	FBXO44	MAT2A	RANBP17	TRGV4
BMP2	FBXO45	MAT2B	RANGAP1	TRGV5
BMP2K	FBXO46	MATK	RANGRF	TRGV8
BMP3	FBXO47	MATN1	RAP1A	TRGV9
BMP4	FBXO48	MATN2	RAP1B	TRGV10
BMP5	FBXW2	MATN3	RAP1GAP	TRGV11
BMP6	FBXW4	MATN4	RAP1GAP2	TRH
BMP7	FBXW5	MATR3	RAP1GDS1	TRHDE
BMP8A	FBXW7	MAU2	RAP2A	TRHR
BMP8B	FBXW8	MAVS	RAP2B	TRIAP1
BMP10	FBXW9	MAX	RAP2C	TRIB1
BMP15	FBXW10	MAZ	RAPGEF1	TRIB2
BMPER	FBXW11	MB	RAPGEF2	TRIB3
BMPR1A	FBXW12	MB21D2	RAPGEF3	TRIL
BMPR1B	FCAMR	MBD1	RAPGEF4	TRIM2
BMPR2	FCAR	MBD2	RAPGEF5	TRIM3
BMS1	FCER1A	MBD3	RAPGEF6	TRIM4
BMT2	FCER1G	MBD3L1	RAPGEFL1	TRIM5
BMX	FCER2	MBD3L2	RAPH1	TRIM6
BNC1	FCF1	MBD3L2B	RAPSN	TRIM6-TRIM34
BNC2	FCGBP	MBD3L3	RARA	TRIM7
BNIP1	FCGR1A	MBD3L4	RARB	TRIM8

BNIP2	FCGR1B	MBD3L5	RARG	TRIM9
BNIP3	FCGR2A	MBD4	RARRES1	TRIM10
BNIP3L	FCGR2B	MBD5	RARRES2	TRIM11
BNIP5	FCGR3A	MBD6	RARRES3	TRIM13
BNIPL	FCGR3B	MBIP	RARS	TRIM14
BOC	FCGRT	MBL2	RARS1	TRIM15
BOD1	FCHO1	MBLAC1	RARS2	TRIM16
BOD1L1	FCHO2	MBLAC2	RASA1	TRIM16L
BOD1L2	FCHSD1	MBNL1	RASA2	TRIM17
BOK	FCHSD2	MBNL2	RASA3	TRIM21
BOLA1	FCMR	MBNL3	RASA4	TRIM22
BOLA2	FCN1	MBOAT1	RASA4B	TRIM23
BOLA2B	FCN2	MBOAT2	RASAL1	TRIM24
BOLA2-SMG1P6	FCN3	MBOAT4	RASAL2	TRIM25
BOLA3	FCRL1	MBOAT7	RASAL3	TRIM26
BOLL	FCRL2	MBP	RASD1	TRIM27
BOP1	FCRL3	MBTD1	RASD2	TRIM28
BORA	FCRL4	MBTPS1	RASEF	TRIM29
BORCS5	FCRL5	MBTPS2	RASGEF1A	TRIM31
BORCS6	FCRL6	MC1R	RASGEF1B	TRIM32
BORCS7	FCRLA	MC2R	RASGEF1C	TRIM33
BORCS7-ASMT	FCRLB	MC3R	RASGRF1	TRIM34
BORCS8	FCSK	MC4R	RASGRF2	TRIM35
BORCS8-MEF2B	FDCSP	MC5R	RASGRP1	TRIM36
BPGM	FDFT1	MCAM	RASGRP2	TRIM37
BPHL	FDPS	MCAT	RASGRP3	TRIM38
BPI	FDX1	MCC	RASGRP4	TRIM39
BPIFA1	FDX2	MCCC1	RASIP1	TRIM39-RPP21
BPIFA2	FDXACB1	MCCC2	RASL10A	TRIM40
BPIFA3	FDXR	MCCD1	RASL10B	TRIM41
BPIFB1	FECH	MCEE	RASL11A	TRIM42
BPIFB2	FEM1A	MCEMP1	RASL11B	TRIM43
BPIFB3	FEM1B	MCF2	RASL12	TRIM43B
BPIFB4	FEM1C	MCF2L	RASSF1	TRIM44
BPIFB6	FEN1	MCF2L2	RASSF2	TRIM45
BPIFC	FER	MCFD2	RASSF3	TRIM46
BPNT1	FER1L5	MCHR1	RASSF4	TRIM47
BPTF	FER1L6	MCHR2	RASSF5	TRIM48
BPY2	FERD3L	MCIDAS	RASSF6	TRIM49
BPY2B	FERMT1	MCL1	RASSF7	TRIM49B
BPY2C	FERMT2	MCM2	RASSF8	TRIM49C
BRAF	FERMT3	MCM3	RASSF9	TRIM49D1

BRAP	FES	MCM3AP	RASSF10	TRIM49D2
BRAT1	FETUB	MCM4	RAVER1	TRIM50
BRCA1	FEV	MCM5	RAVER2	TRIM51
BRCA2	FEZ1	MCM6	RAX	TRIM51GP
BRCC3	FEZ2	MCM7	RAX2	TRIM52
BRD1	FEZF1	MCM8	RB1	TRIM54
BRD2	FEZF2	MCM9	RB1CC1	TRIM55
BRD3	FFAR1	MCM10	RBAK	TRIM56
BRD3OS	FFAR2	MCMBP	RBAK-RBAKDN	TRIM58
BRD4	FFAR3	MCMDC2	RBBP4	TRIM59
BRD7	FFAR4	MCOLN1	RBBP5	TRIM60
BRD8	FGA	MCOLN2	RBBP6	TRIM61
BRD9	FGB	MCOLN3	RBBP7	TRIM62
BRDT	FGD1	MCPH1	RBBP8	TRIM63
BRF1	FGD2	MCRIP1	RBBP8NL	TRIM64
BRF2	FGD3	MCRIP2	RBBP9	TRIM64B
BRI3	FGD4	MCRS1	RBCK1	TRIM64C
BRI3BP	FGD5	MCTP1	RBFA	TRIM65
BRICD5	FGD6	MCTP2	RBFOX1	TRIM66
BRINP1	FGF1	MCTS1	RBFOX2	TRIM67
BRINP2	FGF2	MCTS2P	RBFOX3	TRIM68
BRINP3	FGF3	MCU	RBIS	TRIM69
BRIP1	FGF4	MCUB	RBKS	TRIM71
BRIX1	FGF5	MCUR1	RBL1	TRIM72
BRK1	FGF6	MDC1	RBL2	TRIM73
BRMS1	FGF7	MDFI	RBM3	TRIM74
BRMS1L	FGF8	MDFIC	RBM4	TRIM75P
BROX	FGF9	MDFIC2	RBM4B	TRIM77
BRPF1	FGF10	MDGA1	RBM5	TRIML1
BRPF3	FGF11	MDGA2	RBM6	TRIML2
BRS3	FGF12	MDH1	RBM7	TRIO
BRSK1	FGF13	MDH1B	RBM8A	TRIOBP
BRSK2	FGF14	MDH2	RBM10	TRIP4
BRWD1	FGF16	MDK	RBM11	TRIP6
BRWD3	FGF17	MDM1	RBM12	TRIP10
BSCL2	FGF18	MDM2	RBM12B	TRIP11
BSDC1	FGF19	MDM4	RBM14	TRIP12
BSG	FGF20	MDN1	RBM14-RBM4	TRIP13
BSN	FGF21	MDP1	RBM15	TRIQK
BSND	FGF22	MDS2	RBM15B	TRIR
BSPH1	FGF23	ME1	RBM17	TRIT1
BSPRY	FGFBP1	ME2	RBM18	TRMO

BST1	FGFBP2	ME3	RBM19	TRMT1
BST2	FGFBP3	MEA1	RBM20	TRMT1L
BSX	FGFR1	MEAF6	RBM22	TRMT2A
BTAF1	FGFR1OP	MEAK7	RBM23	TRMT2B
BTBD1	FGFR1OP2	MECOM	RBM24	TRMT5
BTBD2	FGFR2	MECP2	RBM25	TRMT6
BTBD3	FGFR3	MECR	RBM26	TRMT9B
BTBD6	FGFR4	MED1	RBM27	TRMT10A
BTBD7	FGFRL1	MED4	RBM28	TRMT10B
BTBD8	FGG	MED6	RBM33	TRMT10C
BTBD9	FGGY	MED7	RBM34	TRMT11
BTBD10	FGL1	MED8	RBM38	TRMT12
BTBD11	FGL2	MED9	RBM39	TRMT13
BTBD16	FGR	MED10	RBM41	TRMT44
BTBD17	FH	MED11	RBM42	TRMT61A
BTBD18	FHAD1	MED12	RBM43	TRMT61B
BTBD19	FHDC1	MED12L	RBM44	TRMT112
BTC	FHIT	MED13	RBM45	TRMU
BTD	FHL1	MED13L	RBM46	TRNAU1AP
BTF3	FHL2	MED14	RBM47	TRNP1
BTF3L4	FHL3	MED14OS	RBM48	TRNT1
BTG1	FHL5	MED15	RBMS1	TRO
BTG2	FHOD1	MED16	RBMS2	TROAP
BTG3	FHOD3	MED17	RBMS3	TROVE2
BTG4	FIBCD1	MED18	RBMX	TRPA1
BTK	FIBIN	MED19	RBMX2	TRPC1
BTLA	FIBP	MED20	RBMXL1	TRPC3
BTN1A1	FICD	MED21	RBMXL2	TRPC4
BTN2A1	FIG4	MED22	RBMXL3	TRPC4AP
BTN2A2	FIGLA	MED23	RBMY1A1	TRPC5
BTN3A1	FIGN	MED24	RBMY1B	TRPC5OS
BTN3A2	FIGNL1	MED25	RBMY1D	TRPC6
BTN3A3	FIGNL2	MED26	RBMY1E	TRPC7
BTNL2	FILIP1	MED27	RBMY1F	TRPM1
BTNL3	FILIP1L	MED28	RBMY1J	TRPM2
BTNL8	FIP1L1	MED29	RBP1	TRPM3
BTNL9	FIS1	MED30	RBP2	TRPM4
BTNL10	FITM1	MED31	RBP3	TRPM5
BTRC	FITM2	MEDAG	RBP4	TRPM6
BUB1	FIZ1	MEF2A	RBP5	TRPM7
BUB1B	FJX1	MEF2B	RBP7	TRPM8
BUB1B-PAK6	FKBP1A	MEF2C	RBPJ	TRPS1

BUB3	FKBP1B	MEF2D	RBPJL	TRPT1
BUD13	FKBP1C	MEFV	RBPMS	TRPV1
BUD23	FKBP2	MEGF6	RBPMS2	TRPV2
BUD31	FKBP3	MEGF8	RBSN	TRPV3
BVES	FKBP4	MEGF9	RBX1	TRPV4
BX255925.3	FKBP5	MEGF10	RC3H1	TRPV5
BX276092.9	FKBP6	MEGF11	RC3H2	TRPV6
BX470111.1	FKBP7	MEI1	RCAN1	TRRAP
BX664615.2	FKBP8	MEI4	RCAN2	TRUB1
BYSL	FKBP9	MEIG1	RCAN3	TRUB2
BZW1	FKBP10	MEIKIN	RCBTB1	TSACC
BZW2	FKBP11	MEIOB	RCBTB2	TSBP1
C1D	FKBP14	MEIOC	RCC1	TSC1
C1GALT1	FKBP15	MEIS1	RCC1L	TSC2
C1GALT1C1	FKBPL	MEIS2	RCC2	TSC22D1
C1GALT1C1L	FKRP	MEIS3	RCCD1	TSC22D2
C1QA	FKTN	MELK	RCE1	TSC22D3
C1QB	FLACC1	MELTF	RCHY1	TSC22D4
C1QBP	FLAD1	MEMO1	RCL1	TSEN2
C1QC	FLCN	MEN1	RCN1	TSEN15
C1QL1	FLG	MEOX1	RCN2	TSEN34
C1QL2	FLG2	MEOX2	RCN3	TSEN54
C1QL3	FLI1	MEP1A	RCOR1	TSFM
C1QL4	FLII	MEP1B	RCOR2	TSG101
C1QTNF1	FLJ44635	MEPCE	RCOR3	TSGA10
C1QTNF2	FLNA	MEPE	RCS1	TSGA10IP
C1QTNF3	FLNB	MERTK	RCVRN	TSGA13
C1QTNF3-AMACR	FLNC	MESD	RD3	TSHB
C1QTNF4	FLOT1	MESP1	RD3L	TSHR
C1QTNF5	FLOT2	MESP2	RDH5	TSHZ1
C1QTNF6	FLRT1	MEST	RDH8	TSHZ2
C1QTNF7	FLRT2	MET	RDH10	TSHZ3
C1QTNF8	FLRT3	METAP1	RDH11	TSKS
C1QTNF9	FLT1	METAP1D	RDH12	TSKU
C1QTNF9B	FLT3	METAP2	RDH13	TSLP
C1QTNF12	FLT3LG	METRNL	RDH14	TSN
C1R	FLT4	METRNL	RDH16	TSNARE1
C1RL	FLVCR1	METTL1	RDM1	TSNAX
C1S	FLVCR2	METTL2A	RDX	TSNAXIP1
C1orf21	FLYWCH1	METTL2B	REC8	TSNAX-DISC1
C1orf35	FLYWCH2	METTL3	REC114	TSPAN1



C1orf43	FMC1	METTL4	RECK	TSPAN2
C1orf50	FMC1-LUC7L2	METTL5	RECQL	TSPAN3
C1orf52	FMN1	METTL6	RECQL4	TSPAN4
C1orf53	FMN2	METTL7A	RECQL5	TSPAN5
C1orf54	FMNL1	METTL7B	REELD1	TSPAN6
C1orf56	FMNL2	METTL8	REEP1	TSPAN7
C1orf61	FMNL3	METTL9	REEP2	TSPAN8
C1orf68	FMO1	METTL11B	REEP3	TSPAN9
C1orf74	FMO2	METTL13	REEP4	TSPAN10
C1orf87	FMO3	METTL14	REEP5	TSPAN11
C1orf94	FMO4	METTL15	REEP6	TSPAN12
C1orf100	FMO5	METTL16	REG1A	TSPAN13
C1orf105	FMOD	METTL17	REG1B	TSPAN14
C1orf109	FMR1	METTL18	REG3A	TSPAN15
C1orf112	FMR1NB	METTL21A	REG3G	TSPAN16
C1orf115	FN1	METTL21C	REG4	TSPAN17
C1orf116	FN3K	METTL22	REL	TSPAN18
C1orf122	FN3KRP	METTL23	RELA	TSPAN19
C1orf123	FNBP1	METTL24	RELB	TSPAN31
C1orf127	FNBP1L	METTL25	RELCH	TSPAN32
C1orf131	FNBP4	METTL26	RELL1	TSPAN33
C1orf141	FNDC1	METTL27	RELL2	TSPEAR
C1orf146	FNDC3A	MEX3A	RELN	TSPO
C1orf158	FNDC3B	MEX3B	RELT	TSPO2
C1orf159	FNDC4	MEX3C	REM1	TSPOAP1
C1orf162	FNDC5	MEX3D	REM2	TSPY1
C1orf167	FNDC7	MFAP1	REN	TSPY2
C1orf174	FNDC8	MFAP2	RENBP	TSPY3
C1orf185	FNDC9	MFAP3	REP15	TSPY4
C1orf189	FNDC10	MFAP3L	REPIN1	TSPY8
C1orf194	FNDC11	MFAP4	REPS1	TSPY9P
C1orf195	FNIP1	MFAP5	REPS2	TSPY10
C1orf198	FNIP2	MFF	RER1	TSPYL1
C1orf210	FNTA	MFGE8	RERE	TSPYL2
C1orf216	FNTB	MFHAS1	RERG	TSPYL4
C1orf226	FO393400.1	MFN1	RERGL	TSPYL5
C1orf229	FO681492.1	MFN2	RESF1	TSPYL6
C1orf232	FOCAD	MFNG	RESP18	TSR1
C2	FOLH1	MFRP	REST	TSR2
C2CD2	FOLH1B	MFSD1	RET	TSR3
C2CD2L	FOLR1	MFSD2A	RETN	TSSC4
C2CD3	FOLR2	MFSD2B	RETNLB	TSSK1B

C2CD4A	FOLR3	MFSD3	RETREG1	TSSK2
C2CD4B	FOPNL	MFSD4A	RETREG2	TSSK3
C2CD4C	FOS	MFSD4B	RETREG3	TSSK4
C2CD4D	FOSB	MFSD5	RETSAT	TSSK6
C2CD5	FOSL1	MFSD6	REV1	TST
C2CD6	FOSL2	MFSD6L	REV3L	TSTA3
C2orf15	FOXA1	MFSD8	REX1BD	TSTD1
C2orf16	FOXA2	MFSD9	REXO1	TSTD2
C2orf27A	FOXA3	MFSD10	REXO2	TSTD3
C2orf40	FOXB1	MFSD11	REXO4	TTBK1
C2orf42	FOXB2	MFSD12	REXO5	TTBK2
C2orf49	FOXC1	MFSD13A	RFC1	TTC1
C2orf50	FOXC2	MFSD14A	RFC2	TTC3
C2orf54	FOXD1	MFSD14B	RFC3	TTC4
C2orf66	FOXD2	MFSD14C	RFC4	TTC5
C2orf68	FOXD3	MGA	RFC5	TTC6
C2orf69	FOXD4	MGAM	RFESD	TTC7A
C2orf70	FOXD4L1	MGAM2	RFFL	TTC7B
C2orf72	FOXD4L3	MGARP	RFK	TTC8
C2orf73	FOXD4L4	MGAT1	RFLNA	TTC9
C2orf74	FOXD4L5	MGAT2	RFLNB	TTC9B
C2orf76	FOXD4L6	MGAT3	RFNG	TTC9C
C2orf78	FOXE1	MGAT4A	RFPL1	TTC12
C2orf80	FOXE3	MGAT4B	RFPL2	TTC13
C2orf81	FOXF1	MGAT4C	RFPL3	TTC14
C2orf83	FOXF2	MGAT4D	RFPL4A	TTC16
C2orf88	FOXG1	MGAT5	RFPL4AL1	TTC17
C2orf91	FOXH1	MGAT5B	RFPL4B	TTC19
C2orf92	FOXI1	MGLL	RFT1	TTC21A
C3	FOXI2	MGME1	RFTN1	TTC21B
C3AR1	FOXI3	MGMT	RFTN2	TTC22
C3orf14	FOXJ1	MGP	RFWD3	TTC23
C3orf18	FOXJ2	MGRN1	RFX1	TTC23L
C3orf20	FOXJ3	MGST1	RFX2	TTC24
C3orf22	FOXK1	MGST2	RFX3	TTC25
C3orf30	FOXK2	MGST3	RFX4	TTC26
C3orf33	FOXL1	MIA	RFX5	TTC27
C3orf35	FOXL2	MIA2	RFX6	TTC28
C3orf36	FOXL2NB	MIA3	RFX7	TTC29
C3orf38	FOXL3	MIA-RAB4B	RFX8	TTC30A
C3orf49	FOXM1	MIB1	RFXANK	TTC30B
C3orf52	FOXN1	MIB2	RFXAP	TTC31

C3orf56	FOXN2	MICA	RGCC	TTC32
C3orf58	FOXN3	MICAL1	RGL1	TTC33
C3orf62	FOXN4	MICAL2	RGL2	TTC34
C3orf67	FOXO1	MICAL3	RGL3	TTC36
C3orf70	FOXO3	MICALCL	RGL4	TTC37
C3orf80	FOXO3B	MICALL1	RGMA	TTC38
C3orf84	FOXO4	MICALL2	RGMB	TTC39A
C3orf85	FOXO6	MICB	RGN	TTC39B
C3orf86	FOXP1	MICOS10	RGP1	TTC39C
C4A	FOXP2	MICOS10-NBL1	RGPD1	TTF1
C4B	FOXP3	MICOS13	RGPD2	TTF2
C4BPA	FOXP4	MICU1	RGPD3	TTI1
C4BPB	FOXQ1	MICU2	RGPD4	TTI2
C4orf3	FOXR1	MICU3	RGPD5	TTK
C4orf17	FOXR2	MID1	RGPD6	TTL
C4orf19	FOXRED1	MID1IP1	RGPD8	TTLL1
C4orf33	FOXRED2	MID2	RGR	TTLL2
C4orf36	FOXS1	MIDEAS	RGS1	TTLL3
C4orf45	FP565260.1	MIDN	RGS2	TTLL4
C4orf46	FP565260.2	MIEF1	RGS3	TTLL5
C4orf47	FP565260.3	MIEF2	RGS4	TTLL6
C4orf48	FP565260.4	MIEN1	RGS5	TTLL7
C4orf50	FP565260.6	MIER1	RGS6	TTLL8
C4orf51	FPGS	MIER2	RGS7	TTLL9
C4orf54	FPGT	MIER3	RGS7BP	TTLL10
C5	FPGT-TNNI3K	MIF	RGS8	TTLL11
C5AR1	FPR1	MIF4GD	RGS9	TTLL12
C5AR2	FPR2	MIGA1	RGS9BP	TTLL13P
C5orf15	FPR3	MIGA2	RGS10	TTN
C5orf22	FRA10AC1	MIIP	RGS11	TTPA
C5orf24	FRAS1	MILR1	RGS12	TTPAL
C5orf30	FRAT1	MINAR1	RGS13	TTR
C5orf34	FRAT2	MINAR2	RGS14	TTYH1
C5orf38	FREM1	MINDY1	RGS16	TTYH2
C5orf46	FREM2	MINDY2	RGS17	TTYH3
C5orf47	FREM3	MINDY3	RGS18	TUB
C5orf49	FRG1	MINDY4	RGS19	TUBA1A
C5orf51	FRG2	MINDY4B	RGS20	TUBA1B
C5orf52	FRG2B	MINK1	RGS21	TUBA1C
C5orf58	FRG2C	MINOS1	RGS22	TUBA3C
C5orf60	FRK	MINPP1	RGSL1	TUBA3D
C5orf63	FRMD1	MIOS	RHAG	TUBA3E

C5orf67	FRMD3	MIOX	RHBDD1	TUBA4A
C6	FRMD4A	MIP	RHBDD2	TUBA4B
C6orf10	FRMD4B	MIPEP	RHBDD3	TUBA8
C6orf15	FRMD5	MIPOL1	RHBDF1	TUBAL3
C6orf47	FRMD6	MIR1-1HG	RHBDF2	TUBB
C6orf48	FRMD7	MIS12	RHBDL1	TUBB1
C6orf52	FRMD8	MIS18A	RHBDL2	TUBB2A
C6orf58	FRMPD1	MIS18BP1	RHBDL3	TUBB2B
C6orf62	FRMPD2	MISP	RHBG	TUBB3
C6orf89	FRMPD3	MISP3	RHCE	TUBB4A
C6orf106	FRMPD4	MITD1	RHCG	TUBB4B
C6orf118	FRRS1	MITF	RHD	TUBB6
C6orf120	FRRS1L	MIXL1	RHEB	TUBB8
C6orf132	FRS2	MKI67	RHEBL1	TUBB8B
C6orf136	FRS3	MKKS	RHEX	TUBB8P12
C6orf141	FRY	MKLN1	RHNO1	TUBD1
C6orf163	FRYL	MKNK1	RHO	TUBE1
C6orf201	FRZB	MKNK2	RHOA	TUBG1
C6orf203	FSBP	MKRN1	RHOB	TUBG2
C6orf222	FSCB	MKRN2	RHOBTB1	TUBGCP2
C6orf223	FSCN1	MKRN2OS	RHOBTB2	TUBGCP3
C6orf226	FSCN2	MKRN3	RHOBTB3	TUBGCP4
C7	FSCN3	MKS1	RHOC	TUBGCP5
C7orf25	FSD1	MKX	RHOD	TUBGCP6
C7orf26	FSD1L	MLANA	RHOF	TUFM
C7orf31	FSD2	MLC1	RHOG	TUFT1
C7orf33	FSHB	MLEC	RHOH	TULP1
C7orf43	FSHR	MLF1	RHOJ	TULP2
C7orf50	FSIP1	MLF2	RHOQ	TULP3
C7orf55-LUC7L2	FSIP2	MLH1	RHOT1	TULP4
C7orf57	FST	MLH3	RHOT2	TUNAR
C7orf61	FSTL1	MLIP	RHOU	TUSC1
C7orf65	FSTL3	MLKL	RHOV	TUSC2
C7orf66	FSTL4	MLLT1	RHOXF1	TUSC3
C7orf77	FSTL5	MLLT3	RHOXF2	TUT1
C8A	FTCD	MLLT6	RHOXF2B	TUT4
C8B	FTCDNL1	MLLT10	RHPN1	TUT7
C8G	FTCD-AS1	MLLT11	RHPN2	TVP23A
C8orf33	FTH1	MLN	RIBC1	TVP23B
C8orf34	FTHL17	MLNR	RIBC2	TVP23C
C8orf37	FTHL18	MLPH	RIC1	TVP23C-CDRT4
C8orf44	FTL	MLST8	RIC3	TWF1

C8orf44-SGK3	FTMT	MLX	RIC8A	TWF2
C8orf48	FTO	MLXIP	RIC8B	TWIST1
C8orf49	FTSJ1	MLXIPL	RICTOR	TWIST2
C8orf58	FTSJ3	MLYCD	RIDA	TWISTNB
C8orf59	FUBP1	MMAA	RIF1	TWNK
C8orf74	FUBP3	MMAB	RIIAD1	TWSG1
C8orf76	FUCA1	MMACHC	RILP	TXK
C8orf82	FUCA2	MMADHC	RILPL1	TXLNA
C8orf86	FUK	MMD	RILPL2	TXLNB
C8orf88	FUNDC1	MMD2	RIMBP2	TXLNG
C8orf89	FUNDC2	MME	RIMBP3	TXN
C9	FUOM	MMEL1	RIMBP3B	TXN2
C9orf3	FURIN	MMGT1	RIMBP3C	TXNDC2
C9orf16	FUS	MMP1	RIMKLA	TXNDC5
C9orf24	FUT1	MMP2	RIMKLB	TXNDC8
C9orf40	FUT2	MMP3	RIMS1	TXNDC9
C9orf43	FUT3	MMP7	RIMS2	TXNDC11
C9orf47	FUT4	MMP8	RIMS3	TXNDC12
C9orf50	FUT5	MMP9	RIMS4	TXNDC15
C9orf57	FUT6	MMP10	RIN1	TXNDC16
C9orf62	FUT7	MMP11	RIN2	TXNDC17
C9orf64	FUT8	MMP12	RIN3	TXNIP
C9orf66	FUT9	MMP13	RING1	TXNL1
C9orf72	FUT10	MMP14	RINL	TXNL4A
C9orf78	FUT11	MMP15	RINT1	TXNL4B
C9orf84	FUZ	MMP16	RIOK1	TXNRD1
C9orf85	FXN	MMP17	RIOK2	TXNRD2
C9orf92	FXR1	MMP19	RIOK3	TXNRD3
C9orf116	FXR2	MMP20	RIOX1	TXNRD3NB
C9orf129	FXYD1	MMP21	RIOX2	TYK2
C9orf131	FXYD2	MMP23B	RIPK1	TYMP
C9orf135	FXYD3	MMP24	RIPK2	TYMS
C9orf139	FXYD4	MMP24OS	RIPK3	TYMSOS
C9orf147	FXYD5	MMP24-AS1- EDEM2	RIPK4	TYR
C9orf152	FXYD6	MMP25	RIPOR1	TYRO3
C9orf153	FXYD6-FXYD2	MMP26	RIPOR2	TYROBP
C9orf163	FXYD7	MMP27	RIPOR3	TYRP1
C10orf53	FYB1	MMP28	RIPPLY1	TYSND1
C10orf55	FYB2	MMRN1	RIPPLY2	TYW1
C10orf62	FYCO1	MMRN2	RIPPLY3	TYW1B
C10orf67	FYN	MMS19	RIT1	TYW3

C10orf71	FYTTD1	MMS22L	RIT2	TYW5
C10orf82	FZD1	MMUT	RITA1	U2AF1
C10orf88	FZD2	MN1	RLBP1	U2AF1L4
C10orf90	FZD3	MNAT1	RLF	U2AF1L5
C10orf95	FZD4	MND1	RLIM	U2AF2
C10orf99	FZD5	MNDA	RLN1	U2SURP
C10orf105	FZD6	MNS1	RLN2	U52112.2
C10orf113	FZD7	MNT	RLN3	UACA
C10orf120	FZD8	MNX1	RMC1	UAP1
C10orf142	FZD9	MOAP1	RMDN1	UAP1L1
C10orf143	FZD10	MOB1A	RMDN2	UBA1
C11orf1	FZR1	MOB1B	RMDN3	UBA2
C11orf16	G0S2	MOB2	RMI1	UBA3
C11orf21	G2E3	MOB3A	RMI2	UBA5
C11orf24	G3BP1	MOB3B	RMND1	UBA6
C11orf40	G3BP2	MOB3C	RMND5A	UBA7
C11orf42	G6PC	MOB4	RMND5B	UBA52
C11orf45	G6PC2	MOBP	RNASE1	UBAC1
C11orf49	G6PC3	MOCOS	RNASE2	UBAC2
C11orf52	G6PD	MOCS1	RNASE3	UBALD1
C11orf53	GAA	MOCS2	RNASE4	UBALD2
C11orf54	GAB1	MOCS3	RNASE6	UBAP1
C11orf58	GAB2	MOG	RNASE7	UBAP1L
C11orf65	GAB3	MOGAT1	RNASE8	UBAP2
C11orf68	GAB4	MOGAT2	RNASE9	UBAP2L
C11orf71	GABARAP	MOGAT3	RNASE10	UBASH3A
C11orf74	GABARAPL1	MOGS	RNASE11	UBASH3B
C11orf80	GABARAPL2	MOK	RNASE12	UBB
C11orf86	GABBR1	MON1A	RNASE13	UBC
C11orf87	GABBR2	MON1B	RNASEH1	UBD
C11orf88	GABPA	MON2	RNASEH2A	UBE2A
C11orf91	GABPB1	MORC1	RNASEH2B	UBE2B
C11orf94	GABPB2	MORC2	RNASEH2C	UBE2C
C11orf95	GABRA1	MORC3	RNASEK	UBE2D1
C11orf96	GABRA2	MORC4	RNASEK- C17orf49	UBE2D2
C11orf97	GABRA3	MORF4L1	RNASEL	UBE2D3
C11orf98	GABRA4	MORF4L2	RNASET2	UBE2D4
C12orf4	GABRA5	MORN1	RND1	UBE2E1
C12orf10	GABRA6	MORN2	RND2	UBE2E2
C12orf29	GABRB1	MORN3	RND3	UBE2E3
C12orf40	GABRB2	MORN4	RNF2	UBE2F

C12orf42	GABRB3	MORN5	RNF4	UBE2F-SCLY
C12orf43	GABRD	MOS	RNF5	UBE2G1
C12orf45	GABRE	MOSMO	RNF6	UBE2G2
C12orf49	GABRG1	MOSPD1	RNF7	UBE2H
C12orf50	GABRG2	MOSPD2	RNF8	UBE2I
C12orf54	GABRG3	MOSPD3	RNF10	UBE2J1
C12orf56	GABRP	MOV10	RNF11	UBE2J2
C12orf57	GABRQ	MOV10L1	RNF13	UBE2K
C12orf60	GABRR1	MOXD1	RNF14	UBE2L3
C12orf65	GABRR2	MPC1	RNF17	UBE2L5
C12orf66	GABRR3	MPC1L	RNF19A	UBE2L6
C12orf71	GAD1	MPC2	RNF19B	UBE2M
C12orf73	GAD2	MPDU1	RNF20	UBE2N
C12orf74	GADD45A	MPDZ	RNF24	UBE2O
C12orf75	GADD45B	MPEG1	RNF25	UBE2Q1
C12orf76	GADD45G	MPG	RNF26	UBE2Q2
C12orf77	GADD45GIP1	MPHOSPH6	RNF31	UBE2Q2L
C13orf42	GADL1	MPHOSPH8	RNF32	UBE2QL1
C13orf46	GAGE1	MPHOSPH9	RNF34	UBE2R2
C14orf28	GAGE2A	MPHOSPH10	RNF38	UBE2S
C14orf39	GAGE2E	MPI	RNF39	UBE2T
C14orf93	GAGE10	MPIG6B	RNF40	UBE2U
C14orf119	GAGE12B	MPL	RNF41	UBE2V1
C14orf132	GAGE12C	MPLKIP	RNF43	UBE2V2
C14orf177	GAGE12D	MPND	RNF44	UBE2W
C14orf178	GAGE12E	MPO	RNF103	UBE2Z
C14orf180	GAGE12F	MPP1	RNF103-CHMP3	UBE3A
C15orf38-AP3S2	GAGE12G	MPP2	RNF111	UBE3B
C15orf39	GAGE12H	MPP3	RNF112	UBE3C
C15orf40	GAGE12J	MPP4	RNF113A	UBE3D
C15orf41	GAGE13	MPP5	RNF113B	UBE4A
C15orf48	GAK	MPP6	RNF114	UBE4B
C15orf53	GAL	MPP7	RNF115	UBFD1
C15orf56	GAL3ST1	MPPE1	RNF121	UBIAD1
C15orf61	GAL3ST2	MPPED1	RNF122	UBL3
C15orf62	GAL3ST3	MPPED2	RNF123	UBL4A
C15orf65	GAL3ST4	MPRIP	RNF125	UBL4B
C16orf45	GALC	MPST	RNF126	UBL5
C16orf46	GALE	MPV17	RNF128	UBL7
C16orf54	GALK1	MPV17L	RNF130	UBLCP1
C16orf58	GALK2	MPV17L2	RNF133	UBN1
C16orf70	GALM	MPZ	RNF135	UBN2

C16orf71	GALNS	MPZL1	RNF138	UBOX5
C16orf72	GALNT1	MPZL2	RNF139	UBP1
C16orf74	GALNT2	MPZL3	RNF141	UBQLN1
C16orf78	GALNT3	MR1	RNF144A	UBQLN2
C16orf82	GALNT4	MRAP	RNF144B	UBQLN3
C16orf86	GALNT5	MRAP2	RNF145	UBQLN4
C16orf87	GALNT6	MRAS	RNF146	UBQLNL
C16orf89	GALNT7	MRC1	RNF148	UBR1
C16orf90	GALNT8	MRC2	RNF149	UBR2
C16orf91	GALNT9	MRE11	RNF150	UBR3
C16orf92	GALNT10	MREG	RNF151	UBR4
C16orf95	GALNT11	MRFAP1	RNF152	UBR5
C16orf96	GALNT12	MRFAP1L1	RNF157	UBR7
C16orf97	GALNT13	MRGBP	RNF165	UBTD1
C17orf47	GALNT14	MRGPRD	RNF166	UBTD2
C17orf49	GALNT15	MRGPPE	RNF167	UBTF
C17orf50	GALNT16	MRGPRF	RNF168	UBTFL1
C17orf51	GALNT17	MRGPRG	RNF169	UBXN1
C17orf53	GALNT18	MRGPRX1	RNF170	UBXN2A
C17orf58	GALNTL5	MRGPRX2	RNF175	UBXN2B
C17orf64	GALNTL6	MRGPRX3	RNF180	UBXN4
C17orf67	GALP	MRGPRX4	RNF181	UBXN6
C17orf75	GALR1	MRI1	RNF182	UBXN7
C17orf77	GALR2	MRLN	RNF183	UBXN8
C17orf78	GALR3	MRM1	RNF185	UBXN10
C17orf80	GALT	MRM2	RNF186	UBXN11
C17orf97	GAMT	MRM3	RNF187	UCHL1
C17orf98	GAN	MRNIP	RNF207	UCHL3
C17orf99	GANAB	MRO	RNF208	UCHL5
C17orf100	GANC	MROH1	RNF212	UCK1
C17orf107	GAP43	MROH2A	RNF212B	UCK2
C17orf113	GAPDH	MROH2B	RNF213	UCKL1
C18orf12	GAPDHS	MROH6	RNF214	UCMA
C18orf21	GAPT	MROH7	RNF215	UCN
C18orf25	GAPVD1	MROH7-TTC4	RNF216	UCN2
C18orf32	GAR1	MROH8	RNF217	UCN3
C18orf54	GAREM1	MROH9	RNF219	UCP1
C18orf63	GAREM2	MRPL1	RNF220	UCP2
C19orf12	GARNL3	MRPL2	RNF222	UCP3
C19orf18	GARS	MRPL3	RNF223	UEVLD
C19orf24	GARS1	MRPL4	RNF224	UFC1
C19orf25	GART	MRPL9	RNF225	UFD1



C19orf33	GAS1	MRPL10	RNF227	UFL1
C19orf38	GAS2	MRPL11	RNFT1	UFM1
C19orf44	GAS2L1	MRPL12	RNFT2	UFSP1
C19orf47	GAS2L2	MRPL13	RNGTT	UFSP2
C19orf48	GAS2L3	MRPL14	RNH1	UGCG
C19orf53	GAS6	MRPL15	RNLS	UGDH
C19orf54	GAS7	MRPL16	RNMT	UGGT1
C19orf57	GAS8	MRPL17	RNPC3	UGGT2
C19orf66	GASK1A	MRPL18	RNPEP	UGP2
C19orf67	GASK1B	MRPL19	RNPEPL1	UGT1A1
C19orf70	GAST	MRPL20	RNPS1	UGT1A3
C19orf71	GATA1	MRPL21	RO60	UGT1A4
C19orf73	GATA2	MRPL22	ROBO1	UGT1A5
C19orf81	GATA3	MRPL23	ROBO2	UGT1A6
C19orf84	GATA4	MRPL24	ROBO3	UGT1A7
C19orf85	GATA5	MRPL27	ROBO4	UGT1A8
C20orf27	GATA6	MRPL28	ROCK1	UGT1A9
C20orf85	GATAD1	MRPL30	ROCK2	UGT1A10
C20orf96	GATAD2A	MRPL32	ROGDI	UGT2A1
C20orf141	GATAD2B	MRPL33	ROM1	UGT2A2
C20orf144	GATB	MRPL34	ROMO1	UGT2A3
C20orf173	GATC	MRPL35	ROPN1	UGT2B4
C20orf194	GATD1	MRPL36	ROPN1B	UGT2B7
C20orf202	GATD3A	MRPL37	ROPN1L	UGT2B10
C20orf203	GATD3B	MRPL38	ROR1	UGT2B11
C20orf204	GATM	MRPL39	ROR2	UGT2B15
C21orf2	GBA	MRPL40	RORA	UGT2B17
C21orf58	GBA2	MRPL41	RORB	UGT2B28
C21orf59- TCP10L	GBE1	MRPL42	RORC	UGT3A1
C21orf62	GBF1	MRPL43	ROS1	UGT3A2
C21orf91	GBGT1	MRPL44	RP1	UGT8
C22orf15	GBP1	MRPL45	RP1L1	UHMK1
C22orf23	GBP2	MRPL46	RP2	UHRF1
C22orf24	GBP3	MRPL47	RP9	UHRF1BP1
C22orf31	GBP4	MRPL48	RPA1	UHRF1BP1L
C22orf34	GBP5	MRPL49	RPA2	UHRF2
C22orf39	GBP6	MRPL50	RPA3	UIMC1
C22orf42	GBP7	MRPL51	RPA4	ULBP1
C22orf46	GBX1	MRPL52	RPAIN	ULBP2
CA1	GBX2	MRPL53	RPAP1	ULBP3
CA2	GC	MRPL54	RPAP2	ULK1

CA3	GCA	MRPL55	RPAP3	ULK2
CA4	GCAT	MRPL57	RPE	ULK3
CA5A	GCC1	MRPL58	RPE65	ULK4
CA5B	GCC2	MRPS2	RPEL1	UMAD1
CA6	GCDH	MRPS5	RPF1	UMOD
CA7	GCFC2	MRPS6	RPF2	UMODL1
CA8	GCG	MRPS7	RPGR	UMPS
CA9	GCGR	MRPS9	RPGRIP1	UNC5A
CA10	GCH1	MRPS10	RPGRIP1L	UNC5B
CA11	GCHFR	MRPS11	RPH3A	UNC5C
CA12	GCK	MRPS12	RPH3AL	UNC5CL
CA13	GCKR	MRPS14	RPIA	UNC5D
CA14	GCLC	MRPS15	RPL3	UNC13A
CAAP1	GCLM	MRPS16	RPL3L	UNC13B
CAB39	GCM1	MRPS17	RPL4	UNC13C
CAB39L	GCM2	MRPS18A	RPL5	UNC13D
CABCOC01	GCN1	MRPS18B	RPL6	UNC45A
CABIN1	GCNA	MRPS18C	RPL7	UNC45B
CABLES1	GCNT1	MRPS21	RPL7A	UNC50
CABLES2	GCNT2	MRPS22	RPL7L1	UNC79
CABP1	GCNT3	MRPS23	RPL8	UNC80
CABP2	GCNT4	MRPS24	RPL9	UNC93A
CABP4	GCNT7	MRPS25	RPL10	UNC93B1
CABP5	GCOM1	MRPS26	RPL10A	UNC119
CABP7	GCSAM	MRPS27	RPL10L	UNC119B
CABS1	GCSAML	MRPS28	RPL11	UNCX
CABYR	GCSAML-AS1	MRPS30	RPL12	UNG
CACFD1	GCSH	MRPS31	RPL13	UNK
CACHD1	GDA	MRPS33	RPL13A	UNKL
CACNA1A	GDAP1	MRPS34	RPL14	UPB1
CACNA1B	GDAP1L1	MRPS35	RPL15	UPF1
CACNA1C	GDAP2	MRPS36	RPL17	UPF2
CACNA1D	GDE1	MRRF	RPL17-C18orf32	UPF3A
CACNA1E	GDF1	MRS2	RPL18	UPF3B
CACNA1F	GDF2	MRTFA	RPL18A	UPK1A
CACNA1G	GDF3	MRTFB	RPL19	UPK1B
CACNA1H	GDF5	MRT04	RPL21	UPK2
CACNA1I	GDF5OS	MRVI1	RPL22	UPK3A
CACNA1S	GDF6	MS4A1	RPL22L1	UPK3B
CACNA2D1	GDF7	MS4A2	RPL23	UPK3BL1
CACNA2D2	GDF9	MS4A3	RPL23A	UPK3BL2
CACNA2D3	GDF10	MS4A4A	RPL24	UPP1

CACNA2D4	GDF11	MS4A4E	RPL26	UPP2
CACNB1	GDF15	MS4A5	RPL26L1	UPRT
CACNB2	GDI1	MS4A6A	RPL27	UQCC1
CACNB3	GDI2	MS4A6E	RPL27A	UQCC2
CACNB4	GDNF	MS4A7	RPL28	UQCC3
CACNG1	GDPD1	MS4A8	RPL29	UQCR10
CACNG2	GDPD2	MS4A10	RPL30	UQCR11
CACNG3	GDPD3	MS4A12	RPL31	UQCRB
CACNG4	GDPD4	MS4A13	RPL32	UQCRC1
CACNG5	GDPD5	MS4A14	RPL34	UQCRC2
CACNG6	GDPGP1	MS4A15	RPL35	UQCRFS1
CACNG7	GEM	MS4A18	RPL35A	UQCRH
CACNG8	GEMIN2	MSANTD1	RPL36	UQCRHL
CACTIN	GEMIN4	MSANTD2	RPL36A	UQCRQ
CACUL1	GEMIN5	MSANTD3	RPL36AL	URAD
CACYBP	GEMIN6	MSANTD3- TMEFF1	RPL36A- HNRNPH2	URB1
CAD	GEMIN7	MSANTD4	RPL37	URB2
CADM1	GEMIN8	MSC	RPL37A	URGCP
CADM2	GEN1	MSGN1	RPL38	URGCP-MRPS24
CADM3	GET1	MSH2	RPL39	URI1
CADM4	GET1-SH3BGR	MSH3	RPL39L	URM1
CADPS	GET3	MSH4	RPL41	UROC1
CADPS2	GET4	MSH5	RPLP0	UROD
CAGE1	GFAP	MSH5-SAPCD1	RPLP1	UROS
CALB1	GFER	MSH6	RPLP2	USB1
CALB2	GFI1	MSI1	RPN1	USE1
CALCA	GFI1B	MSI2	RPN2	USF1
CALCB	GFM1	MSL1	RPP14	USF2
CALCOCO1	GFM2	MSL2	RPP21	USF3
CALCOCO2	GFOD1	MSL3	RPP25	USH1C
CALCR	GFOD2	MSLN	RPP25L	USH1G
CALCRL	GFPT1	MSLNL	RPP30	USH2A
CALD1	GFPT2	MSMB	RPP38	USHBP1
CALHM1	GFRA1	MSMO1	RPP40	USO1
CALHM2	GFRA2	MSMP	RPRD1A	USP1
CALHM3	GFRA3	MSN	RPRD1B	USP2
CALHM4	GFRA4	MSR1	RPRD2	USP3
CALHM5	GFRAL	MSRA	RPRM	USP4
CALHM6	GFY	MSRB1	RPRML	USP5
CALM1	GGA1	MSRB2	RPS2	USP6
CALM2	GGA2	MSRB3	RPS3	USP6NL

CALM3	GGA3	MSS51	RPS3A	USP7
CALML3	GGACT	MST1	RPS4X	USP8
CALML4	GGCT	MST1L	RPS4Y1	USP9X
CALML5	GGCX	MST1R	RPS4Y2	USP9Y
CALML6	GGH	MSTN	RPS5	USP10
CALN1	GGN	MSTO1	RPS6	USP11
CALR	GGNBP2	MSX1	RPS6KA1	USP12
CALR3	GGPS1	MSX2	RPS6KA2	USP13
CALU	GGT1	MT1A	RPS6KA3	USP14
CALY	GGT2	MT1B	RPS6KA4	USP15
CAMK1	GGT5	MT1E	RPS6KA5	USP16
CAMK1D	GGT6	MT1F	RPS6KA6	USP17L1
CAMK1G	GGT7	MT1G	RPS6KB1	USP17L2
CAMK2A	GGTLC1	MT1H	RPS6KB2	USP17L3
CAMK2B	GGTLC2	MT1HL1	RPS6KC1	USP17L4
CAMK2D	GGTLC3	MT1M	RPS6KL1	USP17L5
CAMK2G	GH1	MT1X	RPS7	USP17L7
CAMK2N1	GH2	MT2A	RPS8	USP17L8
CAMK2N2	GHDC	MT3	RPS9	USP17L10
CAMK4	GHITM	MT4	RPS10	USP17L11
CAMKK1	GHR	MTA1	RPS10-NUDT3	USP17L12
CAMKK2	GHRH	MTA2	RPS11	USP17L13
CAMKMT	GHRHR	MTA3	RPS12	USP17L15
CAMKV	GHRL	MTAP	RPS13	USP17L17
CAMLG	GHSR	MTARC1	RPS14	USP17L18
CAMP	GID4	MTARC2	RPS15	USP17L19
CAMSAP1	GID8	MTBP	RPS15A	USP17L20
CAMSAP2	GIF	MTCH1	RPS16	USP17L21
CAMSAP3	GIGYF1	MTCH2	RPS17	USP17L22
CAMTA1	GIGYF2	MTCL1	RPS18	USP17L23
CAMTA2	GIMAP1	MTCP1	RPS19	USP17L24
CAND1	GIMAP1-GIMAP5	MTDH	RPS19BP1	USP17L25
CAND2	GIMAP2	MTERF1	RPS20	USP17L26
CANT1	GIMAP4	MTERF2	RPS21	USP17L27
CANX	GIMAP5	MTERF3	RPS23	USP17L28
CAP1	GIMAP6	MTERF4	RPS24	USP17L29
CAP2	GIMAP7	MTF1	RPS25	USP17L30
CAPG	GIMAP8	MTF2	RPS26	USP18
CAPN1	GIMD1	MTFMT	RPS27	USP19
CAPN2	GIN1	MTFP1	RPS27A	USP20
CAPN3	GINM1	MTFR1	RPS27L	USP21
CAPN5	GINS1	MTFR1L	RPS28	USP22

CAPN6	GINS2	MTFR2	RPS29	USP24
CAPN7	GINS3	MTG1	RPSA	USP25
CAPN8	GINS4	MTG2	RPSAP58	USP26
CAPN9	GIP	MTHFD1	RPTN	USP27X
CAPN10	GIPC1	MTHFD1L	RPTOR	USP28
CAPN11	GIPC2	MTHFD2	RPUSD1	USP29
CAPN12	GIPC3	MTHFD2L	RPUSD2	USP30
CAPN13	GIPR	MTHFR	RPUSD3	USP31
CAPN14	GIT1	MTHFS	RPUSD4	USP32
CAPN15	GIT2	MTHFSD	RRAD	USP33
CAPNS1	GJA1	MTIF2	RRAGA	USP34
CAPNS2	GJA3	MTIF3	RRAGB	USP35
CAPRIN1	GJA4	MTLN	RRAGC	USP36
CAPRIN2	GJA5	MTM1	RRAGD	USP37
CAPS	GJA8	MTMR1	RRAS	USP38
CAPS2	GJA9	MTMR2	RRAS2	USP39
CAPSL	GJA10	MTMR3	RRBP1	USP40
CAPZA1	GJB1	MTMR4	RREB1	USP41
CAPZA2	GJB2	MTMR6	RRH	USP42
CAPZA3	GJB3	MTMR7	RRM1	USP43
CAPZB	GJB4	MTMR8	RRM2	USP44
CARD6	GJB5	MTMR9	RRM2B	USP45
CARD8	GJB6	MTMR10	RRN3	USP46
CARD9	GJB7	MTMR11	RRNAD1	USP47
CARD10	GJC1	MTMR12	RRP1	USP48
CARD11	GJC2	MTMR14	RRP1B	USP49
CARD14	GJC3	MTNR1A	RRP7A	USP50
CARD16	GJD2	MTNR1B	RRP8	USP51
CARD17	GJD3	MTO1	RRP9	USP53
CARD18	GJD4	MTOR	RRP12	USP54
CARD19	GJE1	MTPAP	RRP15	USPL1
CARF	GK	MTPN	RRP36	UST
CARHSP1	GK2	MTR	RRS1	UTF1
CARM1	GK3P	MTRES1	RS1	UTP3
CARMIL1	GK5	MTREX	RSAD1	UTP4
CARMIL2	GKAP1	MTRF1	RSAD2	UTP6
CARMIL3	GKN1	MTRF1L	RSBN1	UTP11
CARNMT1	GKN2	MTRNR2L1	RSBN1L	UTP14A
CARNS1	GLA	MTRNR2L2	RSC1A1	UTP14C
CARS	GLB1	MTRNR2L3	RSF1	UTP15
CARS1	GLB1L	MTRNR2L4	RSKR	UTP18
CARS2	GLB1L2	MTRNR2L5	RSL1D1	UTP20

CARTPT	GLB1L3	MTRNR2L6	RSL24D1	UTP23
CASC1	GLCCI1	MTRNR2L7	RSPH1	UTP25
CASC3	GLCE	MTRNR2L8	RSPH3	UTRN
CASC4	GLDC	MTRNR2L9	RSPH4A	UTS2
CASC10	GLDN	MTRNR2L10	RSPH6A	UTS2B
CASD1	GLE1	MTRNR2L11	RSPH9	UTS2R
CASK	GLG1	MTRNR2L12	RSPH10B	UTY
CASKIN1	GLI1	MTRNR2L13	RSPH10B2	UVRAG
CASKIN2	GLI2	MTRR	RSPH14	UVSSA
CASP1	GLI3	MTSS1	RSPO1	UXS1
CASP2	GLI4	MTSS1L	RSPO2	UXT
CASP3	GLIPR1	MTSS2	RSPO3	VAC14
CASP4	GLIPR1L1	MTTP	RSPO4	VAMP1
CASP5	GLIPR1L2	MTURN	RSPRY1	VAMP2
CASP6	GLIPR2	MTUS1	RSRC1	VAMP3
CASP7	GLIS1	MTUS2	RSRC2	VAMP4
CASP8	GLIS2	MTX1	RSRP1	VAMP5
CASP8AP2	GLIS3	MTX2	RSU1	VAMP7
CASP9	GLMN	MTX3	RTBDN	VAMP8
CASP10	GLMP	MUC1	RTCA	VANGL1
CASP14	GLO1	MUC2	RTCB	VANGL2
CASQ1	GLOD4	MUC3A	RTEL1	VAPA
CASQ2	GLOD5	MUC4	RTEL1- TNFRSF6B	VAPB
CASR	GLP1R	MUC5AC	RTF1	VARS
CASS4	GLP2R	MUC5B	RTF2	VARS1
CAST	GLRA1	MUC6	RTKN	VARS2
CASTOR1	GLRA2	MUC7	RTKN2	VASH1
CASTOR2	GLRA3	MUC12	RTL1	VASH2
CASTOR3	GLRA4	MUC13	RTL3	VASN
CASZ1	GLRB	MUC15	RTL4	VASP
CAT	GLRX	MUC16	RTL5	VAT1
CATIP	GLRX2	MUC17	RTL6	VAT1L
CATSPER1	GLRX3	MUC19	RTL8A	VAV1
CATSPER2	GLRX5	MUC20	RTL8B	VAV2
CATSPER3	GLS	MUC21	RTL8C	VAV3
CATSPER4	GLS2	MUC22	RTL9	VAX1
CATSPERB	GLT1D1	MUCL1	RTL10	VAX2
CATSPERD	GLT6D1	MUCL3	RTN1	VBP1
CATSPERE	GLT8D1	MUL1	RTN2	VCAM1
CATSPERG	GLT8D2	MUM1	RTN3	VCAN
CATSPERZ	GLTP	MUM1L1	RTN4	VCL

CAV1	GLTPD2	MUS81	RTN4IP1	VCP
CAV2	GLUD1	MUSK	RTN4R	VCPIP1
CAV3	GLUD2	MUSTN1	RTN4RL1	VCPKMT
CAVIN1	GLUL	MUT	RTN4RL2	VCX
CAVIN2	GLYAT	MUTYH	RTP1	VCX2
CAVIN3	GLYATL1	MVB12A	RTP2	VCX3A
CAVIN4	GLYATL1B	MVB12B	RTP3	VCX3B
CBARP	GLYATL2	MVD	RTP4	VCY
CBFA2T2	GLYATL3	MVK	RTP5	VCY1B
CBFA2T3	GLYCTK	MVP	RTRAF	VDAC1
CBFB	GLYR1	MX1	RTTN	VDAC2
CBL	GM2A	MX2	RUBCN	VDAC3
CBLB	GMCL1	MXD1	RUBCNL	VDR
CBLC	GMCL2	MXD3	RUFY1	VEGFA
CBLIF	GMDS	MXD4	RUFY2	VEGFB
CBLL1	GMEB1	MXI1	RUFY3	VEGFC
CBLL2	GMEB2	MXRA5	RUFY4	VEGFD
CBLN1	GMFB	MXRA7	RUNDC1	VENTX
CBLN2	GMFG	MXRA8	RUNDC3A	VEPH1
CBLN3	GMIP	MYADM	RUNDC3B	VEZF1
CBLN4	GML	MYADML2	RUNX1	VEZT
CBR1	GMNC	MYB	RUNX1T1	VGF
CBR3	GMNN	MYBBP1A	RUNX2	VGLL1
CBR4	GMPPA	MYBL1	RUNX3	VGLL2
CBS	GMPPB	MYBL2	RUSC1	VGLL3
CBSL	GMPR	MYBPC1	RUSC2	VGLL4
CBWD1	GMPR2	MYBPC2	RUVBL1	VHL
CBWD2	GMPS	MYBPC3	RUVBL2	VHLL
CBWD3	GNA11	MYBPH	RWDD1	VIL1
CBWD5	GNA12	MYBPHL	RWDD2A	VILL
CBWD6	GNA13	MYC	RWDD2B	VIM
CBX1	GNA14	MYCBP	RWDD3	VIP
CBX2	GNA15	MYCBP2	RWDD4	VIPAS39
CBX3	GNAI1	MYCBPAP	RXFP1	VIPR1
CBX4	GNAI2	MYCL	RXFP2	VIPR2
CBX5	GNAI3	MYCN	RXFP3	VIRMA
CBX6	GNAL	MYCT1	RXFP4	VIT
CBX7	GNAO1	MYD88	RXRA	VKORC1
CBX8	GNAQ	MYDGF	RXRB	VKORC1L1
CBY1	GNAS	MYEF2	RXRG	VLDLR
CBY2	GNAT1	MYEOV	RXYLT1	VMA21
CBY3	GNAT2	MYF5	RYBP	VMAC

CC2D1A	GNAT3	MYF6	RYK	VMO1
CC2D1B	GNAZ	MYH1	RYS1	VMP1
CC2D2A	GNB1	MYH2	RYS2	VN1R1
CC2D2B	GNB1L	MYH3	RYS3	VN1R2
CCAR1	GNB2	MYH4	S1PR1	VN1R3
CCAR2	GNB3	MYH6	S1PR2	VN1R4
CCBE1	GNB4	MYH7	S1PR3	VN1R5
CCDC3	GNB5	MYH7B	S1PR4	VNN1
CCDC6	GNE	MYH8	S1PR5	VNN2
CCDC7	GNG2	MYH9	S100A1	VNN3
CCDC8	GNG3	MYH10	S100A2	VOPP1
CCDC9	GNG4	MYH11	S100A3	VPREB1
CCDC9B	GNG5	MYH13	S100A4	VPREB3
CCDC12	GNG7	MYH14	S100A5	VPS4A
CCDC13	GNG8	MYH15	S100A6	VPS4B
CCDC14	GNG10	MYL1	S100A7	VPS8
CCDC15	GNG11	MYL2	S100A7A	VPS9D1
CCDC17	GNG12	MYL3	S100A7L2	VPS11
CCDC18	GNG13	MYL4	S100A8	VPS13A
CCDC22	GNG14	MYL5	S100A9	VPS13B
CCDC24	GNGT1	MYL6	S100A10	VPS13C
CCDC25	GNGT2	MYL6B	S100A11	VPS13D
CCDC27	GNL1	MYL7	S100A12	VPS16
CCDC28A	GNL2	MYL9	S100A13	VPS18
CCDC28B	GNL3	MYL10	S100A14	VPS25
CCDC30	GNL3L	MYL12A	S100A16	VPS26A
CCDC32	GNLY	MYL12B	S100B	VPS26B
CCDC33	GNMT	MYLIP	S100G	VPS26C
CCDC34	GNPAT	MYLK	S100P	VPS28
CCDC36	GNPDA1	MYLK2	S100PBP	VPS29
CCDC38	GNPDA2	MYLK3	S100Z	VPS33A
CCDC39	GNPNAT1	MYLK4	SAA1	VPS33B
CCDC40	GNPTAB	MYLPF	SAA2	VPS35
CCDC42	GNPTG	MYMK	SAA2-SAA4	VPS35L
CCDC43	GNRH1	MYMX	SAA4	VPS36
CCDC47	GNRH2	MYNN	SAAL1	VPS37A
CCDC50	GNRHR	MYO1A	SAC3D1	VPS37B
CCDC51	GNS	MYO1B	SACM1L	VPS37C
CCDC54	GOLGA1	MYO1C	SACS	VPS37D
CCDC57	GOLGA2	MYO1D	SAE1	VPS39
CCDC58	GOLGA3	MYO1E	SAFB	VPS41
CCDC59	GOLGA4	MYO1F	SAFB2	VPS45



CCDC60	GOLGA5	MYO1G	SAG	VPS50
CCDC61	GOLGA6A	MYO1H	SAGE1	VPS51
CCDC62	GOLGA6B	MYO3A	SALL1	VPS52
CCDC63	GOLGA6C	MYO3B	SALL2	VPS53
CCDC65	GOLGA6D	MYO5A	SALL3	VPS54
CCDC66	GOLGA6L1	MYO5B	SALL4	VPS72
CCDC68	GOLGA6L2	MYO5C	SAMD1	VRK1
CCDC69	GOLGA6L3	MYO6	SAMD3	VRK2
CCDC70	GOLGA6L4	MYO7A	SAMD4A	VRK3
CCDC71	GOLGA6L6	MYO7B	SAMD4B	VRTN
CCDC71L	GOLGA6L7	MYO9A	SAMD5	VSIG1
CCDC73	GOLGA6L9	MYO9B	SAMD7	VSIG2
CCDC74A	GOLGA6L10	MYO10	SAMD8	VSIG4
CCDC74B	GOLGA6L22	MYO15A	SAMD9	VSIG8
CCDC77	GOLGA7	MYO15B	SAMD9L	VSIG10
CCDC78	GOLGA7B	MYO16	SAMD10	VSIG10L
CCDC80	GOLGA8A	MYO18A	SAMD11	VSIG10L2
CCDC81	GOLGA8B	MYO18B	SAMD12	VSIR
CCDC82	GOLGA8F	MYO19	SAMD13	VSNL1
CCDC83	GOLGA8G	MYOC	SAMD14	VSTM1
CCDC84	GOLGA8H	MYOCD	SAMD15	VSTM2A
CCDC85A	GOLGA8J	MYOCOS	SAMHD1	VSTM2B
CCDC85B	GOLGA8K	MYOD1	SAMM50	VSTM2L
CCDC85C	GOLGA8M	MYOF	SAMSN1	VSTM4
CCDC86	GOLGA8N	MYOG	SAP18	VSTM5
CCDC87	GOLGA8O	MYOM1	SAP25	VSX1
CCDC88A	GOLGA8Q	MYOM2	SAP30	VSX2
CCDC88B	GOLGA8R	MYOM3	SAP30BP	VTA1
CCDC88C	GOLGA8S	MYORG	SAP30L	VTCN1
CCDC89	GOLGA8T	MYOT	SAP130	VTI1A
CCDC90B	GOLGB1	MYOZ1	SAPCD1	VTI1B
CCDC91	GOLIM4	MYOZ2	SAPCD2	VTN
CCDC92	GOLM1	MYOZ3	SAR1A	VWA1
CCDC92B	GOLPH3	MYPN	SAR1B	VWA2
CCDC93	GOLPH3L	MYPOP	SARAF	VWA3A
CCDC96	GOLT1A	MYRF	SARDH	VWA3B
CCDC97	GOLT1B	MYRFL	SARM1	VWA5A
CCDC102A	GON4L	MYRIP	SARNP	VWA5B1
CCDC102B	GON7	MYSM1	SARS	VWA5B2
CCDC103	GOPC	MYT1	SARS1	VWA7
CCDC105	GORAB	MYT1L	SARS2	VWA8
CCDC106	GORASP1	MYZAP	SART1	VWC2

CCDC107	GORASP2	MZB1	SART3	VWC2L
CCDC110	GOSR1	MZF1	SASH1	VWCE
CCDC112	GOSR2	MZT1	SASH3	VWDE
CCDC113	GOT1	MZT2A	SASS6	VWF
CCDC114	GOT1L1	MZT2B	SAT1	VXN
CCDC115	GOT2	N4BP1	SAT2	WAC
CCDC116	GP1BA	N4BP2	SATB1	WAPL
CCDC117	GP1BB	N4BP2L1	SATB2	WARS
CCDC120	GP2	N4BP2L2	SATL1	WARS1
CCDC121	GP5	N4BP3	SAV1	WARS2
CCDC122	GP6	N6AMT1	SAXO1	WAS
CCDC124	GP9	NAA10	SAXO2	WASF1
CCDC125	GPA33	NAA11	SAYSD1	WASF2
CCDC126	GPAA1	NAA15	SBDS	WASF3
CCDC127	GPALPP1	NAA16	SBF1	WASHC1
CCDC129	GPAM	NAA20	SBF2	WASHC2A
CCDC130	GPANK1	NAA25	SBK1	WASHC2C
CCDC134	GPAT2	NAA30	SBK2	WASHC3
CCDC136	GPAT3	NAA35	SBK3	WASHC4
CCDC137	GPAT4	NAA38	SBNO1	WASHC5
CCDC138	GPATCH1	NAA40	SBNO2	WASL
CCDC140	GPATCH2	NAA50	SBSN	WBP1
CCDC141	GPATCH2L	NAA60	SBSPON	WBP1L
CCDC142	GPATCH3	NAA80	SC5D	WBP2
CCDC144A	GPATCH4	NAAA	SCAF1	WBP2NL
CCDC144NL	GPATCH8	NAALAD2	SCAF4	WBP4
CCDC146	GPATCH11	NAALADL1	SCAF8	WBP11
CCDC148	GPBAR1	NAALADL2	SCAF11	WDCP
CCDC149	GPBP1	NAB1	SCAI	WDFY1
CCDC150	GPBP1L1	NAB2	SCAMP1	WDFY2
CCDC151	GPC1	NABP1	SCAMP2	WDFY3
CCDC152	GPC2	NABP2	SCAMP3	WDFY4
CCDC153	GPC3	NACA	SCAMP4	WDHD1
CCDC154	GPC4	NACA2	SCAMP5	WDPCP
CCDC155	GPC5	NACAD	SCAND1	WDR1
CCDC157	GPC6	NACC1	SCAP	WDR3
CCDC158	GPCPD1	NACC2	SCAPER	WDR4
CCDC159	GPD1	NADK	SCARA3	WDR5
CCDC160	GPD1L	NADK2	SCARA5	WDR5B
CCDC163	GPD2	NADSYN1	SCARB1	WDR6
CCDC166	GPER1	NAE1	SCARB2	WDR7
CCDC167	GPHA2	NAF1	SCARF1	WDR11

CCDC168	GPHB5	NAGA	SCARF2	WDR12
CCDC169	GPHN	NAGK	SCART1	WDR13
CCDC169- SOHLH2	GPI	NAGLU	SCCPDH	WDR17
CCDC170	GPIHBP1	NAGPA	SCD	WDR18
CCDC171	GPKOW	NAGS	SCD5	WDR19
CCDC172	GPLD1	NAIF1	SCEL	WDR20
CCDC173	GPM6A	NAIP	SCFD1	WDR24
CCDC174	GPM6B	NALCN	SCFD2	WDR25
CCDC175	GPN1	NAMPT	SCG2	WDR26
CCDC177	GPN2	NANOG	SCG3	WDR27
CCDC178	GPN3	NANOGNB	SCG5	WDR31
CCDC179	GPNMB	NANOGP8	SCGB1A1	WDR33
CCDC180	GPR1	NANOS1	SCGB1C1	WDR34
CCDC181	GPR3	NANOS2	SCGB1C2	WDR35
CCDC182	GPR4	NANOS3	SCGB1D1	WDR36
CCDC183	GPR6	NANP	SCGB1D2	WDR37
CCDC184	GPR12	NANS	SCGB1D4	WDR38
CCDC185	GPR15	NAP1L1	SCGB2A1	WDR41
CCDC186	GPR17	NAP1L2	SCGB2A2	WDR43
CCDC187	GPR18	NAP1L3	SCGB2B2	WDR44
CCDC188	GPR19	NAP1L4	SCGB3A1	WDR45
CCDC189	GPR20	NAP1L5	SCGB3A2	WDR45B
CCDC190	GPR21	NAPA	SCGN	WDR46
CCDC191	GPR22	NAPB	SCHIP1	WDR47
CCDC192	GPR25	NAPEPLD	SCIMP	WDR48
CCDC194	GPR26	NAPG	SCIN	WDR49
CCDC195	GPR27	NAPRT	SCLT1	WDR53
CCDC196	GPR31	NAPSA	SCLY	WDR54
CCDC197	GPR32	NARF	SCMH1	WDR55
CCDC198	GPR33	NARS	SCML1	WDR59
CCDC200	GPR34	NARS1	SCML2	WDR60
CCDC201	GPR35	NARS2	SCML4	WDR61
CCER1	GPR37	NASP	SCN1A	WDR62
CCER2	GPR37L1	NAT1	SCN1B	WDR63
CCHCR1	GPR39	NAT2	SCN2A	WDR64
CCIN	GPR42	NAT8	SCN2B	WDR66
CCK	GPR45	NAT8L	SCN3A	WDR70
CCKAR	GPR50	NAT9	SCN3B	WDR72
CCKBR	GPR52	NAT10	SCN4A	WDR73
CCL1	GPR55	NAT14	SCN4B	WDR74
CCL2	GPR61	NAT16	SCN5A	WDR75

CCL3	GPR62	NATD1	SCN7A	WDR76
CCL3L3	GPR63	NAV1	SCN8A	WDR77
CCL4	GPR65	NAV2	SCN9A	WDR78
CCL4L2	GPR68	NAV3	SCN10A	WDR81
CCL5	GPR75	NAXD	SCN11A	WDR82
CCL7	GPR75-ASB3	NAXE	SCNM1	WDR83
CCL8	GPR78	NBAS	SCNN1A	WDR83OS
CCL11	GPR82	NBDY	SCNN1B	WDR86
CCL13	GPR83	NBEA	SCNN1D	WDR87
CCL14	GPR84	NBEAL1	SCNN1G	WDR88
CCL15	GPR85	NBEAL2	SCO1	WDR89
CCL15-CCL14	GPR87	NBL1	SCO2	WDR90
CCL16	GPR88	NBN	SCOC	WDR91
CCL17	GPR89A	NBPF1	SCP2	WDR92
CCL18	GPR89B	NBPF3	SCP2D1	WDR93
CCL19	GPR101	NBPF4	SCPEP1	WDR97
CCL20	GPR107	NBPF6	SCRG1	WDSUB1
CCL21	GPR108	NBPF7	SCRIB	WDTC1
CCL22	GPR119	NBPF8	SCRN1	WDYHV1
CCL23	GPR132	NBPF9	SCRN2	WEE1
CCL24	GPR135	NBPF10	SCRN3	WEE2
CCL25	GPR137	NBPF11	SCRT1	WFDC1
CCL26	GPR137B	NBPF12	SCRT2	WFDC2
CCL27	GPR137C	NBPF14	SCT	WFDC3
CCL28	GPR139	NBPF15	SCTR	WFDC5
CCM2	GPR141	NBPF19	SCUBE1	WFDC6
CCM2L	GPR142	NBPF20	SCUBE2	WFDC8
CCN1	GPR143	NBPF26	SCUBE3	WFDC9
CCN2	GPR146	NBR1	SCX	WFDC10A
CCN3	GPR148	NCALD	SCYGR1	WFDC10B
CCN4	GPR149	NCAM1	SCYGR2	WFDC11
CCN5	GPR150	NCAM2	SCYGR3	WFDC12
CCN6	GPR151	NCAN	SCYGR4	WFDC13
CCNA1	GPR152	NCAPD2	SCYGR5	WFIKKN1
CCNA2	GPR153	NCAPD3	SCYGR6	WFIKKN2
CCNB1	GPR155	NCAPG	SCYGR7	WFS1
CCNB1IP1	GPR156	NCAPG2	SCYGR8	WHAMM
CCNB2	GPR157	NCAPH	SCYL1	WHRN
CCNB3	GPR158	NCAPH2	SCYL2	WIF1
CCNC	GPR160	NCBP1	SCYL3	WIPF1
CCND1	GPR161	NCBP2	SDAD1	WIPF2
CCND2	GPR162	NCBP2AS2	SDC1	WIPF3

CCND3	GPR171	NCBP2L	SDC2	WIPI1
CCNDBP1	GPR173	NCBP2-AS2	SDC3	WIPI2
CCNE1	GPR174	NCBP3	SDC4	WISP1
CCNE2	GPR176	NCCRP1	SDCBP	WISP2
CCNF	GPR179	NCDN	SDCBP2	WISP3
CCNG1	GPR180	NCEH1	SDCCAG8	WIZ
CCNG2	GPR182	NCF1	SDE2	WLS
CCNH	GPR183	NCF2	SDF2	WNK1
CCNI	GPRASP1	NCF4	SDF2L1	WNK2
CCNI2	GPRASP2	NCK1	SDF4	WNK3
CCNJ	GPRC5A	NCK2	SDHA	WNK4
CCNJL	GPRC5B	NCKAP1	SDHAF1	WNT1
CCNK	GPRC5C	NCKAP1L	SDHAF2	WNT2
CCNL1	GPRC5D	NCKAP5	SDHAF3	WNT2B
CCNL2	GPRC6A	NCKAP5L	SDHAF4	WNT3
CCNO	GPRIN1	NCKIPSD	SDHB	WNT3A
CCNQ	GPRIN2	NCL	SDHC	WNT4
CCNT1	GPRIN3	NCLN	SDHD	WNT5A
CCNT2	GPS1	NCMAP	SDK1	WNT5B
CCNY	GPS2	NCOA1	SDK2	WNT6
CCNYL1	GPSM1	NCOA2	SDR9C7	WNT7A
CCP110	GPSM2	NCOA3	SDR16C5	WNT7B
CCPG1	GPSM3	NCOA4	SDR39U1	WNT8A
CCR1	GPT	NCOA5	SDR42E1	WNT8B
CCR2	GPT2	NCOA6	SDR42E2	WNT9A
CCR3	GPX1	NCOA7	SDS	WNT9B
CCR4	GPX2	NCOR1	SDSL	WNT10A
CCR5	GPX3	NCOR2	SEBOX	WNT10B
CCR6	GPX4	NCR1	SEC11A	WNT11
CCR7	GPX5	NCR2	SEC11C	WNT16
CCR8	GPX6	NCR3	SEC13	WRAP53
CCR9	GPX7	NCR3LG1	SEC14L1	WRAP73
CCR10	GPX8	NCS1	SEC14L2	WRB
CCRL2	GRAMD1A	NCSTN	SEC14L3	WRB-SH3BGR
CCS	GRAMD1B	NDC1	SEC14L4	WRN
CCSAP	GRAMD1C	NDC80	SEC14L5	WRNIP1
CCSER1	GRAMD2A	NDE1	SEC14L6	WSB1
CCSER2	GRAMD2B	NDEL1	SEC16A	WSB2
CCT2	GRAMD4	NDFIP1	SEC16B	WSCD1
CCT3	GRAP	NDFIP2	SEC22A	WSCD2
CCT4	GRAP2	NDN	SEC22B	WT1
CCT5	GRAPL	NDNF	SEC22C	WTAP

CCT6A	GRASP	NDOR1	SEC23A	WTIP
CCT6B	GRB2	NDP	SEC23B	WWC1
CCT7	GRB7	NDRG1	SEC23IP	WWC2
CCT8	GRB10	NDRG2	SEC24A	WWC3
CCT8L2	GRB14	NDRG3	SEC24B	WWOX
CCZ1	GREB1	NDRG4	SEC24C	WWP1
CCZ1B	GREB1L	NDST1	SEC24D	WWP2
CD1A	GREM1	NDST2	SEC31A	WWTR1
CD1B	GREM2	NDST3	SEC31B	XAB2
CD1C	GRHL1	NDST4	SEC61A1	XAF1
CD1D	GRHL2	NDUFA1	SEC61A2	XAGE1A
CD1E	GRHL3	NDUFA2	SEC61B	XAGE1B
CD2	GRHPR	NDUFA3	SEC61G	XAGE2
CD2AP	GRIA1	NDUFA4	SEC62	XAGE3
CD2BP2	GRIA2	NDUFA4L2	SEC63	XAGE5
CD3D	GRIA3	NDUFA5	SECISBP2	XBP1
CD3E	GRIA4	NDUFA6	SECISBP2L	XCL1
CD3EAP	GRID1	NDUFA7	SECTM1	XCL2
CD3G	GRID2	NDUFA8	SEH1L	XCR1
CD4	GRID2IP	NDUFA9	SEL1L	XDH
CD5	GRIFIN	NDUFA10	SEL1L2	XG
CD5L	GRIK1	NDUFA11	SEL1L3	XIAP
CD6	GRIK2	NDUFA12	SELE	XIRP1
CD7	GRIK3	NDUFA13	SELENBP1	XIRP2
CD8A	GRIK4	NDUFAB1	SELENOF	XK
CD8B	GRIK5	NDUFAF1	SELENOH	XKR3
CD8B2	GRIN1	NDUFAF2	SELENOI	XKR4
CD9	GRIN2A	NDUFAF3	SELENOK	XKR5
CD14	GRIN2B	NDUFAF4	SELENOM	XKR6
CD19	GRIN2C	NDUFAF5	SELENON	XKR7
CD22	GRIN2D	NDUFAF6	SELENOO	XKR8
CD24	GRIN3A	NDUFAF7	SELENOP	XKR9
CD27	GRIN3B	NDUFAF8	SELENOS	XKRX
CD28	GRINA	NDUFB1	SELENOT	XKRY
CD33	GRIP1	NDUFB2	SELENOV	XKRY2
CD34	GRIP2	NDUFB3	SELENOW	XPA
CD36	GRIPAP1	NDUFB4	SELL	XPC
CD37	GRK1	NDUFB5	SELP	XPNPEP1
CD38	GRK2	NDUFB6	SELPLG	XPNPEP2
CD40	GRK3	NDUFB7	SEM1	XPNPEP3
CD40LG	GRK4	NDUFB8	SEMA3A	XPO1
CD44	GRK5	NDUFB9	SEMA3B	XPO4

CD46	GRK6	NDUFB10	SEMA3C	XPO5
CD47	GRK7	NDUFB11	SEMA3D	XPO6
CD48	GRM1	NDUFC1	SEMA3E	XPO7
CD52	GRM2	NDUFC2	SEMA3F	XPOT
CD53	GRM3	NDUFC2-KCTD14	SEMA3G	XPR1
CD55	GRM4	NDUFS1	SEMA4A	XRCC1
CD58	GRM5	NDUFS2	SEMA4B	XRCC2
CD59	GRM6	NDUFS3	SEMA4C	XRCC3
CD63	GRM7	NDUFS4	SEMA4D	XRCC4
CD68	GRM8	NDUFS5	SEMA4F	XRCC5
CD69	GRN	NDUFS6	SEMA4G	XRCC6
CD70	GRP	NDUFS7	SEMA5A	XRN1
CD72	GRPEL1	NDUFS8	SEMA5B	XRN2
CD74	GRPEL2	NDUFV1	SEMA6A	XRR1
CD79A	GRPR	NDUFV2	SEMA6B	XXYL1
CD79B	GRSF1	NDUFV3	SEMA6C	XYLB
CD80	GRTP1	NEB	SEMA6D	XYLT1
CD81	GRWD1	NEBL	SEMA7A	XYLT2
CD82	GRXCR1	NECAB1	SEMG1	YAE1
CD83	GRXCR2	NECAB2	SEMG2	YAF2
CD84	GSAP	NECAB3	SENP1	YAP1
CD86	GSC	NECAP1	SENP2	YARS
CD93	GSC2	NECAP2	SENP3	YARS1
CD96	GSDMA	NECTIN1	SENP3-EIF4A1	YARS2
CD99	GSDMB	NECTIN2	SENP5	YBEY
CD99L2	GSDMC	NECTIN3	SENP6	YBX1
CD101	GSDMD	NECTIN4	SENP7	YBX2
CD109	GSDME	NEDD1	SENP8	YBX3
CD151	GSE1	NEDD4	SEPHS1	YDJC
CD160	GSG1	NEDD4L	SEPHS2	YEATS2
CD163	GSG1L	NEDD8	SEPSECS	YEATS4
CD163L1	GSG1L2	NEDD8-MDP1	SEPT1	YES1
CD164	GSK3A	NEDD9	SEPT2	YIF1A
CD164L2	GSK3B	NEFH	SEPT3	YIF1B
CD177	GSKIP	NEFL	SEPT4	YIPF1
CD180	GSN	NEFM	SEPT5	YIPF2
CD200	GSPT1	NEGR1	SEPT6	YIPF3
CD200R1	GSPT2	NEIL1	SEPT7	YIPF4
CD200R1L	GSR	NEIL2	SEPT8	YIPF5
CD207	GSS	NEIL3	SEPT9	YIPF6
CD209	GSTA1	NEK1	SEPT10	YIPF7
CD226	GSTA2	NEK2	SEPT11	YJEFN3

CD244	GSTA3	NEK3	SEPT12	YJU2
CD247	GSTA4	NEK4	SEPT14	YKT6
CD248	GSTA5	NEK5	SEPTIN1	YLPM1
CD274	GSTCD	NEK6	SEPTIN2	YME1L1
CD276	GSTK1	NEK7	SEPTIN3	YOD1
CD300A	GSTM1	NEK8	SEPTIN4	YPEL1
CD300C	GSTM2	NEK9	SEPTIN5	YPEL2
CD300E	GSTM3	NEK10	SEPTIN6	YPEL3
CD300H	GSTM4	NEK11	SEPTIN7	YPEL4
CD300LB	GSTM5	NELFA	SEPTIN8	YPEL5
CD300LD	GSTO1	NELFB	SEPTIN9	YRDC
CD300LF	GSTO2	NELFCD	SEPTIN10	YTHDC1
CD300LG	GSTP1	NELFE	SEPTIN11	YTHDC2
CD302	GSTT2B	NELL1	SEPTIN12	YTHDF1
CD320	GSTT4	NELL2	SEPTIN14	YTHDF2
CDA	GSTZ1	NEMF	SERAC1	YTHDF3
CDADC1	GSX1	NEMP1	SERBP1	YWHAB
CDAN1	GSX2	NEMP2	SERF1A	YWHAE
CDC5L	GTDC1	NENF	SERF1B	YWHAG
CDC6	GTF2A1	NEO1	SERF2	YWHAH
CDC7	GTF2A1L	NEPRO	SERGEF	YWHAQ
CDC14A	GTF2A2	NES	SERHL2	YWHAZ
CDC14B	GTF2B	NET1	SERINC1	YY1
CDC14C	GTF2E1	NETO1	SERINC2	YY1AP1
CDC16	GTF2E2	NETO2	SERINC3	YY2
CDC20	GTF2F1	NEU1	SERINC4	Z82190.2
CDC20B	GTF2F2	NEU2	SERINC5	Z82206.1
CDC23	GTF2H1	NEU3	SERP1	Z83844.1
CDC25A	GTF2H2	NEU4	SERP2	Z83844.3
CDC25B	GTF2H2C	NEURL1	SERPINA1	Z84488.2
CDC25C	GTF2H3	NEURL1B	SERPINA3	Z84492.2
CDC26	GTF2H4	NEURL2	SERPINA4	Z98752.3
CDC27	GTF2H5	NEURL3	SERPINA5	ZACN
CDC34	GTF2I	NEURL4	SERPINA6	ZADH2
CDC37	GTF2IRD1	NEUROD1	SERPINA7	ZAN
CDC37L1	GTF2IRD2	NEUROD2	SERPINA9	ZAP70
CDC40	GTF2IRD2B	NEUROD4	SERPINA10	ZAR1
CDC42	GTF3A	NEUROD6	SERPINA11	ZAR1L
CDC42BPA	GTF3C1	NEUROG1	SERPINA12	ZASP
CDC42BPB	GTF3C2	NEUROG2	SERPINB1	ZBBX
CDC42BPG	GTF3C3	NEUROG3	SERPINB2	ZBED1
CDC42EP1	GTF3C4	NEXMIF	SERPINB3	ZBED2



CDC42EP2	GTF3C5	NEXN	SERPINB4	ZBED3
CDC42EP3	GTF3C6	NF1	SERPINB5	ZBED4
CDC42EP4	GTPBP1	NF2	SERPINB6	ZBED5
CDC42EP5	GTPBP2	NFAM1	SERPINB7	ZBED6
CDC42SE1	GTPBP3	NFASC	SERPINB8	ZBED6CL
CDC42SE2	GTPBP4	NFAT5	SERPINB9	ZBED8
CDC45	GTPBP6	NFATC1	SERPINB10	ZBED9
CDC73	GTPBP8	NFATC2	SERPINB11	ZBP1
CDC123	GTPBP10	NFATC2IP	SERPINB12	ZBTB1
CDCA2	GTSE1	NFATC3	SERPINB13	ZBTB2
CDCA3	GTSF1	NFATC4	SERPINC1	ZBTB3
CDCA4	GTSF1L	NFE2	SERPIND1	ZBTB4
CDCA5	GUCA1A	NFE2L1	SERPINE1	ZBTB5
CDCA7	GUCA1B	NFE2L2	SERPINE2	ZBTB6
CDCA7L	GUCA1C	NFE2L3	SERPINE3	ZBTB7A
CDCA8	GUCA2A	NFE4	SERPINF1	ZBTB7B
CDCP1	GUCA2B	NFIA	SERPINF2	ZBTB7C
CDCP2	GUCD1	NFIB	SERPING1	ZBTB8A
CDH1	GUCY1A1	NFIC	SERPINH1	ZBTB8B
CDH2	GUCY1A2	NFIL3	SERPINI1	ZBTB8OS
CDH3	GUCY1B1	NFIX	SERPINI2	ZBTB9
CDH4	GUCY2C	NFKB1	SERTAD1	ZBTB10
CDH5	GUCY2D	NFKB2	SERTAD2	ZBTB11
CDH6	GUCY2F	NFKBIA	SERTAD3	ZBTB12
CDH7	GUF1	NFKBIB	SERTAD4	ZBTB14
CDH8	GUK1	NFKBID	SERTM1	ZBTB16
CDH9	GULP1	NFKBIE	SERTM2	ZBTB17
CDH10	GUSB	NFKBIL1	SESN1	ZBTB18
CDH11	GVQW2	NFKBIZ	SESN2	ZBTB20
CDH12	GVQW3	NFRKB	SESN3	ZBTB21
CDH13	GXYLT1	NFS1	SESTD1	ZBTB22
CDH15	GXYLT2	NFU1	SET	ZBTB24
CDH16	GYG1	NFX1	SETBP1	ZBTB25
CDH17	GYG2	NFXL1	SETD1A	ZBTB26
CDH18	GYPA	NFYA	SETD1B	ZBTB32
CDH19	GYPB	NFYB	SETD2	ZBTB33
CDH20	GYPC	NFYC	SETD3	ZBTB34
CDH22	GYPE	NGB	SETD4	ZBTB37
CDH23	GYS1	NGDN	SETD5	ZBTB38
CDH24	GYS2	NGEF	SETD6	ZBTB39
CDH26	GZF1	NGF	SETD7	ZBTB40
CDHR1	GZMA	NGFR	SETD9	ZBTB41

CDHR2	GZMB	NGLY1	SETDB1	ZBTB42
CDHR3	GZMH	NGRN	SETDB2	ZBTB43
CDHR4	GZMK	NHEJ1	SETDB2-PHF11	ZBTB44
CDHR5	GZMM	NHLH1	SETMAR	ZBTB45
CDIP1	H1F0	NHLH2	SETSIP	ZBTB46
CDIPT	H1FNT	NHLRC1	SETX	ZBTB47
CDK1	H1FOO	NHLRC2	SEZ6	ZBTB48
CDK2	H1FX	NHLRC3	SEZ6L	ZBTB49
CDK2AP1	H1-0	NHLRC4	SEZ6L2	ZC2HC1A
CDK2AP2	H1-1	NHP2	SF1	ZC2HC1B
CDK3	H1-2	NHS	SF3A1	ZC2HC1C
CDK4	H1-3	NHSL1	SF3A2	ZC3H3
CDK5	H1-4	NHSL2	SF3A3	ZC3H4
CDK5R1	H1-5	NIBAN1	SF3B1	ZC3H6
CDK5R2	H1-6	NIBAN2	SF3B2	ZC3H7A
CDK5RAP1	H1-7	NIBAN3	SF3B3	ZC3H7B
CDK5RAP2	H1-8	NICN1	SF3B4	ZC3H8
CDK5RAP3	H1-10	NID1	SF3B5	ZC3H10
CDK6	H2AB1	NID2	SF3B6	ZC3H11A
CDK7	H2AB2	NIF3L1	SFI1	ZC3H11B
CDK8	H2AB3	NIFK	SFMBT1	ZC3H12A
CDK9	H2AC1	NIM1K	SFMBT2	ZC3H12B
CDK10	H2AC4	NIN	SFN	ZC3H12C
CDK11A	H2AC6	NINJ1	SFPQ	ZC3H12D
CDK11B	H2AC7	NINJ2	SFR1	ZC3H13
CDK12	H2AC8	NINL	SFRP1	ZC3H14
CDK13	H2AC11	NIP7	SFRP2	ZC3H15
CDK14	H2AC12	NIPA1	SFRP4	ZC3H18
CDK15	H2AC13	NIPA2	SFRP5	ZC3HAV1
CDK16	H2AC14	NIPAL1	SFSWAP	ZC3HAV1L
CDK17	H2AC15	NIPAL2	SFT2D1	ZC3HC1
CDK18	H2AC16	NIPAL3	SFT2D2	ZC4H2
CDK19	H2AC17	NIPAL4	SFT2D3	ZCCHC2
CDK20	H2AC18	NIPBL	SFTA2	ZCCHC3
CDKAL1	H2AC19	NIPSNAP1	SFTA3	ZCCHC4
CDKL1	H2AC20	NIPSNAP2	SFTPA1	ZCCHC7
CDKL2	H2AC21	NIPSNAP3A	SFTPA2	ZCCHC8
CDKL3	H2AFB1	NIPSNAP3B	SFTPB	ZCCHC9
CDKL4	H2AFB2	NISCH	SFTPC	ZCCHC10
CDKL5	H2AFB3	NIT1	SFTPD	ZCCHC12
CDKN1A	H2AFJ	NIT2	SFXN1	ZCCHC13
CDKN1B	H2AFV	NKAIN1	SFXN2	ZCCHC14

CDKN1C	H2AFX	NKAIN2	SFXN3	ZCCHC17
CDKN2A	H2AFY	NKAIN3	SFXN4	ZCCHC18
CDKN2AIP	H2AFY2	NKAIN4	SFXN5	ZCCHC24
CDKN2AIPNL	H2AFZ	NKAP	SGCA	ZCRB1
CDKN2B	H2AJ	NKAPD1	SGCB	ZCWPW1
CDKN2C	H2AL1RP	NKAPL	SGCD	ZCWPW2
CDKN2D	H2AP	NKD1	SGCE	ZDBF2
CDKN3	H2AW	NKD2	SGCG	ZDHHC1
CDNF	H2AX	NKG7	SGCZ	ZDHHC2
CDO1	H2AZ1	NKIRAS1	SGF29	ZDHHC3
CDON	H2AZ2	NKIRAS2	SGIP1	ZDHHC4
CDPF1	H2BC1	NKPD1	SGK1	ZDHHC5
CDR1	H2BC3	NKRF	SGK2	ZDHHC6
CDR2	H2BC4	NKTR	SGK3	ZDHHC7
CDR2L	H2BC5	NKX1-1	SGMS1	ZDHHC8
CDRT1	H2BC6	NKX1-2	SGMS2	ZDHHC9
CDRT4	H2BC7	NKX2-1	SGO1	ZDHHC11
CDRT15	H2BC8	NKX2-2	SGO2	ZDHHC11B
CDRT15L2	H2BC9	NKX2-3	SGPL1	ZDHHC12
CDS1	H2BC10	NKX2-4	SGPP1	ZDHHC13
CDS2	H2BC11	NKX2-5	SGPP2	ZDHHC14
CDSN	H2BC12	NKX2-6	SGSH	ZDHHC15
CDT1	H2BC13	NKX2-8	SGSM1	ZDHHC16
CDV3	H2BC14	NKX3-1	SGSM2	ZDHHC17
CDX1	H2BC15	NKX3-2	SGSM3	ZDHHC18
CDX2	H2BC17	NKX6-1	SGTA	ZDHHC19
CDX4	H2BC18	NKX6-2	SGTB	ZDHHC20
CDY1	H2BC21	NKX6-3	SH2B1	ZDHHC21
CDY1B	H2BE1	NLE1	SH2B2	ZDHHC22
CDY2A	H2BFM	NLGN1	SH2B3	ZDHHC23
CDY2B	H2BFWT	NLGN2	SH2D1A	ZDHHC24
CDYL	H2BS1	NLGN3	SH2D1B	ZEB1
CDYL2	H2BU1	NLGN4X	SH2D2A	ZEB2
CEACAM1	H2BW1	NLGN4Y	SH2D3A	ZER1
CEACAM3	H2BW2	NLK	SH2D3C	ZFAND1
CEACAM4	H3.Y	NLN	SH2D4A	ZFAND2A
CEACAM5	H3C1	NLRC3	SH2D4B	ZFAND2B
CEACAM6	H3C2	NLRC4	SH2D5	ZFAND3
CEACAM7	H3C3	NLRC5	SH2D6	ZFAND4
CEACAM8	H3C4	NLRP1	SH2D7	ZFAND5
CEACAM16	H3C6	NLRP2	SH3BGR	ZFAND6
CEACAM18	H3C7	NLRP2B	SH3BGRL	ZFAT

CEACAM19	H3C8	NLRP3	SH3BGRL2	ZFC3H1
CEACAM20	H3C10	NLRP4	SH3BGRL3	ZFHX2
CEACAM21	H3C11	NLRP5	SH3BP1	ZFHX3
CEBPA	H3C12	NLRP6	SH3BP2	ZFHX4
CEBPB	H3C13	NLRP7	SH3BP4	ZFP1
CEBPD	H3C14	NLRP8	SH3BP5	ZFP2
CEBPE	H3C15	NLRP9	SH3BP5L	ZFP3
CEBPG	H3F3A	NLRP10	SH3D19	ZFP14
CEBPZ	H3F3B	NLRP11	SH3D21	ZFP28
CEBPZOS	H3F3C	NLRP12	SH3GL1	ZFP30
CECR2	H3Y1	NLRP13	SH3GL2	ZFP36
CEL	H3Y2	NLRP14	SH3GL3	ZFP36L1
CELA1	H3-2	NLRX1	SH3GLB1	ZFP36L2
CELA2A	H3-3A	NMB	SH3GLB2	ZFP37
CELA2B	H3-3B	NMBR	SH3KBP1	ZFP41
CELA3A	H3-4	NMD3	SH3PXD2A	ZFP42
CELA3B	H3-5	NME1	SH3PXD2B	ZFP57
CELF1	H4C1	NME1-NME2	SH3RF1	ZFP62
CELF2	H4C2	NME2	SH3RF2	ZFP64
CELF3	H4C3	NME3	SH3RF3	ZFP69
CELF4	H4C4	NME4	SH3TC1	ZFP69B
CELF5	H4C5	NME5	SH3TC2	ZFP82
CELF6	H4C6	NME6	SH3YL1	ZFP90
CELSR1	H4C7	NME7	SHANK1	ZFP91
CELSR2	H4C8	NME8	SHANK2	ZFP91-CNTF
CELSR3	H4C9	NME9	SHANK3	ZFP92
CEMIP	H4C11	NMI	SHARPIN	ZFPL1
CEMIP2	H4C12	NMNAT1	SHB	ZFPM1
CEMP1	H4C13	NMNAT2	SHBG	ZFPM2
CEND1	H4C14	NMNAT3	SHC1	ZFR
CENPA	H4C15	NMRAL1	SHC2	ZFR2
CENPB	H4-16	NMRK1	SHC3	ZFX
CENPBD1	H6PD	NMRK2	SHC4	ZFY
CENPC	HAAO	NMS	SHCBP1	ZFYVE1
CENPE	HABP2	NMT1	SHCBP1L	ZFYVE9
CENPF	HABP4	NMT2	SHD	ZFYVE16
CENPH	HACD1	NMU	SHE	ZFYVE19
CENPI	HACD2	NMUR1	SHF	ZFYVE21
CENPJ	HACD3	NMUR2	SHFL	ZFYVE26
CENPK	HACD4	NNAT	SHH	ZFYVE27
CENPL	HACE1	NNMT	SHISA2	ZFYVE28
CENPM	HACL1	NNT	SHISA3	ZG16

CENPN	HADH	NOA1	SHISA4	ZG16B
CENPO	HADHA	NOB1	SHISA5	ZGLP1
CENPP	HADHB	NOBOX	SHISA6	ZGPAT
CENPQ	HAGH	NOC2L	SHISA7	ZGRF1
CENPS	HAGHL	NOC3L	SHISA8	ZHX1
CENPS-CORT	HAL	NOC4L	SHISA9	ZHX1-C8orf76
CENPT	HAMP	NOCT	SHISAL1	ZHX2
CENPU	HAND1	NOD1	SHISAL2A	ZHX3
CENPV	HAND2	NOD2	SHISAL2B	ZIC1
CENPVL1	HAO1	NODAL	SHKBP1	ZIC2
CENPVL2	HAO2	NOG	SHLD1	ZIC3
CENPVL3	HAP1	NOL3	SHLD2	ZIC4
CENPW	HAPLN1	NOL4	SHLD3	ZIC5
CENPX	HAPLN2	NOL4L	SHMT1	ZIK1
CEP19	HAPLN3	NOL6	SHMT2	ZIM2
CEP41	HAPLN4	NOL7	SHOC1	ZIM3
CEP44	HARBI1	NOL8	SHOC2	ZKSCAN1
CEP55	HARS	NOL9	SHOX	ZKSCAN2
CEP57	HARS1	NOL10	SHOX2	ZKSCAN3
CEP57L1	HARS2	NOL11	SHPK	ZKSCAN4
CEP63	HAS1	NOL12	SHPRH	ZKSCAN5
CEP68	HAS2	NOLC1	SHQ1	ZKSCAN7
CEP70	HAS3	NOM1	SHROOM1	ZKSCAN8
CEP72	HASPIN	NOMO1	SHROOM2	ZMAT1
CEP76	HAT1	NOMO2	SHROOM3	ZMAT2
CEP78	HAUS1	NOMO3	SHROOM4	ZMAT3
CEP83	HAUS2	NONO	SHTN1	ZMAT4
CEP85	HAUS3	NOP2	SI	ZMAT5
CEP85L	HAUS4	NOP9	SIAE	ZMIZ1
CEP89	HAUS5	NOP10	SIAH1	ZMIZ2
CEP95	HAUS6	NOP14	SIAH2	ZMPSTE24
CEP97	HAUS7	NOP16	SIAH3	ZMYM1
CEP104	HAUS8	NOP53	SIDT1	ZMYM2
CEP112	HAVCR1	NOP56	SIDT2	ZMYM3
CEP120	HAVCR2	NOP58	SIGIRR	ZMYM4
CEP126	HAX1	NOS1	SIGLEC1	ZMYM5
CEP128	HBA1	NOS1AP	SIGLEC5	ZMYM6
CEP131	HBA2	NOS2	SIGLEC6	ZMYND8
CEP135	HBB	NOS3	SIGLEC7	ZMYND10
CEP152	HBD	NOSIP	SIGLEC8	ZMYND11
CEP162	HBE1	NOSTRIN	SIGLEC9	ZMYND12
CEP164	HBEGF	NOTCH1	SIGLEC10	ZMYND15

CEP170	HBG1	NOTCH2	SIGLEC11	ZMYND19
CEP170B	HBG2	NOTCH2NLA	SIGLEC12	ZNF2
CEP192	HBM	NOTCH2NLB	SIGLEC14	ZNF3
CEP250	HBP1	NOTCH2NLC	SIGLEC15	ZNF7
CEP290	HBQ1	NOTCH3	SIGLEC16	ZNF8
CEP295	HBS1L	NOTCH4	SIGLECL1	ZNF10
CEP295NL	HBZ	NOTO	SIGMAR1	ZNF12
CEP350	HCAR1	NOTUM	SIK1	ZNF14
CEPT1	HCAR2	NOV	SIK1B	ZNF16
CER1	HCAR3	NOVA1	SIK2	ZNF17
CERCAM	HCCS	NOVA2	SIK3	ZNF18
CERK	HCFC1	NOX1	SIKE1	ZNF19
CERKL	HCFC1R1	NOX3	SIL1	ZNF20
CERS1	HCFC2	NOX4	SIM1	ZNF22
CERS2	HCK	NOX5	SIM2	ZNF23
CERS3	HCLS1	NOXA1	SIMC1	ZNF24
CERS4	HCN1	NOXO1	SIN3A	ZNF25
CERS5	HCN2	NOXRED1	SIN3B	ZNF26
CERS6	HCN3	NPAP1	SINHCAF	ZNF28
CERT1	HCN4	NPAP1L	SIPA1	ZNF30
CES1	HCRT	NPAS1	SIPA1L1	ZNF32
CES2	HCRTR1	NPAS2	SIPA1L2	ZNF33A
CES3	HCRTR2	NPAS3	SIPA1L3	ZNF33B
CES4A	HCST	NPAS4	SIRPA	ZNF34
CES5A	HDAC1	NPAT	SIRPB1	ZNF35
CETN1	HDAC2	NPB	SIRPB2	ZNF37A
CETN2	HDAC3	NPBWR1	SIRPD	ZNF41
CETN3	HDAC4	NPBWR2	SIRPG	ZNF43
CETP	HDAC5	NPC1	SIRT1	ZNF44
CFAP20	HDAC6	NPC1L1	SIRT2	ZNF45
CFAP36	HDAC7	NPC2	SIRT3	ZNF48
CFAP43	HDAC8	NPDC1	SIRT4	ZNF56
CFAP44	HDAC9	NPEPL1	SIRT5	ZNF57
CFAP45	HDAC10	NPEPPS	SIRT6	ZNF66
CFAP46	HDAC11	NPFF	SIRT7	ZNF69
CFAP47	HDC	NPFFR1	SIT1	ZNF70
CFAP52	HDDC2	NPFFR2	SIVA1	ZNF71
CFAP53	HDDC3	NPHP1	SIX1	ZNF74
CFAP54	HDGF	NPHP3	SIX2	ZNF75A
CFAP57	HDGFL1	NPHP3-ACAD11	SIX3	ZNF75D
CFAP58	HDGFL2	NPHP4	SIX4	ZNF76
CFAP61	HDGFL3	NPHS1	SIX5	ZNF77

CFAP65	HDHD2	NPHS2	SIX6	ZNF79
CFAP69	HDHD3	NPIPA1	SKA1	ZNF80
CFAP70	HDHD5	NPIPA2	SKA2	ZNF81
CFAP73	HDLBP	NPIPA3	SKA3	ZNF83
CFAP74	HDX	NPIPA5	SKAP1	ZNF84
CFAP77	HEATR1	NPIPA7	SKAP2	ZNF85
CFAP97	HEATR3	NPIPA8	SKI	ZNF90
CFAP97D1	HEATR4	NPIPA9	SKIDA1	ZNF91
CFAP97D2	HEATR5A	NPIP2	SKIL	ZNF92
CFAP99	HEATR5B	NPIP3	SKIV2L	ZNF93
CFAP100	HEATR6	NPIP4	SKOR1	ZNF98
CFAP126	HEATR9	NPIP5	SKOR2	ZNF99
CFAP157	HEBP1	NPIP6	SKP1	ZNF100
CFAP161	HEBP2	NPIP7	SKP2	ZNF101
CFAP206	HECA	NPIP8	SLA	ZNF106
CFAP221	HECTD1	NPIP9	SLA2	ZNF107
CFAP298	HECTD2	NPIP11	SLAIN1	ZNF112
CFAP298-TCP10L	HECTD3	NPIP12	SLAIN2	ZNF114
CFAP299	HECTD4	NPIP13	SLAMF1	ZNF117
CFAP300	HECW1	NPIP15	SLAMF6	ZNF121
CFAP410	HECW2	NPL	SLAMF7	ZNF124
CFB	HEG1	NPLOC4	SLAMF8	ZNF131
CFC1	HELB	NPM1	SLAMF9	ZNF132
CFC1B	HELLS	NPM2	SLBP	ZNF133
CFD	HELQ	NPM3	SLC1A1	ZNF134
CFDP1	HELT	NPNT	SLC1A2	ZNF135
CFH	HELZ	NPPA	SLC1A3	ZNF136
CFHR1	HELZ2	NPPB	SLC1A4	ZNF138
CFHR2	HEMGN	NPPC	SLC1A5	ZNF140
CFHR3	HEMK1	NPR1	SLC1A6	ZNF141
CFHR4	HENMT1	NPR2	SLC1A7	ZNF142
CFHR5	HEPACAM	NPR3	SLC2A1	ZNF143
CFI	HEPACAM2	NPRL2	SLC2A2	ZNF146
CFL1	HEPH	NPRL3	SLC2A3	ZNF148
CFL2	HEPHL1	NPS	SLC2A4	ZNF154
CFLAR	HEPN1	NPSR1	SLC2A4RG	ZNF155
CFP	HERC1	NPTN	SLC2A5	ZNF157
CFTR	HERC2	NPTX1	SLC2A6	ZNF160
CGA	HERC3	NPTX2	SLC2A7	ZNF165
CGAS	HERC4	NPTXR	SLC2A8	ZNF169
CGB1	HERC5	NPVF	SLC2A9	ZNF174
CGB2	HERC6	NPW	SLC2A10	ZNF175

CGB3	HERPUD1	NPY	SLC2A11	ZNF177
CGB5	HERPUD2	NPY1R	SLC2A12	ZNF180
CGB7	HES1	NPY2R	SLC2A13	ZNF181
CGB8	HES2	NPY4R	SLC2A14	ZNF182
CGGBP1	HES3	NPY4R2	SLC3A1	ZNF184
CGN	HES4	NPY5R	SLC3A2	ZNF185
CGNL1	HES5	NQO1	SLC4A1	ZNF189
CGREF1	HES6	NQO2	SLC4A1AP	ZNF195
CGRRF1	HES7	NR0B1	SLC4A2	ZNF197
CH25H	HESX1	NR0B2	SLC4A3	ZNF200
CHAC1	HEXA	NR1D1	SLC4A4	ZNF202
CHAC2	HEXB	NR1D2	SLC4A5	ZNF205
CHAD	HEXD	NR1H2	SLC4A7	ZNF207
CHADL	HEXDC	NR1H3	SLC4A8	ZNF208
CHAF1A	HEXIM1	NR1H4	SLC4A9	ZNF211
CHAF1B	HEXIM2	NR1I2	SLC4A10	ZNF212
CHAMP1	HEY1	NR1I3	SLC4A11	ZNF213
CHAT	HEY2	NR2C1	SLC5A1	ZNF214
CHCHD1	HEYL	NR2C2	SLC5A2	ZNF215
CHCHD2	HFE	NR2C2AP	SLC5A3	ZNF217
CHCHD3	HFM1	NR2E1	SLC5A4	ZNF219
CHCHD4	HGC6.3	NR2E3	SLC5A5	ZNF221
CHCHD5	HGD	NR2F1	SLC5A6	ZNF222
CHCHD6	HGF	NR2F2	SLC5A7	ZNF223
CHCHD7	HGFAC	NR2F6	SLC5A8	ZNF224
CHCHD10	HGH1	NR3C1	SLC5A9	ZNF225
CHD1	HGS	NR3C2	SLC5A10	ZNF226
CHD1L	HGSNAT	NR4A1	SLC5A11	ZNF227
CHD2	HHAT	NR4A2	SLC5A12	ZNF229
CHD3	HHATL	NR4A3	SLC6A1	ZNF230
CHD4	HHEX	NR5A1	SLC6A2	ZNF232
CHD5	HHIP	NR5A2	SLC6A3	ZNF233
CHD6	HHIPL1	NR6A1	SLC6A4	ZNF234
CHD7	HHIPL2	NRAP	SLC6A5	ZNF235
CHD8	HHLA1	NRARP	SLC6A6	ZNF236
CHD9	HHLA2	NRAS	SLC6A7	ZNF239
CHDH	HHLA3	NRBF2	SLC6A8	ZNF248
CHEK1	HIBADH	NRBP1	SLC6A9	ZNF250
CHEK2	HIBCH	NRBP2	SLC6A11	ZNF251
CHERP	HIC1	NRCAM	SLC6A12	ZNF253
CHFR	HIC2	NRDC	SLC6A13	ZNF254
CHGA	HID1	NRDE2	SLC6A14	ZNF256



CHGB	HIF1A	NREP	SLC6A15	ZNF257
CHI3L1	HIF1AN	NRF1	SLC6A16	ZNF260
CHI3L2	HIF3A	NRG1	SLC6A17	ZNF263
CHIA	HIGD1A	NRG2	SLC6A18	ZNF264
CHIC1	HIGD1B	NRG3	SLC6A19	ZNF266
CHIC2	HIGD1C	NRG4	SLC6A20	ZNF267
CHID1	HIGD2A	NRGN	SLC7A1	ZNF268
CHIT1	HIGD2B	NRIP1	SLC7A2	ZNF273
CHKA	HIKESHI	NRIP2	SLC7A3	ZNF274
CHKB	HILPDA	NRIP3	SLC7A4	ZNF275
CHKB-CPT1B	HINFP	NRK	SLC7A5	ZNF276
CHL1	HINT1	NRL	SLC7A6	ZNF277
CHM	HINT2	NRM	SLC7A6OS	ZNF280A
CHML	HINT3	NRN1	SLC7A7	ZNF280B
CHMP1A	HIP1	NRN1L	SLC7A8	ZNF280C
CHMP1B	HIP1R	NRP1	SLC7A9	ZNF280D
CHMP2A	HIPK1	NRP2	SLC7A10	ZNF281
CHMP2B	HIPK2	NRROS	SLC7A11	ZNF282
CHMP3	HIPK3	NRSN1	SLC7A13	ZNF283
CHMP4A	HIPK4	NRSN2	SLC7A14	ZNF284
CHMP4B	HIRA	NRTN	SLC8A1	ZNF285
CHMP4C	HIRIP3	NRXN1	SLC8A2	ZNF286A
CHMP5	HIST1H1A	NRXN2	SLC8A3	ZNF286B
CHMP6	HIST1H1B	NRXN3	SLC8B1	ZNF287
CHMP7	HIST1H1C	NSA2	SLC9A1	ZNF292
CHN1	HIST1H1D	NSD1	SLC9A2	ZNF296
CHN2	HIST1H1E	NSD2	SLC9A3	ZNF300
CHODL	HIST1H1T	NSD3	SLC9A3R1	ZNF302
CHORDC1	HIST1H2AA	NSDHL	SLC9A3R2	ZNF304
CHP1	HIST1H2AB	NSF	SLC9A4	ZNF311
CHP2	HIST1H2AC	NSFL1C	SLC9A5	ZNF316
CHPF	HIST1H2AD	NSG1	SLC9A6	ZNF317
CHPF2	HIST1H2AE	NSG2	SLC9A7	ZNF318
CHPT1	HIST1H2AG	NSL1	SLC9A8	ZNF319
CHRAC1	HIST1H2AH	NSMAF	SLC9A9	ZNF320
CHRD	HIST1H2AI	NSMCE1	SLC9B1	ZNF322
CHRDL1	HIST1H2AJ	NSMCE2	SLC9B2	ZNF324
CHRDL2	HIST1H2AK	NSMCE3	SLC9C1	ZNF324B
CHRFAM7A	HIST1H2AL	NSMCE4A	SLC9C2	ZNF326
CHRM1	HIST1H2AM	NSMF	SLC10A1	ZNF329
CHRM2	HIST1H2BA	NSRP1	SLC10A2	ZNF330
CHRM3	HIST1H2BB	NSUN2	SLC10A3	ZNF331

CHRM4	HIST1H2BC	NSUN3	SLC10A4	ZNF333
CHRM5	HIST1H2BD	NSUN4	SLC10A5	ZNF334
CHRNA1	HIST1H2BE	NSUN5	SLC10A6	ZNF335
CHRNA2	HIST1H2BF	NSUN6	SLC10A7	ZNF337
CHRNA3	HIST1H2BG	NSUN7	SLC11A1	ZNF341
CHRNA4	HIST1H2BH	NT5C	SLC11A2	ZNF343
CHRNA5	HIST1H2BI	NT5C1A	SLC12A1	ZNF345
CHRNA6	HIST1H2BJ	NT5C1B	SLC12A2	ZNF346
CHRNA7	HIST1H2BK	NT5C1B-RDH14	SLC12A3	ZNF347
CHRNA9	HIST1H2BL	NT5C2	SLC12A4	ZNF350
CHRNA10	HIST1H2BM	NT5C3A	SLC12A5	ZNF354A
CHRN1	HIST1H2BN	NT5C3B	SLC12A6	ZNF354B
CHRN2	HIST1H2BO	NT5DC1	SLC12A7	ZNF354C
CHRN3	HIST1H3A	NT5DC2	SLC12A8	ZNF358
CHRN4	HIST1H3B	NT5DC3	SLC12A9	ZNF362
CHRNA	HIST1H3C	NT5DC4	SLC13A1	ZNF365
CHRNE	HIST1H3D	NT5E	SLC13A2	ZNF366
CHRNA	HIST1H3E	NT5M	SLC13A3	ZNF367
CHST1	HIST1H3F	NTAN1	SLC13A4	ZNF382
CHST2	HIST1H3G	NTF3	SLC13A5	ZNF383
CHST3	HIST1H3H	NTF4	SLC14A1	ZNF384
CHST4	HIST1H3I	NTHL1	SLC14A2	ZNF385A
CHST5	HIST1H3J	NTM	SLC15A1	ZNF385B
CHST6	HIST1H4A	NTMT1	SLC15A2	ZNF385C
CHST7	HIST1H4B	NTN1	SLC15A3	ZNF385D
CHST8	HIST1H4C	NTN3	SLC15A4	ZNF391
CHST9	HIST1H4D	NTN4	SLC15A5	ZNF394
CHST10	HIST1H4E	NTN5	SLC16A1	ZNF395
CHST11	HIST1H4F	NTNG1	SLC16A2	ZNF396
CHST12	HIST1H4G	NTNG2	SLC16A3	ZNF397
CHST13	HIST1H4H	NTPCR	SLC16A4	ZNF398
CHST14	HIST1H4I	NTRK1	SLC16A5	ZNF404
CHST15	HIST1H4J	NTRK2	SLC16A6	ZNF407
CHSY1	HIST1H4K	NTRK3	SLC16A7	ZNF408
CHSY3	HIST1H4L	NTS	SLC16A8	ZNF410
CHTF8	HIST2H2AA3	NTSR1	SLC16A9	ZNF414
CHTF18	HIST2H2AA4	NTSR2	SLC16A10	ZNF415
CHTOP	HIST2H2AB	NUAK1	SLC16A11	ZNF416
CHUK	HIST2H2AC	NUAK2	SLC16A12	ZNF417
CHURC1	HIST2H2BE	NUB1	SLC16A13	ZNF418
CHURC1-FNTB	HIST2H2BF	NUBP1	SLC16A14	ZNF419
CIAO1	HIST2H3A	NUBP2	SLC17A1	ZNF420

CIAO2A	HIST2H3C	NUBPL	SLC17A2	ZNF423
CIAO2B	HIST2H3D	NUCB1	SLC17A3	ZNF425
CIAO3	HIST2H4A	NUCB2	SLC17A4	ZNF426
CIAPIN1	HIST2H4B	NUCKS1	SLC17A5	ZNF428
CIART	HIST3H2A	NUDC	SLC17A6	ZNF429
CIB1	HIST3H2BB	NUDCD1	SLC17A7	ZNF430
CIB2	HIST3H3	NUDCD2	SLC17A8	ZNF431
CIB3	HIST4H4	NUDCD3	SLC17A9	ZNF432
CIB4	HIVEP1	NUDT1	SLC18A1	ZNF433
CIC	HIVEP2	NUDT2	SLC18A2	ZNF436
CIDEA	HIVEP3	NUDT3	SLC18A3	ZNF438
CIDEB	HJURP	NUDT4	SLC18B1	ZNF439
CIDEC	HJV	NUDT4B	SLC19A1	ZNF440
CIITA	HK1	NUDT5	SLC19A2	ZNF441
CILK1	HK2	NUDT6	SLC19A3	ZNF442
CILP	HK3	NUDT7	SLC20A1	ZNF443
CILP2	HKDC1	NUDT8	SLC20A2	ZNF444
CINP	HKR1	NUDT9	SLC22A1	ZNF445
CIP2A	HLA-A	NUDT10	SLC22A2	ZNF446
CIPC	HLA-B	NUDT11	SLC22A3	ZNF449
CIR1	HLA-C	NUDT12	SLC22A4	ZNF451
CIRBP	HLA-DMA	NUDT13	SLC22A5	ZNF454
CISD1	HLA-DMB	NUDT14	SLC22A6	ZNF460
CISD2	HLA-DOA	NUDT15	SLC22A7	ZNF461
CISD3	HLA-DOB	NUDT16	SLC22A8	ZNF462
CISH	HLA-DPA1	NUDT16L1	SLC22A9	ZNF467
CIT	HLA-DPB1	NUDT17	SLC22A10	ZNF468
CITED1	HLA-DQA1	NUDT18	SLC22A11	ZNF469
CITED2	HLA-DQA2	NUDT19	SLC22A12	ZNF470
CITED4	HLA-DQB1	NUDT21	SLC22A13	ZNF471
CIZ1	HLA-DQB2	NUDT22	SLC22A14	ZNF473
CKAP2	HLA-DRA	NUF2	SLC22A15	ZNF474
CKAP2L	HLA-DRB1	NUFIP1	SLC22A16	ZNF479
CKAP4	HLA-DRB5	NUFIP2	SLC22A17	ZNF480
CKAP5	HLA-E	NUGGC	SLC22A18	ZNF483
CKB	HLA-F	NUMA1	SLC22A18AS	ZNF484
CKLF	HLA-G	NUMB	SLC22A23	ZNF485
CKLF-CMTM1	HLCS	NUMBL	SLC22A24	ZNF486
CKM	HLF	NUP35	SLC22A25	ZNF487
CKMT1A	HLTF	NUP37	SLC22A31	ZNF488
CKMT1B	HLX	NUP42	SLC23A1	ZNF490
CKMT2	HM13	NUP43	SLC23A2	ZNF491

CKS1B	HMBOX1	NUP50	SLC23A3	ZNF492
CKS2	HMBS	NUP54	SLC24A1	ZNF493
CLASP1	HMCES	NUP58	SLC24A2	ZNF496
CLASP2	HMCN1	NUP62	SLC24A3	ZNF497
CLASRP	HMCN2	NUP62CL	SLC24A4	ZNF500
CLBA1	HMG20A	NUP85	SLC24A5	ZNF501
CLC	HMG20B	NUP88	SLC25A1	ZNF502
CLCA1	HMGA1	NUP93	SLC25A2	ZNF503
CLCA2	HMGA2	NUP98	SLC25A3	ZNF506
CLCA4	HMGB1	NUP107	SLC25A4	ZNF507
CLCC1	HMGB2	NUP133	SLC25A5	ZNF510
CLCF1	HMGB3	NUP153	SLC25A6	ZNF511
CLCN1	HMGB4	NUP155	SLC25A10	ZNF511-PRAP1
CLCN2	HMGCL	NUP160	SLC25A11	ZNF512
CLCN3	HMGCLL1	NUP188	SLC25A12	ZNF512B
CLCN4	HMGCR	NUP205	SLC25A13	ZNF513
CLCN5	HMGCS1	NUP210	SLC25A14	ZNF514
CLCN6	HMGCS2	NUP210L	SLC25A15	ZNF516
CLCN7	HMGN1	NUP214	SLC25A16	ZNF517
CLCNKA	HMGN2	NUPL2	SLC25A17	ZNF518A
CLCNKB	HMGN3	NUPR1	SLC25A18	ZNF518B
CLDN1	HMGN4	NUPR2	SLC25A19	ZNF519
CLDN2	HMGN5	NUS1	SLC25A20	ZNF521
CLDN3	HMGXB3	NUSAP1	SLC25A21	ZNF524
CLDN4	HMGXB4	NUTF2	SLC25A22	ZNF525
CLDN5	HMHB1	NUTM1	SLC25A23	ZNF526
CLDN6	HMMR	NUTM2A	SLC25A24	ZNF527
CLDN7	HMOX1	NUTM2B	SLC25A25	ZNF528
CLDN8	HMOX2	NUTM2D	SLC25A26	ZNF529
CLDN9	HMSD	NUTM2E	SLC25A27	ZNF530
CLDN10	HMX1	NUTM2F	SLC25A28	ZNF532
CLDN11	HMX2	NUTM2G	SLC25A29	ZNF534
CLDN12	HMX3	NVL	SLC25A30	ZNF536
CLDN14	HNF1A	NWD1	SLC25A31	ZNF540
CLDN15	HNF1B	NWD2	SLC25A32	ZNF541
CLDN16	HNF4A	NXF1	SLC25A33	ZNF543
CLDN17	HNF4G	NXF2	SLC25A34	ZNF544
CLDN18	HNMT	NXF2B	SLC25A35	ZNF546
CLDN19	HNRNPA0	NXF3	SLC25A36	ZNF547
CLDN20	HNRNPA1	NXF5	SLC25A37	ZNF548
CLDN22	HNRNPA1L2	NXN	SLC25A38	ZNF549
CLDN23	HNRNPA1P48	NXNL1	SLC25A39	ZNF550

CLDN24	HNRNPA2B1	NXNL2	SLC25A40	ZNF551
CLDN25	HNRNPA3	NXPE1	SLC25A41	ZNF552
CLDN34	HNRNPAB	NXPE2	SLC25A42	ZNF554
CLDND1	HNRNPC	NXPE3	SLC25A43	ZNF555
CLDND2	HNRNPCL1	NXPE4	SLC25A44	ZNF556
CLEC1A	HNRNPCL2	NXPH1	SLC25A45	ZNF557
CLEC1B	HNRNPCL3	NXPH2	SLC25A46	ZNF558
CLEC2A	HNRNPCL4	NXPH3	SLC25A47	ZNF559
CLEC2B	HNRNPD	NXPH4	SLC25A48	ZNF559-ZNF177
CLEC2D	HNRNPDL	NXT1	SLC25A51	ZNF560
CLEC2L	HNRNPF	NXT2	SLC25A52	ZNF561
CLEC3A	HNRNPH1	NYAP1	SLC25A53	ZNF562
CLEC3B	HNRNPH2	NYAP2	SLC26A1	ZNF563
CLEC4A	HNRNPH3	NYNRIN	SLC26A2	ZNF564
CLEC4C	HNRNPK	NYX	SLC26A3	ZNF565
CLEC4D	HNRNPL	OAF	SLC26A4	ZNF566
CLEC4E	HNRNPLL	OARD1	SLC26A5	ZNF567
CLEC4F	HNRNPM	OAS1	SLC26A6	ZNF568
CLEC4G	HNRNPR	OAS2	SLC26A7	ZNF569
CLEC4M	HNRNPU	OAS3	SLC26A8	ZNF570
CLEC4O	HNRNPUL1	OASL	SLC26A9	ZNF571
CLEC5A	HNRNPUL2	OAT	SLC26A10	ZNF572
CLEC6A	HNRNPUL2- BSCL2	OAZ1	SLC26A11	ZNF573
CLEC7A	HOGA1	OAZ2	SLC27A1	ZNF574
CLEC9A	HOMER1	OAZ3	SLC27A2	ZNF575
CLEC10A	HOMER2	OBI1	SLC27A3	ZNF576
CLEC11A	HOMER3	OBP2A	SLC27A4	ZNF577
CLEC12A	HOMEZ	OBP2B	SLC27A5	ZNF578
CLEC12B	HOOK1	OBSCN	SLC27A6	ZNF579
CLEC14A	HOOK2	OBSL1	SLC28A1	ZNF580
CLEC16A	HOOK3	OC90	SLC28A2	ZNF581
CLEC17A	HOPX	Oca.02	SLC28A3	ZNF582
CLEC18A	HORMAD1	OCEL1	SLC29A1	ZNF583
CLEC18B	HORMAD2	OCIAD1	SLC29A2	ZNF584
CLEC18C	HOTS	OCIAD2	SLC29A3	ZNF585A
CLEC19A	HOXA1	OCLM	SLC29A4	ZNF585B
CLEC20A	HOXA2	OCLN	SLC30A1	ZNF586
CLECL1	HOXA3	OCM	SLC30A2	ZNF587
CLGN	HOXA4	OCM2	SLC30A3	ZNF587B
CLHC1	HOXA5	OCRL	SLC30A4	ZNF589
CLIC1	HOXA6	OCSTAMP	SLC30A5	ZNF592

CLIC2	HOXA7	ODAM	SLC30A6	ZNF593
CLIC3	HOXA9	ODAPH	SLC30A7	ZNF594
CLIC4	HOXA10	ODC1	SLC30A8	ZNF595
CLIC5	HOXA11	ODF1	SLC30A9	ZNF596
CLIC6	HOXA13	ODF2	SLC30A10	ZNF597
CLINT1	HOXB1	ODF2L	SLC31A1	ZNF598
CLIP1	HOXB2	ODF3	SLC31A2	ZNF599
CLIP2	HOXB3	ODF3B	SLC32A1	ZNF600
CLIP3	HOXB4	ODF3L1	SLC33A1	ZNF605
CLIP4	HOXB5	ODF3L2	SLC34A1	ZNF606
CLK1	HOXB6	ODF4	SLC34A2	ZNF607
CLK2	HOXB7	ODR4	SLC34A3	ZNF608
CLK3	HOXB8	OFD1	SLC35A1	ZNF609
CLK4	HOXB9	OGA	SLC35A2	ZNF610
CLLU10S	HOXB13	OGDH	SLC35A3	ZNF611
CLMN	HOXC4	OGDHL	SLC35A4	ZNF613
CLMP	HOXC5	OGFOD1	SLC35A5	ZNF614
CLN3	HOXC6	OGFOD2	SLC35B1	ZNF615
CLN5	HOXC8	OGFOD3	SLC35B2	ZNF616
CLN6	HOXC9	OGFR	SLC35B3	ZNF618
CLN8	HOXC10	OGFRL1	SLC35B4	ZNF619
CLNK	HOXC11	OGG1	SLC35C1	ZNF620
CLNS1A	HOXC12	OGN	SLC35C2	ZNF621
CLOCK	HOXC13	OGT	SLC35D1	ZNF622
CLP1	HOXD1	OIP5	SLC35D2	ZNF623
CLPB	HOXD3	OIT3	SLC35D3	ZNF624
CLPP	HOXD4	OLA1	SLC35E1	ZNF625
CLPS	HOXD8	OLAH	SLC35E2A	ZNF625-ZNF20
CLPSL1	HOXD9	OLFM1	SLC35E2B	ZNF626
CLPSL2	HOXD10	OLFM2	SLC35E3	ZNF627
CLPTM1	HOXD11	OLFM3	SLC35E4	ZNF628
CLPTM1L	HOXD12	OLFM4	SLC35F1	ZNF629
CLPX	HOXD13	OLFML1	SLC35F2	ZNF630
CLRN1	HP	OLFML2A	SLC35F3	ZNF638
CLRN2	HP1BP3	OLFML2B	SLC35F4	ZNF639
CLRN3	HPCA	OLFML3	SLC35F5	ZNF641
CLSPN	HPCAL1	OLIG1	SLC35F6	ZNF644
CLSTN1	HPCAL4	OLIG2	SLC35G1	ZNF646
CLSTN2	HPD	OLIG3	SLC35G2	ZNF648
CLSTN3	HPDL	OLR1	SLC35G3	ZNF649
CLTA	HPF1	OMA1	SLC35G4	ZNF652
CLTB	HPGD	OMD	SLC35G5	ZNF653

CLTC	HPGDS	OMG	SLC35G6	ZNF654
CLTCL1	HPN	OMP	SLC36A1	ZNF655
CLTRN	HPR	ONECUT1	SLC36A2	ZNF658
CLU	HPRT1	ONECUT2	SLC36A3	ZNF660
CLUAP1	HPS1	ONECUT3	SLC36A4	ZNF660-ZNF197
CLUH	HPS3	OOEP	SLC37A1	ZNF662
CLUL1	HPS4	OOSP1	SLC37A2	ZNF664
CLVS1	HPS5	OOSP2	SLC37A3	ZNF664-RFLNA
CLVS2	HPS6	OOSP3	SLC37A4	ZNF665
CLYBL	HPSE	OOSP4A	SLC38A1	ZNF667
CMA1	HPSE2	OOSP4B	SLC38A2	ZNF668
CMAS	HPX	OPA1	SLC38A3	ZNF669
CMBL	HR	OPA3	SLC38A4	ZNF670
CMC1	HRAS	OPALIN	SLC38A5	ZNF670-ZNF695
CMC2	HRASLS	OPCML	SLC38A6	ZNF671
CMC4	HRASLS2	OPHN1	SLC38A7	ZNF672
CMIP	HRASLS5	OPLAH	SLC38A8	ZNF674
CMKLR1	HRC	OPN1LW	SLC38A9	ZNF675
CMPK1	HRCT1	OPN1MW	SLC38A10	ZNF676
CMPK2	HRG	OPN1MW2	SLC38A11	ZNF677
CMSS1	HRH1	OPN1MW3	SLC39A1	ZNF678
CMTM1	HRH2	OPN1SW	SLC39A2	ZNF679
CMTM2	HRH3	OPN3	SLC39A3	ZNF680
CMTM3	HRH4	OPN4	SLC39A4	ZNF681
CMTM4	HRK	OPN5	SLC39A5	ZNF682
CMTM5	HRNR	OPRD1	SLC39A6	ZNF683
CMTM6	HROB	OPRK1	SLC39A7	ZNF684
CMTM7	HS1BP3	OPRL1	SLC39A8	ZNF687
CMTM8	HS2ST1	OPRM1	SLC39A9	ZNF688
CMTR1	HS3ST1	OPRPN	SLC39A10	ZNF689
CMTR2	HS3ST2	OPTC	SLC39A11	ZNF691
CMYA5	HS3ST3A1	OPTN	SLC39A12	ZNF692
CNBD1	HS3ST3B1	OR1A1	SLC39A13	ZNF695
CNBD2	HS3ST4	OR1A2	SLC39A14	ZNF696
CNBP	HS3ST5	OR1B1	SLC40A1	ZNF697
CNDP1	HS3ST6	OR1C1	SLC41A1	ZNF699
CNDP2	HS6ST1	OR1D2	SLC41A2	ZNF700
CNEP1R1	HS6ST2	OR1D5	SLC41A3	ZNF701
CNFN	HS6ST3	OR1E1	SLC43A1	ZNF703
CNGA1	HSBP1	OR1E2	SLC43A2	ZNF704
CNGA2	HSBP1L1	OR1E3	SLC43A3	ZNF705A
CNGA3	HSCB	OR1F1	SLC44A1	ZNF705B

CNGA4	HSD3B1	OR1F12	SLC44A2	ZNF705D
CNGB1	HSD3B2	OR1G1	SLC44A3	ZNF705E
CNGB3	HSD3B7	OR1I1	SLC44A4	ZNF705G
CNIH1	HSD11B1	OR1J1	SLC44A5	ZNF706
CNIH2	HSD11B1L	OR1J2	SLC45A1	ZNF707
CNIH3	HSD11B2	OR1J4	SLC45A2	ZNF708
CNIH4	HSD17B1	OR1K1	SLC45A3	ZNF709
CNKSR1	HSD17B2	OR1L1	SLC45A4	ZNF710
CNKSR2	HSD17B3	OR1L3	SLC46A1	ZNF711
CNKSR3	HSD17B4	OR1L4	SLC46A2	ZNF713
CNMD	HSD17B6	OR1L6	SLC46A3	ZNF714
CNN1	HSD17B7	OR1L8	SLC47A1	ZNF716
CNN2	HSD17B8	OR1M1	SLC47A2	ZNF717
CNN3	HSD17B10	OR1N1	SLC48A1	ZNF718
CNNM1	HSD17B11	OR1N2	SLC49A3	ZNF720
CNNM2	HSD17B12	OR1Q1	SLC49A4	ZNF721
CNNM3	HSD17B13	OR1S1	SLC50A1	ZNF723
CNNM4	HSD17B14	OR1S2	SLC51A	ZNF724
CNOT1	HSDL1	OR2A1	SLC51B	ZNF726
CNOT2	HSDL2	OR2A2	SLC52A1	ZNF727
CNOT3	HSF1	OR2A4	SLC52A2	ZNF728
CNOT4	HSF2	OR2A5	SLC52A3	ZNF729
CNOT6	HSF2BP	OR2A7	SLC66A1	ZNF730
CNOT6L	HSF4	OR2A12	SLC66A1L	ZNF732
CNOT7	HSF5	OR2A14	SLC66A2	ZNF735
CNOT8	HSFX1	OR2A25	SLC66A3	ZNF736
CNOT9	HSFX2	OR2A42	SLC01A2	ZNF737
CNOT10	HSFX3	OR2AE1	SLC01B1	ZNF738
CNOT11	HSFX4	OR2AG1	SLC01B3	ZNF740
CNP	HSFY1	OR2AG2	SLC01B3- SLC01B7	ZNF746
CNPPD1	HSFY2	OR2AJ1	SLC01B7	ZNF747
CNPY1	HSH2D	OR2AK2	SLC01C1	ZNF749
CNPY2	HSP90AA1	OR2AP1	SLC02A1	ZNF750
CNPY3	HSP90AB1	OR2AT4	SLC02B1	ZNF761
CNPY3-GNMT	HSP90B1	OR2B2	SLC03A1	ZNF763
CNPY4	HSPA1A	OR2B3	SLC04A1	ZNF764
CNR1	HSPA1B	OR2B6	SLC04C1	ZNF765
CNR2	HSPA1L	OR2B11	SLC05A1	ZNF765-ZNF761
CNRIP1	HSPA2	OR2C1	SLC06A1	ZNF766
CNST	HSPA4	OR2C3	SLF1	ZNF768
CNTD1	HSPA4L	OR2D2	SLF2	ZNF770



CNTD2	HSPA5	OR2D3	SLFN5	ZNF771
CNTF	HSPA6	OR2F1	SLFN11	ZNF772
CNTFR	HSPA8	OR2F2	SLFN12	ZNF773
CNTLN	HSPA9	OR2G2	SLFN12L	ZNF774
CNTN1	HSPA12A	OR2G3	SLFN13	ZNF775
CNTN2	HSPA12B	OR2G6	SLFN14	ZNF776
CNTN3	HSPA13	OR2H1	SLFNL1	ZNF777
CNTN4	HSPA14	OR2H2	SLIRP	ZNF778
CNTN5	HSPB1	OR2I1P	SLIT1	ZNF780A
CNTN6	HSPB2	OR2J1	SLIT2	ZNF780B
CNTNAP1	HSPB2-C11orf52	OR2J2	SLIT3	ZNF781
CNTNAP2	HSPB3	OR2J3	SLITRK1	ZNF782
CNTNAP3	HSPB6	OR2K2	SLITRK2	ZNF783
CNTNAP3B	HSPB7	OR2L2	SLITRK3	ZNF784
CNTNAP3C	HSPB8	OR2L3	SLITRK4	ZNF785
CNTNAP4	HSPB9	OR2L5	SLITRK5	ZNF786
CNTNAP5	HSPB11	OR2L8	SLITRK6	ZNF787
CNTRL	HSPBAP1	OR2L13	SLK	ZNF788P
CNTROB	HSPBP1	OR2M2	SLMAP	ZNF789
COA1	HSPD1	OR2M3	SLN	ZNF790
COA3	HSPE1	OR2M4	SLPI	ZNF791
COA4	HSPE1-MOB4	OR2M5	SLTM	ZNF792
COA5	HSPG2	OR2M7	SLU7	ZNF793
COA6	HSPH1	OR2S2	SLURP1	ZNF799
COA7	HTATIP2	OR2T1	SLURP2	ZNF800
COA8	HTATSF1	OR2T2	SLX1A	ZNF804A
COASY	HTD2	OR2T3	SLX1B	ZNF804B
COBL	HTN1	OR2T4	SLX4	ZNF805
COBLL1	HTN3	OR2T5	SLX4IP	ZNF806
COCH	HTR1A	OR2T6	SMAD1	ZNF808
COG1	HTR1B	OR2T7	SMAD2	ZNF813
COG2	HTR1D	OR2T8	SMAD3	ZNF814
COG3	HTR1E	OR2T10	SMAD4	ZNF816
COG4	HTR1F	OR2T11	SMAD5	ZNF816- ZNF321P
COG5	HTR2A	OR2T12	SMAD6	ZNF821
COG6	HTR2B	OR2T27	SMAD7	ZNF823
COG7	HTR2C	OR2T29	SMAD9	ZNF827
COG8	HTR3A	OR2T33	SMAGP	ZNF829
COIL	HTR3B	OR2T34	SMAP1	ZNF830
COL1A1	HTR3C	OR2T35	SMAP2	ZNF831
COL1A2	HTR3D	OR2V1	SMARCA1	ZNF835

COL2A1	HTR3E	OR2V2	SMARCA2	ZNF836
COL3A1	HTR4	OR2W1	SMARCA4	ZNF837
COL4A1	HTR5A	OR2W3	SMARCA5	ZNF839
COL4A2	HTR6	OR2W5	SMARCAD1	ZNF841
COL4A2-AS2	HTR7	OR2Y1	SMARCAL1	ZNF843
COL4A3	HTRA1	OR2Z1	SMARCB1	ZNF844
COL4A3BP	HTRA2	OR3A1	SMARCC1	ZNF845
COL4A4	HTRA3	OR3A2	SMARCC2	ZNF846
COL4A5	HTRA4	OR3A3	SMARCD1	ZNF850
COL4A6	HTT	OR4A5	SMARCD2	ZNF852
COL5A1	HUNK	OR4A15	SMARCD3	ZNF853
COL5A2	HUS1	OR4A16	SMARCE1	ZNF860
COL5A3	HUS1B	OR4A47	SMC1A	ZNF862
COL6A1	HUWE1	OR4B1	SMC1B	ZNF865
COL6A2	HVCN1	OR4C3	SMC2	ZNF875
COL6A3	HYAL1	OR4C5	SMC3	ZNF878
COL6A5	HYAL2	OR4C6	SMC4	ZNF879
COL6A6	HYAL3	OR4C11	SMC5	ZNF880
COL7A1	HYAL4	OR4C12	SMC6	ZNF883
COL8A1	HYDIN	OR4C13	SMCHD1	ZNF888
COL8A2	HYI	OR4C15	SMCO1	ZNF891
COL9A1	HYKK	OR4C16	SMCO2	ZNFX1
COL9A2	HYLS1	OR4C45	SMCO3	ZNHIT1
COL9A3	HYOU1	OR4C46	SMCO4	ZNHIT2
COL10A1	HYPK	OR4D1	SMCP	ZNHIT3
COL11A1	HYPM	OR4D2	SMCR8	ZNHIT6
COL11A2	IAH1	OR4D5	SMDT1	ZNRD1
COL12A1	IAPP	OR4D6	SMG1	ZNRD2
COL13A1	IARS	OR4D9	SMG5	ZNRF1
COL14A1	IARS1	OR4D10	SMG6	ZNRF2
COL15A1	IARS2	OR4D11	SMG7	ZNRF3
COL16A1	IBA57	OR4E1	SMG8	ZNRF4
COL17A1	IBSP	OR4E2	SMG9	ZP1
COL18A1	IBTK	OR4F3	SMIM1	ZP2
COL19A1	ICA1	OR4F4	SMIM2	ZP3
COL20A1	ICA1L	OR4F5	SMIM3	ZP4
COL21A1	ICAM1	OR4F6	SMIM4	ZPBP
COL22A1	ICAM2	OR4F15	SMIM5	ZPBP2
COL23A1	ICAM3	OR4F16	SMIM6	ZPLD1
COL24A1	ICAM4	OR4F17	SMIM7	ZPR1
COL25A1	ICAM5	OR4F21	SMIM8	ZRANB1
COL26A1	ICE1	OR4F29	SMIM9	ZRANB2

COL27A1	ICE2	OR4K1	SMIM10	ZRANB3
COL28A1	ICK	OR4K2	SMIM10L1	ZRSR2
COLCA1	ICMT	OR4K3	SMIM10L2A	ZSCAN1
COLCA2	ICOS	OR4K5	SMIM10L2B	ZSCAN2
COLEC10	ICOSLG	OR4K13	SMIM11A	ZSCAN4
COLEC11	ID1	OR4K14	SMIM11B	ZSCAN5A
COLEC12	ID2	OR4K15	SMIM12	ZSCAN5B
COLGALT1	ID3	OR4K17	SMIM13	ZSCAN5C
COLGALT2	ID4	OR4L1	SMIM14	ZSCAN9
COLQ	IDE	OR4M1	SMIM15	ZSCAN10
COMMD1	IDH1	OR4M2	SMIM17	ZSCAN12
COMMD2	IDH2	OR4N2	SMIM18	ZSCAN16
COMMD3	IDH3A	OR4N4	SMIM19	ZSCAN18
COMMD3-BMI1	IDH3B	OR4N5	SMIM20	ZSCAN20
COMMD4	IDH3G	OR4P4	SMIM21	ZSCAN21
COMMD5	IDI1	OR4Q3	SMIM22	ZSCAN22
COMMD6	IDI2	OR4S1	SMIM23	ZSCAN23
COMMD7	IDNK	OR4S2	SMIM24	ZSCAN25
COMMD8	IDO1	OR4X1	SMIM25	ZSCAN26
COMMD9	IDO2	OR4X2	SMIM26	ZSCAN29
COMMD10	IDS	OR5A1	SMIM27	ZSCAN30
COMP	IDUA	OR5A2	SMIM28	ZSCAN31
COMT	IER2	OR5AC2	SMIM29	ZSCAN32
COMTD1	IER3	OR5AK2	SMIM30	ZSWIM1
COP1	IER3IP1	OR5AL1	SMIM31	ZSWIM2
COPA	IER5	OR5AN1	SMIM32	ZSWIM3
COPB1	IER5L	OR5AP2	SMIM33	ZSWIM4
COPB2	IFFO1	OR5AR1	SMIM34A	ZSWIM5
COPE	IFFO2	OR5AS1	SMIM34B	ZSWIM6
COPG1	IFI6	OR5AU1	SMIM35	ZSWIM7
COPG2	IFI16	OR5B2	SMIM36	ZSWIM8
COPRS	IFI27	OR5B3	SMIM38	ZSWIM9
COPS2	IFI27L1	OR5B12	SMIM39	ZUP1
COPS3	IFI27L2	OR5B17	SMIM40	ZW10
COPS4	IFI30	OR5B21	SMIM41	ZWILCH
COPS5	IFI35	OR5BS1P	SMKR1	ZWINT
COPS6	IFI44	OR5C1	SMLR1	ZXDA
COPS7A	IFI44L	OR5D3P	SMN1	ZXDB
COPS7B	IFIH1	OR5D13	SMN2	ZXDC
COPS8	IFIT1	OR5D14	SMNDC1	ZYG11A
COPS9	IFIT1B	OR5D16	SMO	ZYG11B
COPZ1	IFIT2	OR5D18	SMOC1	ZYX

COPZ2

COQ2

COQ3

IFIT3

IFIT5

IFITM1

OR5F1

OR5H1

OR5H2

SMOC2

SMOX

SMPD1

ZZEF1

ZZZ3