

U5CYW0	1	-----
W1PAZ2	1	-----
AtUGT81A1	1	-----
W1PTT2	1	-----
U5D3V5	1	-----
W1NUG7	1	-----
W1PC48	1	-----
W1PP63	1	-----
OsUGT701A2	1	-----
W1PA48	1	-----
U5D0T8	1	-----
AtUGT80A2	1	-----MPEISPAELAKVSSSSSSSSSSSSSSGRASVKIEEIEGGAAAS
W1PJ19	1	-----
W1NU70	1	-----
W1NV64	1	-----
W1PKS4	1	-----
AtUGT91A1	1	-----
U5CMK2	1	-----
U5CWM7	1	-----
U5D1X9	1	-----
W1PT00	1	-----
OsUGT94A1	1	-----
AtUGT79B1	1	-----
W1PQK6	1	-----
U5D602	1	-----
U5D5X9	1	-----
U5D5Z2	1	-----
U5D5X3	1	-----
ZmUGT93B1	1	-----
PoUGT95A1	1	-----
U5D0B7	1	-----
AtUGT89A1	1	-----
OsUGT96A1	1	-----
AtUGT92A1	1	-----
U5CRD3	1	-----
W1P7W1	1	-----
U5D7I9	1	-----
W1PPF0	1	-----
OsUGT99A1	1	-----
AtUGT73B1	1	-----
OsUGT98B1	1	-----
W1PF90	1	-----M
W1NIK4	1	-----
W1PQX3	1	-----
W1PPW8	1	-----
W1PS80	1	-----
AtUGT90A1	1	-----
OsUGT97A1	1	-----
W1PH20	1	-----
W1PBB6	1	-----
W1PHN8	1	-----
W1PRF4	1	-----
AtUGT71B1	1	-----
W1P1M0	1	-----
AtUGT72B1	1	-----
W1PMA9	1	-----
W1PP20	1	-----
AtUGT88A1	1	-----
U5DB27	1	-----
U5DBY1	1	-----
U5DBY4	1	-----
U5D276	1	-----
U5DB32	1	-----
W1NHX5	1	-----
W1NVU7	1	-----
W1PAP0	1	-----
W1PD80	1	-----
W1PZW0	1	-----
AtUGT82A1	1	-----
W1NUV1	1	MRGATLVAVTCTVLHILHRHARRTSISHVALPHYTRGDAPFHVQQCSISCTTLLHFTCSN
AtUGT86A1	1	-----
AtUGT87A1	1	-----
W1P188	1	-----

W1P302	1	-----
AtUGT78D1	1	-----
W1PTN8	1	-----
ZmUGT77A1	1	-----
AtUGT83A1	1	-----
W1NWE7	1	-----
W1NXD5	1	-----
AtUGT75B1	1	-----
AtUGT84A1	1	-----
W1PLB6	1	-----
U5CXN6	1	-----
U5D2S8	1	-----
U5D817	1	-----
W1NFL7	1	-----
W1NFN9	1	-----
U5DBW3	1	-----
W1PE57	1	-----
U5D3G1	1	-----
AtUGT74B1	1	-----
U5DFQ6	1	-----
U5DI88	1	-----MCEP
U5DCN3	1	-----
U5D531	1	-----
U5CUG8	1	-----
W1PLP3	1	-----
U5DI92	1	-----
U5D3V6	1	-----
U5DDJ3	1	-----
U5DFQ3	1	-----
U5DI97	1	-----
U5DCP2	1	-----
U5DDK2	1	-----
OsUGT709A3	1	-----
SgUGT720A1	1	-----
U5CX27	1	-----
U5D008	1	-----
W1PMY7	1	-----
AtUGT85A1	1	-----
U5CVP6	1	-----
U5CNJ5	1	-----
U5CNG3	1	-----
U5CXJ9	1	-----
AtUGT76B1	1	-----
W1PV81	1	-----
W1PVY0	1	-----
W1PX56	1	-----MDKNLKLQ
W1PS80	1	-----
AtUGT90A1	1	-----
OsUGT97A1	1	-----
W1PH20	1	-----
W1PBB6	1	-----
W1PHN8	1	-----
W1PRF4	1	-----
AtUGT71B1	1	-----
W1P1M0	1	-----
AtUGT72B1	1	-----
W1PMA9	1	-----
W1PP20	1	-----
AtUGT88A1	1	-----
U5DB27	1	-----
U5DBY1	1	-----
U5DBY4	1	-----
U5D276	1	-----
U5DB32	1	-----
W1NHX5	1	-----
W1NVU7	1	-----
W1PAP0	1	-----
W1PD80	1	-----
W1PZW0	1	-----
AtUGT82A1	1	-----
W1NUV1	1	MRGATLVAVTCTVLHILHRHARRTSISHVALPHYTRGDAPFHVQQCSISCTTLLHFTCSN
AtUGT86A1	1	-----
AtUGT87A1	1	-----
W1P188	1	-----

U5CYW0	1	-----	-----	MVMTVIS	P	-----
W1PAZ2	1	-----	-MQASAVTQEPSSG-	LDLLC	-----	-----
AtUGT81A1	1	-----	-MQNPSTVTQESAAPV-	-FDFFPRLRGLTSRNR	-----	-----
W1PTT2	1	-----	-MIVFSDRFPQPHHQQQQDPGQD-	GSSQDPDP	-----	-----
U5D3V5	1	-----	-MALLSSLSLSKH-	LLMLVLLM	-----	-----
W1NUG7	1	-----	-MGLTPQATKPGDER-	ATFLPNYM	-----	-----
W1PC48	1	-----	-----	-MKL-	-----	-----
W1PP63	1	-----	-----	-MSVL-	-----	-----
OsUGT701A2	1	-----	-MELKAMYLYAAVLAVLLCSSVN-	-FIQSP-TD	-----	-----
W1PA48	1	-----	-----	-MEGNRRRRRPN-	-AIFMA-FG	-----
U5D0T8	1	-----	-----	-MPS-	-FVTLH-EV	-----
AtUGT80A2	42	GVVIVSEELETNPKTVVASIADETVAESSGTGNKSFSR	-----	-VWTMP-LEGSSSSDR	-----	-----
W1PJ19	1	-----	-----	-MEAPPKQH-	-----	-----
W1NU70	1	-----	-----	-MDNPDNRRH-	-----	-----
W1NV64	1	-----	-----	-MEAPPPPKQH-	-----	-----
W1PKS4	1	-----	-----	-MEAPPKHH-	-----	-----
AtUGT91A1	1	-----	-MTNFKDNDGDGTKLH-	-VVMFP-WL	-----	-----
U5CMK2	1	-----	-----	-MTDEVLH-	-----	-----
U5CWM7	1	-----	-----	-----	-----	-----
U5D1X9	1	-----	-----	-MERENVH-	-----	-----
W1PT00	1	-----	-----	-MEENEELH-	-----	-----
OsUGT94A1	1	-----	-----	-MAQAERERLR-	-----	-----
AtUGT79B1	1	-----	-----	-MGVFGSNESSSMS-	-----	-----
W1PQK6	1	-----	-METAADVGVGHEVRPLH-	-VAMFP-WL	-----	-----
U5D602	1	-----	-----	-MQPTKKGLDGRSRV-	-----	-----
U5D5X9	1	-----	-----	-----	-----	-----
U5D5Z2	1	---	-MNEIVKEPLEAHQATFSTSQMNSPTHLNSLSAQHAPS	GGVVVLVVP-FP	-----	-----
U5D5X3	1	-----	-----	-----	-----	-----
ZmUGT93B1	1	-----	-----	-MAVDTMESVA-	-----	-----
PoUGT95A1	1	-----	-MDNETQIKKRKLQTATMEAKATGE-	IFVVP-FF	-----	-----
U5D0B7	1	-----	-----	-METE-	-----	-----
AtUGT89A1	1	-----	-MNRAMPQPRPETIRGSLKPH-	IMVFP-YP	-----	-----
OsUGT96A1	1	-----	-MAATTNGVPSRRRRRPH-	VLVLP-LP	-----	-----
AtUGT92A1	1	-----	-----	-MAEAKPRNLR-	-----	-----
U5CRD3	1	-----	-----	-MEPTKLLH-	-----	-----
W1P7W1	1	-----	-MEARHG NATGDVSCGEPKR-	IVMLP-FL	-----	-----
U5D7I9	1	-----	-----	-MVVEH-	-----	-----
W1PFP0	1	-----	-----	-MVVEH-	-----	-----
OsUGT99A1	1	-----	-----	-MAAAH-	-----	-----
AtUGT73B1	1	-----	-----	-MGTPVEVSKLH-	-----	-----
OsUGT98B1	1	-----	-MDDDTAGHASGGYTTTAAAH-	FVLVP-MM	-----	-----
W1PF90	2	EFTDHNPNSTSIASQHS	TNGTTIVTENRNPNGAQPY-	VLMFP-VM	-----	-----
W1NIK4	1	-----	-----	-MFGVGSDSDQRH-	-----	-----
W1PQX3	1	-----	-MVMEGEGEGEGEGESEQRHN-	VVLFP-FM	-----	-----
W1PPW8	1	-----	-MVMEGEGESEQSHN-	VVLFP-FM	-----	-----
W1PS80	1	-----	-MVMEGEGESEQSHN-	VVLFP-FM	-----	-----
AtUGT90A1	1	-----	-----	-MSVSTHHH-	-----	-----
OsUGT97A1	1	-----	-MPASAAAATRPAAEGVGNDGATLAGRDH-	VVVFP-LM	-----	-----
W1PH20	1	-----	-----	-MPEEAPLTSSH-	-----	-----
W1PBB6	1	-----	-MAAAKTEPEFTRGLAPVSSGLSIERTSAPH-	IAVFP-FM	-----	-----
W1PHN8	1	-----	-MATTTTEPEIIRRLTPVEPTRLSMERTSAPH-	IAVFP-FM	-----	-----
W1PRF4	1	-----	-----	-MAGQEHRPH-	-----	-----
AtUGT71B1	1	-----	-----	-MKVE-	-----	-----
W1P1M0	1	-----	-----	-METQRPH-	-----	-----
AtUGT72B1	1	-----	-----	-MEESKTPH-	-----	-----
W1PMA9	1	-----	-MAMEAQTGTH-	-----	-----	-----
W1PP20	1	-----	-MEAKTGAH-	-----	-----	-----
AtUGT88A1	1	-----	-----	-MGEEA-	-----	-----
U5DB27	1	-----	-----	-MATQ-	-----	-----
U5DBY1	1	-----	-----	-MATQ-	-----	-----
U5DBY4	1	-----	-MDEAAKVQ-	-----	-----	-----
U5D276	1	-----	-MENVTKVQ-	-----	-----	-----
U5DB32	1	-----	-MENAREVQ-	-----	-----	-----
W1NHX5	1	-----	-----	-MKEMV-	-----	-----
W1NVU7	1	-----	-MASREMKDRV-	-----	-----	-----
W1PAP0	1	-----	-MCLHSFKMSSES-	-----	-----	-----
W1PD80	1	-----	-----	-----	-----	-----
W1PZW0	1	-----	-----	-MKQE-	-----	-----
AtUGT82A1	1	-----	-----	-MKVTQKPK-	-----	-----
W1NUV1	61	ASFHVRRYFTSCVTMLHFTHGVTPLHTSVGTPAMDWCR	-----	LLVAPTSSMRRS	-----	-----
AtUGT86A1	1	-----	-----	-MERA KSRKPH-	-----	-----
AtUGT87A1	1	-----	-MNPIKPQPLGVRH-	-----	-----	-----
W1P188	1	-----	-MAEQKIPVVQEPDPGHA EPM-	-----	-----	-----
W1P188	1	-----	-----	-----	-----	-----

W1P302	1	-----MLGIGKSDTRNFESLCSGVRH-----	VVAVP-FP-----
AtUGT78D1	1	-----MTKFSEPIRDSH-----	VAVLAFPP-----
W1PTN8	1	-----MAEAAATRAH-----	VALLA-FP-----
ZmUGT77A1	1	-----MAPADGESSPPH-----	VAVVA-FP-----
AtUGT83A1	1	-----MDNNSNKRMRGRPH-----	VVVIIP-YP-----
W1NWE7	1	-----	MEFFYTYK-----
W1NXD5	1	-----MGVQH-----	ALMLP-YP-----
AtUGT75B1	1	-----MAPPH-----	FLLVT-FP-----
AtUGT84A1	1	-----MVFETCPSPNPIH-----	VMLVS-FQ-----
W1PLB6	1	-----MGAIKERAH-----	ILLVT-FP-----
U5CXN6	1	-----MVGIEEKVH-----	VLVVT-FP-----
U5D2S8	1	-----	MGAIS-YW-----
U5D817	1	-----MVTLEVNIH-----	ILLVT-FP-----
W1NFL7	1	-----MSAIEVNIH-----	ILLVT-FP-----
W1NFN9	1	-----MSAIEVNIH-----	ILLVT-FP-----
U5DBW3	1	-----MEMGSETKH-----	VMLVC-YA-----
W1PE57	1	-----MGEIREPTH-----	VMLVF-FS-----
U5D3G1	1	-----MAHH-----	VLMVC-SP-----
AtUGT74B1	1	-----MAETTPKVKGH-----	VVILP-YP-----
U5DFQ6	1	-----MEKGKQTRRP-----	VLVFP-YP-----
U5DI88	5	GFVVDEEEHAPS YKRHTLLFQTSKKPEEMEVEKATRGH-----	VLVLP-YT-----
U5DCN3	1	-----MEVEKGRGGH-----	VLVLP-YP-----
U5D531	1	-----MEEKDKSAH-----	VLVIP-SP-----
U5CUG8	1	-----MEEKGKSAH-----	VLVLL-SL-----
W1PLP3	1	-----MEEKGKSAH-----	VLVLL-SL-----
U5DI92	1	-----MEEETAKSAH-----	VLLLP-YP-----
U5D3V6	1	-----MEKDKSVH-----	VLLLT-YP-----
U5DDJ3	1	-----MEEERGKSAH-----	VLLLP-YP-----
U5DFQ3	1	-----MEVGKAKSAH-----	VLLLP-YP-----
U5DI97	1	-----MEEDKSKSAH-----	VLLLP-YP-----
U5DCP2	1	-----MEEGKAKSSH-----	VLVLP-YP-----
U5DDK2	1	-----MEEGKAKSSH-----	VLVLP-YP-----
OsUGT709A3	1	-----MGTAPAPAH-----	VLVFP-WP-----
SgUGT720A1	1	-----MAEQAHDLLH-----	VLLFP-FP-----
U5CX27	1	-----MCY-----	-----
U5D008	1	-----	-----ML-----
W1PMY7	1	-----	-----
AtUGT85A1	1	-----MGSQIIHNSQKPH-----	VVCVP-YP-----
U5CVP6	1	-----MGAQLEVKPH-----	AVCIP-YP-----
U5CNJ5	1	-----MASTVSTKPH-----	AVCVP-FP-----
U5CNG3	1	-----MGSENNQAH-----	AVCVP-YP-----
U5CXJ9	1	-----MGSDYVQKPH-----	AVCVP-FP-----
AtUGT76B1	1	-----METRETKPV-----	IFLFP-FP-----
W1PV81	1	-----MDLDHRPTQ-----	LVFFP-YP-----
W1PVY0	1	-----MAENRVSTPYTKH-----	LVLFS-PP-----
W1PX56	9	TLVLHFLNSRLTLPIKPSTPLPNSLMAENRVSMPTGHE-----	LVLFS-YP-----
AtUGT90A1	1	-----MSVSTHHHH-----	VVLFP-FM-----
OsUGT97A1	1	-----MPASAAAATRPAAEGVGNDGATLAGRDH-----	VVVFP-LM-----
W1PH20	1	-----MPEEAPLTSSH-----	IVVFP-FM-----
W1PBB6	1	-----MAAAKTEPEFTRGLAPVESSGLSIERTSAPH-----	IAVFP-FM-----
W1PHN8	1	-----MATTTTEPEIIRRLTPVEPTRLSMERTSAPH-----	IAVFP-FM-----
W1PRF4	1	-----MAGQEHRRP-----	VAMLP-SS-----
AtUGT71B1	1	-----MKVE-----	LVFIP-SP-----
W1P1M0	1	-----METQRPH-----	VAIFP-SP-----
AtUGT72B1	1	-----MEESKTPH-----	VAIIP-SP-----
W1PMA9	1	-----MAMEAQTGTH-----	VAIIP-SP-----
W1PP20	1	-----MEAKTGAH-----	VAIIP-SP-----
AtUGT88A1	1	-----MGEEA-----	IVLYP-AP-----
U5DB27	1	-----MATQ-----	LVLFP-SP-----
U5DBY1	1	-----MATQ-----	LVFFP-SP-----
U5DBY4	1	-----MDEAAKVQ-----	VVVFP-LP-----
U5D276	1	-----MENVTKVQ-----	VLMFP-LP-----
U5DB32	1	-----MENAREVQ-----	VVMFP-LP-----
W1NHX5	1	-----MKEMV-----	VVLYP-SP-----
W1NVU7	1	-----MASREMKDRV-----	VVLYP-SP-----
W1PAP0	1	-----MCLHSFKMSSES-----	IVLYP-SP-----
W1PD80	1	-----	MVFFP-SP-----
W1PZW0	1	-----MKQE-----	VVLYP-SP-----
AtUGT82A1	1	-----MKVTQKPK-----	IIFIP-YP-----
W1NUV1	61	ASFHVRRYFTSCVTMLHFTHGVTPLHTSVGTGPAMDWCR-----	LLVAPTSSMRRS----
AtUGT86A1	1	-----MERAKSRKPH-----	IMMIP-YP-----
AtUGT87A1	1	-----MNPIKPQPLGVRH-----	VVAMP-WP-----
W1P188	1	-----MAEQKIPVVQEPDPGHAEP-----	IVAIIP-YP-----
W1P188	1	-----	-----

U5CYW0	9	----	RRS	----	----	ITEK	----	VLOS	----	----	SLSPRSSSR
W1PAZ2	19	----	KFG	----	----	YLSF	----	DSNFSSRGFGQLCLPHSSSSSC	GA	KF	
AtUGT81A1	31	SPCSN	SDG	----	----	YALSSSNALYFNG	----	FRTL	----	----	SRRMGKTLAS
W1PTT2	31	----	AAS	----	----	GLEP	----	TP	----	HLRL	AAARDFGGLR
U5D3V5	21	----	EEN	----	----	EVHC	----	KNSQ	----	PCDLS	SHDYMSLTSL
W1NUG7	23	----	ASN	----	----	LSFD	----	A	----	SRTRL	ASRDFGGLTG
W1PC48	12	----	SSH	----	----	HVSA	----	TLEL	----	DSADL	SSLKTLNLEG
W1PP63	13	----	PFN	----	----	FIQS	----	PM-D	----	FGPLN	FLQTSDSA
OsUGT701A2	30	----	VLGPVA	----	----	LLEP	----	TPSSARDFGAVV	----	----	SDA
W1PA48	19	----	TKG	----	----	DVLP	----	IA-A	----	IATL	ASDQQ-HYN
U5D0T8	11	----	KKC	----	----	SEIC	----	FL-K	----	MLARM	ATVKNDGT
AtUGT80A2	94	AESSSTNQPRLDKSKTERQQKVT				HILAEDA	AKIFDDKISAGKKL	KL	LNRIATVKHD	GT	
W1PJ19	16	----	AMG	----	----	HILP	----	FF-Q	----	LAKRL	ADA
W1NU70	17	----	AFG	----	----	HILP	----	FF-H	----	LAKRL	ADA
W1NV64	18	----	AFG	----	----	HIIP	----	FF-Q	----	LAKRL	ADA
W1PKS4	16	----	ALG	----	----	HIIP	----	FF-R	----	LAKRL	ADA
AtUGT91A1	23	----	AFG	----	----	HMVP	----	YL-E	----	LSKLI	AQK
U5CMK2	15	----	AFG	----	----	HLIP	----	FL-E	----	LSKIL	AQK
U5CWM7	1	----	MEGQCR	----	----	SILP	----	FF-E	----	LSKAL	ALK
U5D1X9	15	----	AFG	----	----	HMIP	----	FF-E	----	LSKAL	AQK
W1PT00	16	----	AHG	----	----	HITP	----	FF-E	----	LAKKL	VER
OsUGT94A1	18	----	AHG	----	----	HINP	----	YL-E	----	LATRL	TTTSSSQIDV
AtUGT79B1	21	----	AFG	----	----	HMT	----	FL-H	----	LSNKL	AEK
W1PQK6	25	----	AFG	----	----	HINP	----	YV-Y	----	LANKL	AGDA
U5D602	24	----	IQG	----	----	HLNA	----	LL-N	----	FARSL	AEC
U5D5X9	1	----	MIN	----	----	QLKP	----	TL-S	----	SSSTM	SGPPN
U5D5Z2	49	----	AAS	----	----	HLNQ	----	LL-N	----	FARVL	AEH
U5D5X3	9	----		----	----		----	LTAS	----		
ZmUGT93B1	18	----	AQG	----	----	HLNQ	----	LL-H	----	LSLL	ASR
PoUGT95A1	32	----	GQG	----	----	HLFP	----	AM-E	----	LCKNI	SAH
U5D0B7	12	----	GQG	----	----	HIFP	----	CI-E	----	LCNQL	ARL
AtUGT89A1	28	----	AQG	----	----	HLLP	----	LL-D	----	LTHQL	CLR
OsUGT96A1	26	----	SRG	----	----	HLLP	----	LL-D	----	FAHRL	STRH
AtUGT92A1	18	----	GQG	----	----	HIIP	----	FVALALR	LEKIM		IMNRANKTT
U5CRD3	9	----	AVS	----	----	HYRQ	----	H	----		
W1P7W1	27	----	ARG	----	----	HLIH	----	FV-A	----	LAEEL	AART
U5D7I9	13	----	AQG	----	----	HLIP	----	FA-A	----	LAEEL	SELH
W1PFP0	13	----	AQG	----	----	HLIP	----	FA-A	----	LAEEL	SELH
OsUGT99A1	13	----	AQG	----	----	HLIP	----	AV-D	----	TALL	ATH
AtUGT73B1	19	----	AHG	----	----	HMIP	----	TL-D	----	MAKLF	ATK
OsUGT98B1	28	----	AQG	----	----	HAIP	----	MT-D	----	MARLL	AEHG
W1PF90	47	----	SQG	----	----	HMIP	----	MI-D	----	LARMI	AAR
W1NIK4	20	----	AQG	----	----	HMLP	----	MI-D	----	LARML	AKR
W1PQX3	28	----	AQG	----	----	HMIP	----	ML-D	----	IARML	ADH
W1PPW8	22	----	AQG	----	----	HMIP	----	ML-D	----	IARML	ANH
W1PS80	22	----	AQG	----	----	HMIP	----	VL-D	----	IARML	ADH
AtUGT90A1	17	----	SKG	----	----	HIIP	----	LL-Q	----	FGRLL	LRHHRKEPTIT
OsUGT97A1	37	----	SKG	----	----	HMIP	----	LL-H	----	FAAAL	AVHHGDHLR
W1PH20	20	----	AQG	----	----	HTIP	----	LL-Y	----	LCNAL	SSM
W1PBB6	39	----	SRG	----	----	HAIP	----	LL-H	----	LCATF	LRR
W1PHN8	39	----	SRG	----	----	HAIP	----	LL-H	----	LCATL	LRR
W1PRF4	18	----	GMG	----	----	HLAP	----	FT-R	----	LATLL	AKDH
AtUGT71B1	12	----	GVG	----	----	HIRA	----	TT-A	----	LAKLL	VASDN
W1P1M0	15	----	GLG	----	----	HLIP	----	LA-A	----	FAQQL	ATIH
AtUGT72B1	16	----	GMG	----	----	HLIP	----	LV-E	----	FAKRL	VHLH
W1PMA9	18	----	GMG	----	----	HLIP	----	LV-A	----	FSKRL	VATH
W1PP20	16	----	GMG	----	----	HLIP	----	LV-V	----	FAKHL	AATH
AtUGT88A1	13	----	PIG	----	----	HLVS	----	MV-E	----	LKGTI	LSKNPSLSIH
U5DB27	12	----	AVG	----	----	HLVS	----	MV-E	----	LAKRL	LHHNPTAFS
U5DBY1	12	----	GVG	----	----	HLVS	----	MV-E	----	LAKRL	LHHNPTAFS
U5DBY4	16	----	LVG	----	----	HLVP	----	TV-E	----	LAKLL	LGHRS
U5D276	16	----	PIG	----	----	HLVT	----	TV-E	----	LAKIL	IHNHS
U5DB32	16	----	PIG	----	----	HLVT	----	MV-E	----	LAKTL	IRNHS
W1NHX5	13	----	CSG	----	----	HLMS	----	MV-E	----	LAKLI	LHRHPNLSTT
W1NVU7	18	----	AIR	----	----	HLLS	----	MV-E	----	LAKLI	L-HHSPKLYIT
W1PAP0	19	----	GMG	----	----	HLVS	----	MM-E	----	LKGLI	L-HHYPTFSIH
W1PD80	8	----	GIG	----	----	HLIP	----	MV-E	----	LKGLI	L-RHHPSFSIT
W1PZW0	12	----	GMG	----	----	HLVS	----	LV-E	----	LKGLI	L-RHHPTFSIT
AtUGT82A1	16	----	AQG	----	----	HVTP	----	ML-H	----	LASAF	LSR
W1NUV1	111	----	LKGRCSLSATCWKLEFGS			HIIP	----	SV-Q	----	LALKL	ASK
AtUGT86A1	18	----	LQG	----	----	HVIP	----	FV-H	----	LAIKL	ASH
AtUGT87A1	21	----	GRG	----	----	HINP	----	ML-N	----	LCKSL	VRRDP
W1P188	28	----	GQG	----	----	HINP	----	MM-R	----	LCMRL	ASK
W1P188	1	----		----	----		----		----		

W1P302	29	----	GQG	-----	HINP	----	MM-H	----	LCKRL	-----	ASK	----	GAA
AtUGT78D1	21	----	VGA	-----	HAGP	----	LL-A	----	VTRRL	-----	AAASPST	I	----
W1PTN8	17	----	FGT	-----	HAAP	----	LL-A	----	LALNL	-----	ATTSPST	SL	----
ZmUGT77A1	21	----	FSS	-----	HAAV	----	LL-S	----	LARAL	-----A	AAAAPS	GAT	----
AtUGT83A1	21	----	AQG	-----	HVLP	----	LI-S	----	FSRYL	-----	AKQ	----	GIQ
W1NWE7	9	----	GNN	-----		----	VL-D	----	FKRPL	-----		----	DGLK
W1NXD5	13	----	AQG	-----	HIIP	----	MM-E	----	LSRRM	-----	EEH	----	GFI
AtUGT75B1	13	----	AQG	-----	HVNP	----	SL-R	----	FARRL	-----	IKRT	----	GAR
AtUGT84A1	21	----	GQG	-----	HVNP	----	LL-R	----	LGKLI	-----	ASK	----	GLL
W1PLB6	17	----	AQG	-----	HVKP	----	AI-R	----	LARRL	-----	ASDN	----	RLR
U5CXN6	17	----	AQG	-----	HVNL	----	AI-R	----	LARCL	-----	AASNT	----	SLL
U5D2S8	8	----	SPS	-----	QDKA	----	MLSQ	----	QSDLL	-----	AASNA	----	SLL
U5D817	17	----	AQG	-----	HVKP	----	AI-R	----	FARRL	-----	TASNA	----	SLL
W1NFL7	17	----	AQG	-----	HVKP	----	AI-R	----	FARRL	-----	TASNA	----	SLL
W1NFN9	17	----	AQG	-----	HVKP	----	AI-R	----	FARRL	-----	TASNA	----	SLL
U5DBW3	17	----	AQG	-----	HINP	----	VL-Q	----	FAGRL	-----	ASR	----	GIS
W1PE57	17	----	AQG	-----	HLNP	----	ML-Q	----	FAGHL	-----	SSR	----	GIT
U5D3G1	12	----	AQG	-----	HINP	----	AL-E	----	LAKRL	-----	VKK	----	DLR
AtUGT74B1	19	----	VQG	-----	HLNP	----	MV-Q	----	FAKRL	-----	VSK	----	NVK
U5DFQ6	19	----	TQG	-----	HINP	----	ML-Q	----	FAKCL	-----	TRE	----	LLS
U5DI88	50	----	TQG	-----	HINP	----	ML-Q	----	FSRRL	-----	THK	----	GLR
U5DCN3	18	----	TQG	-----	HINP	----	ML-Q	----	FSRRL	-----	THK	----	GLR
U5D531	18	----	FPS	-----	HINP	----	ML-H	----	FADRL	-----	ASK	----	GLR
U5CUG8	18	----	CRG	-----	HINP	----	ML-H	----	FADRL	-----	AIN	----	GLR
W1PLP3	18	----	CRG	-----	HINP	----	ML-H	----	FADRL	-----	ASN	----	GLR
U5DI92	18	----	LLG	-----	HINP	----	LL-Q	----	FADRL	-----	ASH	----	GFR
U5D3V6	16	----	TQG	-----	HINP	----	LL-Q	----	FAGRL	-----	ASN	----	GLR
U5DDJ3	18	----	SQG	-----	HINP	----	LL-Y	----	FADRL	-----	ASN	----	GLR
U5DFQ3	18	----	SQG	-----	HINP	----	LL-Q	----	FADRL	-----	ASN	----	CLC
U5DI97	18	----	IQG	-----	HINP	----	LL-Q	----	FADRL	-----	VGK	----	GLK
U5DCP2	18	----	IQG	-----	HINP	----	LL-Q	----	FADGL	-----	ASK	----	GVK
U5DDK2	18	----	IQG	-----	HINP	----	LL-Q	----	FADRL	-----	ASK	----	GVK
OsUGT709A3	17	----	IQG	-----	HLNV	----	ML-H	----	LAVAL	-----	AGA	----	GVH
SgUGT720A1	18	----	AEG	-----	HIKP	----	FL-C	----	LAELL	-----	CNA	----	GFH
U5CX27	4	----	GHG	-----	SFEP	----		----		-----		----	
U5D008	3	----	GTG	-----	P	----		----		-----		----	GRV
W1PMY7	1	----		-----		----		----	MGKNL	-----		----	
AtUGT85A1	21	----	AQG	-----	HINP	----	MM-R	----	VAKLL	-----	HAR	----	GFY
U5CVP6	18	----	AQG	-----	HVSP	----	MM-Q	----	LAKLL	-----	HSK	----	GFH
U5CNJ5	18	----	AQS	-----	HINA	----	MV-Q	----	LAKLL	-----	HTR	----	GFH
U5CNG3	18	----	AQG	-----	HINP	----	MM-Q	----	LAKLL	-----	HAR	----	GFH
U5CXJ9	18	----	AQG	-----	HITP	----	MM-Q	----	LAKLL	-----	HAR	----	GFH
AtUGT76B1	17	----	LQG	-----	HLNP	----	MF-Q	----	LANIF	-----	FNR	----	GFS
W1PV81	17	----	LQG	-----	HLTP	----	ML-Q	----	LAQSL	-----	LSLNP	----</	

U5CYW0	30	-----CSYGVL---EEERGT-----ELTQL-----GAERTKTVLI---
W1PAZ2	51	G----VTFPGEPKFVGSCLKIGKTAAKVQGGIGNQFNRFIRLNCERIPIGFASVSSVQKPFDD
AtUGT81A1	67	-----LSFNTKSSAGSSLRR-----FISDFNSFIRFHCDKVPPEFASVGGVGLSSD
W1PTT2	55	-----ADPPPA---TVALPS-----TASDVTRAIRAALSHQTLTLSAR
U5D3V5	47	NLHGSLSFNETLRASKDFGG-----FRVRKPGAVVEPGSVQDIDVDVIKV
W1NUG7	46	APPHGVLPSSVHEIANLVR-----VAYEADAHFRVAAKGHAHSIQ
W1PC48	38	Y----LSFHDTHLASRDFGD-----CYHSLPSAILRPKSPQDIAKTLQHVFD
W1PP63	37	-----IDFGRI---FFNSPS-----AILQPNVDEISLCLKFISLSSYSKV
OsUGT701A2	58	-----VMRPES---PDDIAL-----LLGALSSTAPSPRATVAAVGAG
W1PA48	42	-----VVLITHLAHKYLEAH-----LVAKGASIVPSTPPVLSMEDAHRT
U5D0T8	34	-----VEFEVTENLPHDDVD-----HGSEAHTGAVDEETDELIDLDIQL
AtUGT80A2	152	-----VEFEVP---ADAIPQ-----PIVVDRGESKNGVCADSIDGVLDQYIPPM
W1PJ19	37	-----ITFLTP-----PSTPPLSSLSL---
W1NU70	38	-----VTFLAP---ASVLPR-----LPSLHLPHHLSLISFHPFSLP
W1NV64	39	-----VTFLTL---PSVFSH-----LPPLH---VPHHLSLISFHPVSLP
W1PKS4	37	-----VTYLSLSP---PSVFPR-----LPPLQLPHHQSLITFHPPLSLP
AtUGT91A1	44	-----VSFIST---PRNIDR-----LLPWLLENLSSVINLVKLSLP
U5CMK2	36	-----VSFIST---PRNIDR-----LPKIPPNLATLINLVKFELP
U5CWM7	25	-----VSLIST---PRNLQR-----LPPIPQELAPQINLVGFPLP
U5D1X9	36	-----VSFIST---PRNLQR-----LPPTPELAPQINLVGFPLP
W1PT00	37	-----VTICST---ASNLTSS-----IKDQLRETHSSIKTAEISLP
OsUGT94A1	43	V----VHLVST---PVNLAA-----VAHRRTDRLISLVELHLP
AtUGT79B1	42	-----IVFLLP---KKALNQ-----LEPLNLYPNLITFHTISIP
W1PQK6	47	-----VTIVSA---PGNLQP-----ISPSILLPSLITLLPLPLP
U5D602	45	-----VVFACS---DTHMRQ-----ATQRAEGWDPFAIANLSFHLLPLP
U5D5X9	21	-----LNFAPR---PRGPKS-----GGASGAAAGAEPPKPAHLRLR
U5D5Z2	70	-----VVFACS---ETHARQ-----TTHRSGGFNCASNPNLRFHILPFP
U5D5X3	13	-----VAWIAP---PFPTSG-----FTSSPSLNFLPLDP
ZmUGT93B1	39	-----VHYAAP---PPHVRQ-----ARARVHGWDPRALGSIRFHDLDVP
PoUGT95A1	53	-----VTLIIPSHLSSSIPS-----TFSNHSSFIHVTEISVAASPPP
U5D0B7	33	-----TTALIP-----SPISSSLRLHPLVQIMETSTH
AtUGT89A1	49	-----VSIIVT---PKNLPY-----LSPLLSAHPSAVSVVTLPPF
OsUGT96A1	48	-----LTVAVT---ASDLPL-----LSAFLASTPLAAALPF---
AtUGT92A1	46	-----ISMINT---PSNIPK-----IRSNLPPESSISLIELPFN
U5CRD3	17	-----PSQHCH-----TPIHATPILAALPFN
W1P7W1	49	-----ITLVST---PKNAQM-----MRSILDTATAAAITVVELPFC
U5D7I9	35	-----ITLVNT---PHNASK-----LRSMNPKAAGAIIDVAELPFS
W1PFP0	35	-----ITLVNT---PHNASK-----LRSMNPKAAGAIIDVAELPFS
OsUGT99A1	34	-----CTVVAT---PATAAR-----VRPTVDSARRSGLPVRLAEFLD
AtUGT73B1	40	-----STILTT---PLNAKL-----FFEKPIKSFNQDNPGLDITIQILNFP
OsUGT98B1	50	-----VSLVVT---PVNAAR-----MAGFAAGVEEAGLPVQLVEL---
W1PF90	68	-----VAVATT---PLNAAR-----IPSVPLLRVLELPPF
W1NIK4	41	-----VSIVTT---PLNASR-----IRSILDRAAASGHRMQILEIEFP
W1PQX3	49	-----VTLVTT---PLNAVR-----IRAAAWSPRVRVLEMEFP
W1PPW8	43	-----VTLVTT---PLNAVW-----IRTILDRAAASSCRVRVLDIEFP
W1PS80	43	-----VTLVTT---PLNAVW-----IRPILDRAAASSCRVRVLDIEFP
AtUGT90A1	43	-----VTVFTT---PKNQPF-----ISDFLSDTPEIKVISLPPF
OsUGT97A1	61	-----VTLVTT---PANLAF-----ARRRLPPSPSVRVVAIPFP
W1PH20	41	-----STIITT---PLNAIS-----MRRTLDCQNPKIRLIELPFP
W1PBB6	60	-----LTIFST---PSNTPF-----YRQCLPQDPKIRIIDLPFP
W1PHN8	60	-----LTIFST---PSNSPF-----YRQSLPKDSGIRIIDLPFP
W1PRF4	40	-----VTILVP---TSLVSV-----PESRTLDLAFSSGLDIHRL-PY
AtUGT71B1	35	-----VTLIVI---PSRVSD-----DASSSVYTNSEDRLRYILLPAR
W1P1M0	37	-----VTFINVSTGSSPMQD-----SILAGLEQTCKGFVKSVELPMM
AtUGT72B1	38	-----VTFVIAGEGPPSKAQ-----RTVLDLSLPSSISSVFLPPV
W1PMA9	40	-----ITFINLITDSSAAQS-----SVLSTLNDVGLSSLQSVDLPPA
W1PP20	38	-----ITFINL---TTDSSA-----AQSSVLNLNDVGLSSVQFVDLPPA
AtUGT88A1	38	-----IILVPP---PYQPES-----TATYISSVSSSFPSTFHHLPVAV
U5DB27	36	-----ITILTT-----QSPFPGGAAATYIAN---
U5DBY1	36	-----ITMLTIES-PFGAAT-----AAAYMAKVSASAPPALQFLPLPPP
U5DBY4	39	-----ITILTPHDHPFNPSS-----TAPYIERTSSSSFPLNRLRFLQLPRV
U5D276	39	-----ITILTPHDHPFDAPT-----TAPYIARISASYSPTRLRFLNLPPV
U5DB32	39	-----ITILTPHDHPFDAAT-----TDPYISRISSYSPTRLRFLKLPPV
W1NHX5	38	-----ILTVNP---PFYVGN-----TAPYIAYISNEFPDIAFLELSP
W1NVU7	43	-----ILNVNP---PFDVGN-----TAPYIGRISSEFPAIAFLELEPP
W1PAP0	44	-----VLTFFNP---PFHTGA-----TAPYMSRIAAYEPAISFHEL---
W1PD80	33	-----ILITTP---PFETGA-----TAPYMSRVASEIQAITFIELPPV
W1PZW0	37	-----VLITKP---PFDTGA-----TAEYVARVASQVSAITFHELPPA
AtUGT82A1	37	-----PVVMTP---ESIHRR-----ISATNEDLGITFLALSD-
W1NUV1	147	-----ITFVNT---EAVHAQ-----TVKAYNNSLSKTLNDSIDCSNSTDDIFFG
AtUGT86A1	39	-----ITFVNTDSIH HHIST-----AHQDDAGDIFSAARSSGQHDIRYT
AtUGT87A1	44	-----VTFVVT---EEWLGf-----IGSDPKPNRIHFATL-PN
W1P188	49	-----IRIVVT---EEWLSF-----MTSAQEPPPNVRLLSIPN-
W1P188	1	-----

W1P302	50	-----ISFVVT---KEWVGF-----MSGQPIPPNVRLCPIPN-
AtUGT78D1	44	-----FSFFNT---ARSNAS-----LFSSDHPENIKVHDV-SD
W1PTN8	41	-----FTFFST---PQSLSK-----LSSSITICSSKATNLRFLPLPEN
ZmUGT77A1	46	-----LSFLST---ASSLAQ-----LRKASSASAGHGLPGNLRFVEV-PD
AtUGT83A1	42	-----ITFINT---EFNHNR-----IISSLPNSPHEDYVGDQINLVSI-PD
W1NWE7	24	-----QVLLGP---NIGKRN-----
W1NXD5	34	-----VTFVNT---DFTQKR-----VLDASMKAHTESHPNKGTGCIRLV
AtUGT75B1	35	-----VTFVTC---VSVFHN-----SMIANHNKVENLSFLTf-SD
AtUGT84A1	42	-----VTFVTT---ELWGKK-----MRQANKIVDGELKPVGSGSIRFE
W1PLB6	39	-----VSFATN---EAIQKQ-----LHDAGTTTTSGTDAHVEFLTf-FD
U5CXN6	40	-----VSLAAI---EAIQQQ-----MHDAGGITTSGSDGHISFETF-SD
U5D2S8	32	-----VSLATN---KTVGQQ-----MHDASAAGPVGPISFETF-SD
U5D817	40	-----VSLATN---EAIQQQ-----MRDSGATGSDEHINFETF-SD
W1NFL7	40	-----VSLATN---EAIQQQ-----MRDSGAAGSDEHISFETF-SD
W1NFN9	40	-----VSLATN---EAIQQQ-----MRDSGAAGSDEHISFETF-SD
U5DBW3	38	-----ITVATA---AIGRQR-----ILKDGDKATAFEADGNIKFEFF-SD
W1PE57	38	-----TTLATT---SIGQEG-----ILKGGTRAVLEAEGTIKFEFY-SD
U5D3G1	33	-----VTFATT---AHGLSR-----IHQAIDIVSFASY-SD
AtUGT74B1	40	-----VTIATT---TYTASS-----ITTPSLSVEPI-SD
U5DFQ6	40	-----VTFVTS---TFVTQS-----LRNTSSAKPLLLQSIRFE
U5DI88	71	-----VTLVTT---IQNLKD-----MRKANPSDPDFVSIELISD
U5DCN3	39	-----VTLVIT---IQNLQE-----MRASNPSDPAFLDIEHISD
U5D531	39	-----ATLVVA---IQNRGD-----IPKANPPADASASLEYISD
U5CUG8	39	-----ATLVVP---IQNRGD-----IGKADPRAVAAACLEYISD
W1PLP3	39	-----ATLVVP---IQNRGD-----IGKADPPAVAAAFLEYISD
U5DI92	39	-----ATIVAP---IRSRGD-----FRKADPSALASVNLEFFSD
U5D3V6	37	-----ATIVAP---TRCKDE-----FCKADPSAVASTNLEFFSD
U5DDJ3	39	-----VTFVTP---IQSKKY-----FHKADPAVLASTHLEFFSD
U5DFQ3	39	-----ATIVAP---IRNRSD-----FHKADPSALATTHLEFFSD
U5DI97	39	-----ATLVAP---VRSRDD-----IRRADRSALTSTNTEYISD
U5DCP2	39	-----ASLVVP---LRIHGD-----ILHKVDTSSLATIPLEYISD
U5DDK2	39	-----ASLVVP---LRIHGD-----ILHKVDTSTLATTHLEYISD
OsUGT709A3	38	-----VTFLLHT---DYNLRR-----LGAAAAAASVPWLRFMSV-TD
SgUGT720A1	39	-----VTFLLNT---DYNHRR-----LHNHLHLLAARFPSSLHFESI-SD
U5CX27	11	-----IRNLDL---DSDSDR-----
U5D008	10	-----RSFWPQ---NRLNSK-----VFDPNPTQRIKNF---
W1PMY7	6	-----
AtUGT85A1	42	-----VTFVNT---VYNHNR-----FLRSRGSNALDGLPSFRFE
U5CVP6	39	-----ITYVNT---EFNHKR-----LLKSRGPDLSNGVPDFRFE
U5CNJ5	39	-----ITFVNT---EYNHQR-----LLKSRGSDPSMGVDGFVFD
U5CNG3	39	-----ITFVNN---EYNHQR-----LLKSRGPDPSMGVQGFVFE
U5CXJ9	39	-----ITFVNN---EYNHQR-----LLKSRGSDPSMGVQGFVFE
AtUGT76B1	38	-----ITVIHT---EFNSPN-----SSNFPHFTFVSIIPDS
W1PV81	40	-----ITIAHT---HFNSPK-----IESPLKFTLIPI-DD
W1PVY0	42	-----ITIVHT---DYNAPH-----LEPRPGLTIEPI-YL
W1PX56	75	-----ITIVHT---DYNAPH-----LEPSPGFSIESI-CL
AtUGT90A1	43	-----VTVFTT---PKNQPF-----ISDFLSDTPEIKVISLPPF
OsUGT97A1	61	-----VTLVTT---PANLAF-----ARRRLPPSPSVRVVAIPFP
W1PH20	41	-----STIIIT---PLNAIS-----MRRTLDCQNPKIRLIELPFP
W1PBB6	60	-----LTIFST---PSNTPF-----YRQCLPQDPKIRIIDLPFP
W1PHN8	60	-----LTIFST---PSNSPF-----YRQSLPKDSGIRIIDLPFP
W1PRF4	40	-----VTILVP---TSLVSV-----PESRTLALFSSGLDIHRL-PY
AtUGT71B1	35	-----VTLIVI---PSRVSD-----DASSSVYTNSEDRLRYILLPAR
W1P1M0	37	-----VTFINVSTGSSPMQD-----SILAGLEQTCCKGFVKSVELPMM
AtUGT72B1	38	-----VTFVIAGEGPPSKAQ-----RTVLDSLSPSSISSVFLPPV
W1PMA9	40	-----ITFINLITDSSAAQS-----SVLSTLNDVGLSSLQSVDLPPA
W1PP20	38	-----ITFINL---TTDSSA-----AQSSVLNLNDVGLSSVQFVDLPFA
AtUGT88A1	38	-----IILVPP---PYQPES-----TATYISSVSSSFPSITFHHLPAV
U5DB27	36	-----ITILTT-----QSPFPGGAAATYIAN---
U5DBY1	36	-----ITMLTIES-PFGAAT-----AAAYMAKVSASAPPALQFLPLPPP
U5DBY4	39	-----ITILTPHDHPFNPSS-----TAPYIERTSSSSFPLNRLRFLQLPRV
U5D276	39	-----ITILTPHDHPFDAPT-----TAPYIARISASYSPTRLRFLNLPPV
U5DB32	39	-----ITILTPHDHPFDAAT-----TDPYISIRISSYSPTRLRFLKLPPV
W1NHX5	38	-----ILTVNP---PFYVGN-----TAPYIAYISNEFPDIAFLELSPP
W1NVU7	43	-----ILNVNP---PFDVGN-----TAPYIGRISSEFPAIAFLELEPP
W1PAP0	44	-----VLTfNP---PFHTGA-----TAPYMSRIAAYEPAISFHEL---
W1PD80	33	-----ILITTP---PFETGA-----TAPYMSRVASEIQAITFIELPPV
W1PZW0	37	-----VLITKP---PFDTGA-----TAEYVARVASQVSAITFHELPPA
AtUGT82A1	37	-----PVVMTP---ESIHRR-----ISATNEDLGITFLALSD-
W1NUV1	147	-----ITFVNT---EAVHAQ-----TVKAYNNSLSKTLNDSIDCSNSTDIFFG
AtUGT86A1	39	-----ITFVNTDSIH HHIST-----AHQDDAGDIFSAARSSGQHDIRYT
AtUGT87A1	44	-----VTFVVT---EEWLGF-----IGSDPKPNRIHFATL-PN
W1P188	49	-----IRIVVT---EEWLSF-----MTSAQEPPPNVRLLSIPN-
W1P188	1	-----



U5CYW0	57	-----LMS-DTGGGHRASAEAIRD----	AFY	
W1PAZ2	107	ECEFQCGESHGLRLLGAETPKKVL-----	ILMSDTGGGHRASAEAIKA----	AFN
AtUGT81A1	114	ENGIRENGTGGVLGEE-GLPLNGVEADRPPKKVLILMS-DTGGGHRASAEAIRA----	AFN	
W1PTT2	90	GCGH-----SVHGQANAP-----	HGI-VLDMSSMRGSMNAVIP----	RVA
U5D3V5	91	GLSSVS-----GLTVAARGNGHCTNGQAQAH-RGVVLEMRGIKIEV----	SLS	
W1NUG7	87	GQAQAPG-----GVVIEMEALKGCLFNVGVLE-NESCSFSSSSYSVERE----	SVE	
W1PC48	81	LGPSKLTIAAR-----GHAHSLR-----	GQA-QAPHGIVVNMESLAD----	PKK
W1PP63	75	TVAARGA-----GHSIHGQ-----	AQA-PNGIVIEMDSLPLSL----	KIH
OsUGT701A2	92	HSLH-----GQAQARD-----	GIVVETRALPRDVHV----	VSA
W1PA48	82	SGLE-----DFSFSRC-----	KEA-IKQHHREECLSAFEN----	IFG
U5D0T8	75	QIVMLIV-----GTQGDVQPFVAIGKR--LQV-YGHRVRLATHSNFEE----	FVL	
AtUGT80A2	194	QIVMLIV-----GTRGDVQPFVAIAKR--LQD-YGHRVRLATHANFKE----	FVL	
W1PJ19	54	-----FHPPTFT-----	-----	LLS
W1NU70	71	HVP-----DLPPEAATTSD-----	LPP-HLQSLLKSSSLDLLQP----	LLH
W1NV64	72	SIP-----ELPEAAA--TTSD--	LPP-HLQDHLKAAFDALQP----	LFH
W1PKS4	70	SIP-----ELPEAATTYD-----	LLP-HLQTPFKAAFDALQP----	LFH
AtUGT91A1	77	VGDN-----KLPEEDGEATTD-----	VPF-ELIPYLKIAVDGLKV----	PVT
U5CMK2	68	PTH-----GLPENAEATMD-----	LPI-EKLQFLTAAAYDKLHE----	PIE
U5CWM7	57	LVE-----GLPKNAKATIEN-----	ISL-EKVQYLKKAYDGLRA----	PFE
U5D1X9	68	SVE-----GLPKNAEATTD-----	IPL-KKVPYLKKAYDGLRA----	PFE
W1PT00	69	QVA-----GLSPHHQTTKD-----	LPP-HLMPHLKRAFHLSON----	QFK
OsUGT94A1	73	ELP-----GLPPALHTTKH-----	LPP-RLMPALKRACDLAAP----	AFG
AtUGT79B1	73	QVK-----GLPPGAE--TNSD--	VPF-FLTHLLAVAMDQTRP----	EVE
W1PQK6	78	HID-----GLPPGLECTTD-----	ATF-LQAEELLKDALDATQP----	QVV
U5D602	81	HLTPGP-----RLRPQLPSA-----	PPV-YLGFHAVPSRPPGRP--C-PLA	
U5D5X9	55	EFP-----TLPDPDE-----	SSN-KFPAHLQPVFDAIEH----	LLA
U5D5Z2	106	SFP-----ALLPDPESSNK-----	FPG-HLQPLFDATEHLLSP----	LTT
U5D5X3	40	ELPN-----KFFG-----	-----HLQPVFDAIEHLLAP----	LTT
ZmUGT93B1	75	PYDS-----PAPDLAASP-----	FPN-HLMPMFEEAFAAAARA----	PLA
PoUGT95A1	90	EAADPE-----GSGTEVR-----	SSG-PRGNPLQDQNLQMGK----	GIK
U5D0B7	60	SPP-----PPPPQW-----	PEN-SPSPSFPAMLDPLES--I-LLE	
AtUGT89A1	81	HHPLIPS-----GVENVKD-----	LGG-YGNPLIMASLRQLRE----	PIV
OsUGT96A1	76	-----HLPDASL-----	PEN-SNHALLAVHLSGIRA----	PLL
AtUGT92A1	77	SSDH-----GLPHDGENFDS-----	LPY-SLVISLLEASRSLREFRDFMT	
U5CRD3	38	GPNH-----GLPPNLEITDS-----	LPY-SLFPAFFKTTTETLLPSFQNLIS	
W1P7W1	82	STDH-----GLPDGVESSDA-----	VPP-ALTLLHVHFHASESLQP----	AFE
U5D7I9	68	SADH-----GLPPDAENTDA-----	LPY-PLILRLFEASETLEPAFESLIS	
W1PFP0	68	SADH-----GLPPDAENTDA-----	LPY-PLILRLFEASETLEPAFESLIS	
OsUGT99A1	69	HAGA-----GLPEGVNDMDN-----	VPS-EFMARYFAAARLRE----	PVE
AtUGT73B1	79	CTEL-----GLPDGCENTDFIFSTPDNLNVGDLISQKFLLAMKYFEE----	PLE	
OsUGT98B1	82	PFPAAEF-----GLPDGCE--NVDML--	PSK-DLFSNLLACGALRE----	PFA
W1PF90	95	GTEV-----DLPRGCESLDAL-----	PQL-SLFPEFMKATRLMKP----	KLD
W1NIK4	76	CMEA-----GLPEGCENLDSL-----	PST-HLLMNFFFEATKMLRD----	PFE
W1PQX3	79	CAEV-----GLPKGCESEFEDV-----	PSY-DLMSNFLRATMLRE----	PFE
W1PPW8	78	CAEV-----GLPEGCESVDLL-----	PSN-DLMINFFRATELLQE----	PFE
W1PS80	78	CAEV-----GLPEGCESMDLL-----	PSN-DLKINFFRATELLQE----	PFE
AtUGT90A1	74	ENIT-----GIPPGVENTEKL-----	PSM-SLFVPFTRATKLLQP----	FFE
OsUGT97A1	92	AHP-----QIPPGVESTDAL-----	PSQ-SLFPAFLRATALLRE----	PFA
W1PH20	73	EEP-----AVPRNCENTDQ-----	LPSVDLFVPFLKATQKLRP----	QFD
W1PBB6	91	SYP-----DLPKGCESTEQL-----	PSM-DMFPTFLNAVKELRD----	SFE
W1PHN8	91	SHP-----DLPKGCESTEQL-----	PSM-DMFLPFLNAVKELRD----	SFE
W1PRF4	73	SLPP-----PLSDNID-----	PFF-KQWGLISRSIDELKP----	ILE
AtUGT71B1	69	D-----QTTDLVS-----	YID-SQKPQVRADVSKVAG----	DVS
W1P1M0	74	DMS-----DIPPDGT-----	KVV-QISLTIRRSLSLRLG----	LLG
AtUGT72B1	72	DLT-----DLSSSTR-----	IES-RISLTVTRSNPELRK----	VFD
W1PMA9	77	DLS-----DLPISAK-----	IET-RISLTVRRSLSSLRT----	LLC
W1PP20	75	DLS-----DLPSSAK-----	IET-RISLTMFRSLSSLRA----	LLG
AtUGT88A1	73	T-----PYSSSST-----	SRH-HHESLLLLEILCFSNP----	SVH
U5DB27	57	-----ISALFIGAHKQISAEALKS----	LS	
U5DBY1	74	LNF-----SVSPETR-----	GET-LISLFIGAHKQSVAE----	ALK
U5DBY4	80	DF-----SPAPDMR-----	PQ-TLFSLFAAAHKPIVT----	ETL
U5D276	79	HF-----SPTPDMR-----	SQT-IRSLFVAAHKPLVAE----	ALK
U5DB32	79	NFS-----ETSDM-----	RPQ-TIRSLFAAAHKPFVT----	EAL
W1NHX5	73	EF-----SVDHSLN-----	LET-LVFEFIHDSNPSVSK----	ALE
W1NVU7	78	EF-----SVDDSAH-----	LET-LIFEYIHLANNPRVS----	EAL
W1PAP0	76	-----SLPPNQC-----	A-TFMDWFLVLKPLVRE----	ALE
W1PD80	68	EL-----SVTQIDH-----	SLT-FMFEWLLLCCKPAVAQ----	ALQ
W1PZW0	72	DLN-----VLNPN-----	LEL-LIFEWLSLCKPHVSE----	ALL
AtUGT82A1	66	-----GQDRPDA-----	PPS-DFFSISIENSMENIMPP----	QLE
W1NUV1	188	AREAGLDIRYRVSD-----GLPFLFDRSLN-----	HNQ-FMFSLHVFSAHVEK----	IIR
AtUGT86A1	78	TVSD-----GFPLDFDRSLN-----	HDQ-FFEGILHVFSAHVDD----	LIA
AtUGT87A1	73	IIPS-----ELVRAND-----	FIA-FIDAVLTRLEEFPEQ----	LLD
W1P188	79	-----VIFSELS-----	RAA-DWVGFGVQAVNSTMEE----	PVD
W1P188	1	-----	-----	

W1P302	79	-----VIPSELN-----	RSA-DWTGFIEAVSTKMEE----	PFE
AtUGT78D1	73	GVPE-----GTMLGN-----	PLE-MVELFLEAAPRIFRS----	EIA
W1PTN8	76	EN-----YSPENLT-----	PMA-AIEAFLRGAAPSARE----	ALG
ZmUGT77A1	82	GAPAAEE-----TVPVPRQ-----	MQL-FMEAAEAGGVKAWLE----	AAR
AtUGT83A1	79	GLSD-----SPEERNI-----	PGK-LSESVLRFMPKKVEE----	LIE
W1NWE7	36	-----RMMLRDD-----	-----	KIS
W1NXD5	70	SIPD-----GLEPDADRNK-----	LGA-LCEAMLSSMPNALET----	LIK
AtUGT75B1	66	GFDDG-----GISTYED-----	RQK-RSVNLKVNGDKALSD----	FIE
AtUGT84A1	77	FFDE-----EWAEDDDRRAD-----	FSL-YIAHLESVGIREVSK----	LVR
W1PLB6	74	GLA-----VDEDRRD-----	LDW-FMAHLNRAGPNGLAA----	LIS
U5CXN6	75	GH-----GIDDDRN-----	DA-FMAQLSTAGPGGLLA----	LID
U5D2S8	64	GL-----GMPDNNQHD-----	LDK-FMAQLNCAGPEGLAA----	LIN
U5D817	72	GLSV-----DGNQHD-----	VDK-FMAQLNRAGPEGLAT----	LIN
W1NFL7	72	GLSV-----VGNQLD-----	ADK-FMAQLNRAGPEGLAT----	LIN
W1NFN9	72	GLSV-----DSNQHD-----	IDK-FMAQLNRAGPEGLAT----	LIN
U5DBW3	74	GSD-----PLMPIKD-----	LDD-CLGLREREGPESLAG----	LVE
W1PE57	73	GWDS-----RVPIVH-----	LDD-YMDKLEIVGSES LAS----	LVE
U5D3G1	60	GFDQ-----GFDNSIA-----	FAD-YVSQFKRLGSETLAA----	LIR
AtUGT74B1	65	GFDFIPI-----GIPGFS-----	VDT-YSESFKLNGSETLTTL----	LIE
U5DFQ6	70	TISD-----GFDNGRSRKDS-----	IAF-YLEKFKITGQVALTE----	LIA
U5DI88	102	GFDD-----GLPSEFT-----	VDA-YLATLERVGS LTLD S----	LLA
U5DCN3	70	GFDD-----GLPVDKF-----	LDT-YVDSLKRVG SQTLD S----	LLT
U5D531	70	GYDD-----ALPSNFD-----	VEI-YKTTLQRVGSEK LLE----	LIA
U5CUG8	70	GYDD-----GLPSNFD-----	VEI-YRTTFQCVGSK K LLE----	LIA
W1PLP3	70	GYDD-----GLPSNFD-----	VEI-YRTTFQRVGSK K LLE----	LIA
U5DI92	70	GHDN-----GFPLDLS-----	LKA-QDSNFSRVGSRVAGD----	LID
U5D3V6	68	GHDS-----GLPPDHD-----	REA-YYSNRRSVGSRVAGD----	FID
U5DDJ3	70	GHDD-----GLPPDLD-----	LEA-YQSNLRR LGSRAVGD----	LID
U5DFQ3	70	GHDD-----GLPPDFT-----	FET-YEPNLRR TGSRAVGD----	LID
U5DI97	70	GHDD-----GLPSDYS-----	SEA-YWATLRRVGSQT LGD----	LIA
U5DCP2	71	GYDD-----GVPLTFD-----	PGA-YDISLQRVGSQT LGE----	LIA
U5DDK2	71	GCDD-----GLPLTFD-----	PEA-YDITLQRVGSQT LGE----	LIG
OsUGT709A3	71	GLPD-----DHPRVAN-----	LGE-ISRSLHTAGRAAYRA----	LLA
SgUGT720A1	72	GLPP-----DQPRDIL-----	DPK-FFISICQVTKPLFRE----	LLL
U5CX27	23	-----GDCPGRQ-----	-----VGPNRLPP-----	LE
U5D008	35	-----DPNPNSD-----	-----	RVH
W1PMY7	6	-----	-----TTPFKE-----	LLV
AtUGT85A1	73	SIAD-----GLPETDMDATQD-----	ITA-LCESTMKNCLAPFRE----	LLQ
U5CVP6	70	SIPD-----GMPETDLDATQD-----	VPE-LSDHIRTCLAPFRE----	LVL
U5CNJ5	70	CIPD-----GLPPVEIEATQS-----	VPD-LCY YTRFSCVAPFRE----	LLA
U5CNG3	70	SIPD-----GLPPIEIEATQS-----	IPE-LCY YTRNCCLAPFRE----	LVA
U5CXJ9	70	SIPD-----GVPIEIEATQS-----	IPE-LCY YTRFSC LDPFRE----	LVA
AtUGT76B1	65	LSEPE-----SYPDVIE-----	-----ILHDLNSKCVAPFGD----	CLK
W1PV81	66	GLPVNW-----QPKGGA-----	LLK-LVDTISSNCRAP LFS----	LLS
W1PVY0	68	GLSN-----EEAREMD-----	IVE-LILT LNKKCLPFRA----	LIE
W1P56	101	GLSN-----QEAREMD-----	KVE-LVLVLNKKCRPPFRA----	LME
AtUGT90A1	74	ENIT-----GIPPGVENTEKL-----	PSM-SLFVPFTRATKLLQ P----	FFE
OsUGT97A1	92	AHP-----QIPPGVESTDAL-----	PSQ-SLFPAFLRATALLRE----	PFA
W1PH20	73	EEP-----AVPRNCENTDQ-----	LPSVDLFVPFLKATQKLRP----	QFD
W1PBB6	91	SYP-----DLPKGCESTEQL-----	PSM-DMFPTFLNAVKE LRD----	SFE
W1PHN8	91	SHP-----DLPKGCESTEQL-----	PSM-DMFLPFLNAVKE LRD----	SFE
W1PRF4	73	SLPP-----PLSDNID-----	PFF-KQWGLISRSIDELKP----	ILE
AtUGT71B1	69	D-----QTTDLVS-----	YID-SQKPQVRVAVSKVAG----	DVS
W1P1M0	74	DMS-----DIPDPTG-----	KVV-QISLTIRRS LGS LRG----	LLG
AtUGT72B1	72	DLT-----DLSSSTR-----	IES-RISLTVTRSNPELRK----	VFD
W1PMA9	77	DLS-----DLPISAK-----	IET-RISLTVRRSLSSLRT----	LLC
W1PP20	75	DLS-----DLPSSAK-----	IET-RISLTMFRRSLSLRA----	LLG
AtUGT88A1	73	T-----PYSSSST-----	SRH-HHESLLEILCF SNP----	SVH
U5DB27	57	-----	ISALFIGAHKQ SIAEALKS----	LS
U5DBY1	74	LNF-----SVSPETR-----	GET-LISLFIGAHKQ SVAE----	ALK
U5DBY4	80	DF-----SPAPDMR-----	PQ-TLFSLF AAAHKPIVT----	ETL
U5D276	79	HF-----SPTPDMR-----	SQT-IRSLFVAAHKPLVAE----	ALK
U5DB32	79	NFS-----ETSDM-----	RPQ-TIRSLF AAAHKPFVT----	EAL
W1NHX5	73	EF-----SVDHSLN-----	LET-LVF EF IHD SNPSVSK----	ALE
W1NVU7	78	EF-----SVDDSAH-----	LET-LIFEYIHLANNPRVS----	EAL
W1PAP0	76	-----SLPPNQC-----	A-TFMDWFLVLKPLVRE----	ALE
W1PD80	68	EL-----SVTQIDH-----	SLT-FMF EW LLLCKPAVAQ----	ALQ
W1PZW0	72	DLN-----VLNPN-----	LEL-LIFEWLSLCKPHVSE----	ALL
AtUGT82A1	66	-----GQDRPDA-----	PPS-DFFS IENSMENIMPP----	QLE
W1NUV1	188	AREAGLDIRYRVSD-----	GLP L EFDRSLN-----HNQ-FMF SLLHVFS AHVEK----	IIR
AtUGT86A1	78	TVSD-----GFPLDFDRSLN-----	HDQ-FFEGILHVFS AHVDD----	LIA
AtUGT87A1	73	IIPS-----ELVRAND-----	FIA-FIDAVLTRLEEPFEQ----	LLD
W1P188	79	-----VIPSELS-----	RAA-DWVG FVQAVNSTMEE----	PVD
W1P188	1	-----	-----	-----

U5CYW0	78	H-----	EYGDD-YRVLVKDVWKE-HTGWPLNDMERSYKFMVKHVQLWKVAFHGTSPS
W1PAZ2	153	L-----	EFGDEYQVYVTDLWSD--HTPWPFNQLPRTYNFLVKHGTWKMTFYGTAPR
AtUGT81A1	168	Q-----	EFGDEYQVFITDLWTD--HTPWPFNQLPRTYNFLVKHGTWKMTFYGTAPR
W1PTT2	124	N-----	TDPEQAGSTGSSYFCVDVKG-GEVWE-DVLRFCLOFGMAPRSWT-----DFLS
U5D3V5	135	R-----	DNPHYVEAGAGELWI-DVLKATLKLGFAPVSWT-----DYLS
W1NUG7	132	R-----	ESGGSLLYADVWGGEL---WI-DVLHETLKHGLAPRSWT-----DYLY
W1PC48	120	R-----	RVHEGGKSPYVEVSGGELWIDV---LRQTLKCGLAPRSWT-----DYLH
W1PP63	110	R-----	KGKRD-EGYSYADVSGGALWI-EVLRESLKHGLAPRSWT-----DYLY
OsUGT701A2	121	R-----	AHGDDDATVRAYADVAGALWV-EVLEECLKLGLAPRSWT-----DYLY
W1PA48	114	E-DSSIEGDFVAINFALVVSLLYQFVYFTTKLFDKSHVKEGWHLAELF-----RVRC	
U5D0T8	118	T--AGLEFYPLGGDPKVLAGYMVKNKGFLPSG--ASEIPIQRKQIKEIIN-----SLLP	
AtUGT80A2	237	T--AGLEFYPLGGDPKVLAGYMVKNKGFLPSG--PSEIPIQRNQMKDIY-----SLLP	
W1PJ19	64	-----	PNVVVHDF-NLYWL---PKTAAEFGVPSVFFS-----IFTA
W1NU70	106	S-----	ILSKL-P--LNLVIQDF-APYWL---PKIAAKFGVPTAYFS-----IFNA
W1NV64	107	T-----	LLPKL-S--PNLVIHDF-TSYWL---PEIATTFGIPTVFFS-----IFNA
W1PKS4	104	T-----	LLPKLS--PNLIIHDF-TSYWL---PQIATTFGIPTVFFS-----IFNA
AtUGT91A1	113	E-----	FLESSK--PDWVLQDF-AGFWL---PPISRRLGIKTGFFS-----AFNG
U5CMK2	103	N-----	FVSEES--PDWLIHDL-FAPWA---PCLAAKFGIPSCFCS-----VFTA
U5CWM7	93	E-----	LVAKVS--PDWILVDF-APYWA---PAIAFKYGIPCCFFI-----VFSA
U5D1X9	103	E-----	LVAKVS--PDWIVVDF-APYWA---TSIASKYGVPCSWF-----NAVS
W1PT00	104	D-----	LLRSLK--PNFLLHDF-IQFWA---PEAALELKIPSSVFL-----TFSV
OsUGT94A1	108	A-----	LLDELS--PDVVLVDF-IQFWA---PLEAAARGVPAVHFS-----TCSA
AtUGT79B1	108	T-----	IFRTI-K--PDLVFYDS--AHWI---PEIAKPIGAKTVCFN-----IVSA
W1PQK6	113	S-----	ILRDLA--PDLVVYDF-SYCWL---PTVAHKLGIKRAVYFS-----VFSA
U5D602	118	R-----	SLARNYG--RVAVVHDP-LVSLA---AAAASRTPNAAEAY-----GYRC
U5D5X9	86	P-----	LTVLVRDLASVVVIHDM-GRSVA---AGAAAESPNSEAYMY-----RCPS
U5D5Z2	141	L-----	VHELASIHRRVAVIHDALMSVAA---GAAVECLNAEAYSYN-----CGST
U5D5X3	66	L-----	VCEPAGSHRRVVVHDMMLMSVAA---RAAAEESLNSESYSYR-----CSSA
ZmUGT93B1	110	A-----	LLQRLSTSYRRVAVVFDL-LNPF--ATEAARLANADAF-----GLQC
PoUGT95A1	124	S-----	FLSARSGTRPTCVVIDV-MMSWS---KEIFVDHEIPVVSFS-----TSGA
U5D0B7	91	R-----	VAAGKSL--PTVVIVDT-MMSRL---LETCKRKFKIPAVSFF-----TSGA
AtUGT89A1	116	N-----	WLSSHNP--PVALISDF-FLGWT---KDLGIPRFAFF-----SSGA
OsUGT96A1	104	S-----	WARSRPDDPTVVVSDF-FLGWA---QLLADDLGVPRVFFY-----ASGA
AtUGT92A1	117	K-----	ILKEEGQSSVIVIGDF-FLGWI---GKVCKEVGVSIVFS-----ASGA
U5CRD3	78	K-----	ISKQDNLPPLCLVSDI-FLGWT---VEVANNLNIFHTVLC-----TSGA
W1P7W1	118	R-----	LISEGPS--PVCVIGDI-FTGWT---IGVAEKLGVKHVTF--KSSA
U5D7I9	108	D-----	VARKDGRPLCIVADV-FCGWT---VLVAERLGIHHVVFT-----TCGA
W1PFP0	108	D-----	IARKDGRPLCIVADV-FCGWT---VLVAERLGIHHVVFT-----TCGA
OsUGT99A1	105	R---HLLLRADDEGAPPPTCVADF-CHPWA---SELAAGLAVPRLTFF-----SM	
AtUGT73B1	122	E-----	LLVTMR--PDCLVGNM-EFFWS---TKVAEKFGVPRLVFH-----GTGY
OsUGT98B1	122	A-----	RLRQQ-RPPASCIISDM-IHWA---GDIARELGVPWLTFN-----GS
W1PF90	132	E-----	ILAIDR---PLAIVSDF-FLPWT---LDTAERIGVPRLVFQ-----GISC
W1NIK4	113	K-----	LIRQTKN--PLCIISDT-FLPWT---AEAAQALGIPRLAFH-----TSNC
W1PQX3	116	K-----	LIRQE-VENPLCIISDT-FFWWT---VETGKVFIPRLVFH-----GTSC
W1PPW8	115	K-----	LIRQEVENPLCIISDM-FLGWT---VETAKVLGIPRIVFH-----GTSC
W1PS80	115	K-----	LIRQE-VENPLCIISDM-FLGWT---VETAKVLGIPRIVFH-----GTSC
AtUGT90A1	111	E-----	TLKTLPK--VSFMVSDG-FLWWT---SESAAKFNIIPRFVSY-----GMNS
OsUGT97A1	128	E-----	FLASLPSPPLVLVSDF-FLGET---QRVADDAGVRRLTFN-----GMSP
W1PH20	109	Q-----	ILEELTVIDPPICIVSDF-FHGWT---LDSAKRLGIPRLVFH-----GMGA
W1PBB6	127	Q-----	SLSEIAAVNPICLISDT-FLYWT---QYVAEKLIPRLTFM-----GMSA
W1PHN8	127	Q-----	SLSEIAAVNPICLISDT-FLYWT---QYVAEKLIPRLTFM-----GMSA
W1PRF4	105	N-----	LNGLSALITDISLAGAM---LPLTNQLGIPNYIFF-----TSSA
AtUGT71B1	98	T-----	RSDSR---LAGIVVDM-FCTSM---IDIADEFNLSAYIFY-----TSNA
W1P1M0	105	D---LFSGLPTATGRFPAISGLIADP-FCADV---IELTHELQLPTYLFF-----TSTA	
AtUGT72B1	103	S-----	FVEGGRL--PTALVVDL-FGTDA---FDVAVEFHVPYIFY-----PTTA
W1PMA9	108	D-----	LTSKFP--NTVMVADI-FGTDA---FDVADELSPKYLFF-----PANA
W1PP20	106	D-----	LTSKFP--NTVLVADI-FGTDA---FDVADELSPKYLFF-----PSNA
AtUGT88A1	102	R-----	TLFSLSRNFNVRAMIDF-FCTAV---LDITADFTFPVYFFY-----TSGA
U5DB27	78	P-----	-----VRAFITDL-FCTTI---LDTAAEAGVPAYNFF-----TSGA
U5DBY1	105	S-----	-----LSPVRAFIIDL-FCTTF---LDTAAEAGVPAYIFF-----TSGA
U5DBY4	109	K-----	SLSSTSP--VCAFIIDF-FCTAL---LDAAMESGVPAYIFF-----TSSA
U5D276	109	S-----	LSTPSSP--VRAFITDF-FCTNL---LEAAEEADVPCYLFF-----TSGA
U5DB32	108	K-----	SLSSP-SFPVHAFVTD-FCTTL---LDAAKEADVPSYIFF-----TSGA
W1NHX5	103	S-----	ICEQSN--IVAFIMDL-FCMTA---LDVANDMHIAPAHVYF-----TSSA
W1NVU7	108	K-----	SITEHST--VVAFVMDL-FCATA---LDRAKDMHIPTYLFF-----TSSA
W1PAP0	102	S-----	FSRRTP--VRAFIMDF-FCTSV---LEDAEELCIPAYFFF-----TSAA
W1PD80	98	S-----	ISEKT--IRAFVMDS-FCSTA---LDVATDLGVPAYFFY-----ASAA
W1PZW0	101	S-----	ISEKAR--IKAFIMDF-FCCTA---LEVARGMGIVASYIFF-----TSGA
AtUGT82A1	94	R-----	LLLEEDLD--VACVVVDL-LASWA---IGVADRCGVPAVGFW-----PVMF
W1NUV1	235	E-----	VALDGPP--ISCIADT-FFVWV---APMAEKFGVPHISFW-----TEPA
AtUGT86A1	114	K-----	LSRRDDPPVTCLADT-FYVWS---SMICDKHNLNVNVSFW-----TEPA
AtUGT87A1	105	R-----	LNSP---PTAIIADT-YIIWA---VRVGTKRNIIPVASFW-----TTSA
W1P188	107	R-----	LIDSIEPMVSVIVADV-YMPWV---ADMAKRRGIPVTWLF-----PMAA
W1P188	1	-----	-----

W1P1302	107	R	---	LLVGL	LETEERP	--	VSVVIV	DV	-	FMPWA	---	ADVA	EERRG	IE	VAVLF	---	PMAS			
AtUGT78D1	104	A	---	AEIEV	GKK	---	VTCL	ITDA	-	FFWFA	---	ADIA	AELN	NATW	VAFW	---	AGGA			
W1PTN8	106	Q	---	---	SEPP	--	VSCV	IGDS	-	FLVFA	---	EEVA	REI	GAKW	VSFW	---	TAGP			
ZmUGT77A1	117	A	---	---	AAGGA	-R	-	VT	CVVGDA	-	FWWPA	---	ADAA	ASAG	AE	WPVPV	---	TAAS		
AtUGT83A1	111	R	---	---	MMAETS	GGTII	SCV	VADQ	-	SLGWA	---	IEVA	AKFG	IR	RTAFC	---	PAAA			
W1NWE7	46	A	---	---	---	---	IIGL	LHNR	SMI	QLT	---	---	---	---	---	---	---			
W1NXD5	105	D	---	---	---	---	INGLE	GD	SVTC	IVAD	-	SMGWA	---	LDVA	AKKL	GIP	PRAAFW	---	PAAA	
AtUGT75B1	99	A	---	---	---	---	TKNG	DSP	--	VTCL	IYTI	-	LLNWA	---	PKVA	RRFQ	LPSALLW	---	IQPA	
AtUGT84A1	113	R	---	---	---	---	YEEAN	EP	VSCL	INN	NP	-	FIPWV	---	CHVA	EEFN	IPCAVLW	---	VQSC	
W1PLB6	105	D	---	---	---	---	LEAR	GRR	--	VHC	VVSNP	-	FVPWV	---	VDVA	EGFS	IPCALLW	---	VQSC	
U5CXN6	104	D	---	---	---	---	LRAS	GRP	--	VHCL	VSNP	-	FVPWV	---	VDVA	ERFS	IPCAMLW	---	VQSC	
U5D2S8	96	D	---	---	---	---	LQAR	GRP	--	VHYV	VSNP	-	FMPFV	---	VDVA	EGFG	IPCAMLW	---	IQSC	
U5D817	103	D	---	---	---	---	LQVR	GRP	--	VHC	IVSNP	-	FVPWV	---	VDVA	EGFG	IPCAMLW	---	VQSC	
W1NFL7	103	D	---	---	---	---	LQVR	GRP	--	VHC	IVSNP	-	FVPWV	---	VDVA	EGFG	IPCAMLW	---	VQSC	
W1NFN9	103	D	---	---	---	---	LQVR	GRP	--	VHC	IVSNP	-	FVPWV	---	VDVA	EGFG	IPCAMLW	---	VQSC	
U5DBW3	105	D	---	---	---	---	LRVQ	GRK	--	VTYM	VTTP	-	FTPWV	---	IDLA	AKGL	GVPCSLW	---	IQCC	
W1PE57	104	E	---	---	---	---	LAANG	R	--	VSYM	TSSP	-	FTPWV	---	VDVA	AKLE	IPCSVLW	---	IQSS	
U5D3G1	92	N	---	---	---	---	LASQ	GCP	--	VTFI	IYNS	-	VVPWS	---	ADVA	DEL	GIP	PSALHW	---	IQSA
AtUGT74B1	99	K	---	---	---	---	FKST	DSP	--	IDCL	IYDS	-	FLPWG	---	LEVA	ARMEL	SAASFF	---	TNNL	
U5DFQ6	106	R	---	---	---	---	LVAE	GYP	--	VNCI	IVDP	-	LLPWI	---	ADV	SENLE	IPSAAFF	---	TQSC	
U5DI88	134	R	---	---	---	---	LSVE	GSR	--	PLCI	IYDS	-	FLPWV	---	LDVA	HAHG	GILGATYH	---	TQSC	
U5DCN3	102	R	---	---	---	---	LGAEG	V	--	PLCV	IYDS	-	FLPWA	---	LDVA	HAHG	GILGAFFH	---	TQSI	
U5D531	102	R	---	---	---	---	LTVE	GMR	--	PVCL	IYDL	-	ALSWV	---	LEIA	HAHG	LLGATFI	---	TQPV	
U5CUG8	102	R	---	---	---	---	LTVE	GPR	--	PVCL	IYDS	-	FLSWA	---	LELA	HAHG	LLGATFI	---	TQPL	
W1PLP3	102	R	---	---	---	---	LTVE	GPR	--	PVCL	IYDS	-	FLSWA	---	LELA	HAHG	LLGATFI	---	TQPL	
U5DI92	102	R	---	---	---	---	LTLE	GAR	--	PVCL	IYNS	-	FLPWA	---	LDVA	HHHG	GILGVTF	---	TQPC	
U5D3V6	100	R	---	---	---	---	LTLE	G	--	PVSL	IYDS	-	FLPWA	---	LDVA	HDHG	GMLGV	SFL	---	TQSC
U5DDJ3	102	R	---	---	---	---	LTVQ	GVR	--	PVSL	VYDS	-	FYLWA	---	LDVA	HDHG	GILGV	SFL	---	TQSC
U5DFQ3	102	R	---	---	---	---	LTVE	G	--	PVCL	VYDS	-	FLTWA	---	LDVA	HDHG	GILGV	SFL	---	TQSC
U5DI97	102	R	---	---	---	---	LNEE	GPR	--	PVCL	IYDS	-	FLTWA	---	LDVA	HAYG	GILGV	TFL	---	TQSY
U5DCP2	103	R	---	---	---	---	LAVD	GLQ	--	PVCL	IYDS	-	ILQWA	---	LDIA	HAHG	GILGVAFL	---	TQSY	
U5DDK2	103	R	---	---	---	---	LSVD</													

[illegible]

W1P302	152	AI--FSIYYHFDLL-----	FSKGHFGSGSSTVSQEE--
AtUGT78D1	145	NS--LCAHLY--TD-----	LIRETIGLKDVSMEE--
W1PTN8	143	CS--LAAHFY--TK-----	KIREEVKLGDNIGKDE--
ZmUGT77A1	156	CA--LLAHIR--TD-----	ALREDVGDQAANRVDG--
AtUGT83A1	154	AS--MVLGFS--IQ-----	KLIDDGLIDSDGTVRV--
W1NWE7	61	-----	-----
W1NXD5	146	GC--LTVFLK--LQ-----	ELIQKGV---ITKEGE--
AtUGT75B1	139	LV--FNIYYT--HF-----	MGNKSVF-----
AtUGT84A1	153	AC--FSAYYH-----	YQDGSVSFPTETEPEL--
W1PLB6	145	AI--YALYYR--SV-----	YRLSEFP---TPEKPD--
U5CXN6	144	SV--YALYYR--SF-----	YRLGEFP---TPERPDP--
U5D2S8	136	AV--YAVYYR--SL-----	YRLGEFP---TPERPDP--
U5D817	143	AV--YAIYYQ--SL-----	YRLGEFP---TPERPDP--
W1NFL7	143	AV--YAVCYQ--SL-----	YRLDEFP---TPERLNP--
W1NFN9	143	AV--YAVYYQ--SL-----	CRLDEFP---TPERLNP--
U5DBW3	145	AV--YGYYYR--VL-----	HRNRAEM-----
W1PE57	144	LV--YSYYR--VY-----	GGLGANG-----
U5D3G1	132	TV--FVIYWN-----	HFRGSKS---SSYLIS--
AtUGT74B1	139	TV--CSVLRK-----	FSNGDFP---LPADPN--
U5DFQ6	146	AV--FALYFR-----	YHEGSLSLCDEKAETM--
U5DI88	174	AV--NTIYRH-----	LHGKFS---GKETKL--
U5DCN3	142	AI--NTLYLL-----	HHDKFS---DKKTDI--
U5D531	142	AV--CLTYCY--YG-----	-----
U5CUG8	142	AV--CLMYCY--YG-----	CGLQINP-----
W1PLP3	142	AV--CLMYCY--YG-----	CGLQINP-----
U5DI92	142	AV--CTIYIR--YI-----	RGFPVLP-----KEP--
U5D3V6	140	AV--CSIYNR--YR-----	RGLPVMP-----KEL--
U5DDJ3	142	AV--GSIYNR--YL-----	HGHPVRP-----KEP--
U5DFQ3	142	AV--CSIYDR--YL-----	RDLVPTP-----KEP--
U5DI97	142	AV--SSIYSL--CH-----	RSILVVQ-----REP--
U5DCP2	143	AVSSMCSLYHR--CA-----	LVAQAEP-----
U5DDK2	143	AV--SSMYSL--YH-----	RGALVMQ-----AEP--
OsUGT709A3	154	CS--FLAYMS--VP-----	RLVELGELPFPPGGDL--
SgUGT720A1	150	RF--MFLYFW--IP-----	KLIEDGQ---LPYPNG--
U5CX27	62	LE-----	-----
U5D008	61	TH--MVDVVL--LA-----	NADENFM---TNGELE--
W1PMY7	57	CG--YWAFLQ--IP-----	ELIRRGYTPLKDMACL--
AtUGT85A1	152	CA--FLAYLH--FY-----	LFIEKGL---CPLKDESY
U5CVP6	149	SG--LWGYLQ--YT-----	ELIERGYVPLKEESYL--
U5CNJ5	148	SS--FLAFLQ--YP-----	ELQERGYIPLKDESQSL--
U5CNG3	149	CG--FWAYLH--YP-----	ELVERGYTPLKDASQL--
U5CXJ9	149	CG--LWAYLQ--YP-----	ELIERGYTPLKDASQL--
AtUGT76B1	135	SA--FVAFSK--FH-----	VLREKGYLSLQETKAD--
W1PV81	139	TS--FAVFAN--IE-----	KLHEMGY---LPIRDF--
W1PVY0	142	TS--TLGFQA-----	IRDKGY---LDNRGH--
W1PX56	175	TS--TLGFQA-----	IREKGY---LDERAD--
AtUGT90A1	151	YS--AAVSIS-----	VFKHELFTEPESKSDT--
OsUGT97A1	170	FS--LALCFT--LA-----	SRRPHVGVGEG-----
W1PH20	152	YS--MSICKS--VC-----	VHYPQKGLTE-----
W1PBB6	170	YA--TCLSLA--IA-----	TYGSPIP-----KD--
W1PHN8	170	YA--TCLSLA--IA-----	AYGSPIP-----KD--
W1PRF4	142	LM--LAFVAH--FP-----	SLSTDFA-----
AtUGT71B1	136	SY--LGLQFH--VQ-----	SLYDEKELDVSEFKDT--
W1P1M0	152	TL--LSLMLH--LP-----	TLDQEIS---GEYRDL--
AtUGT72B1	143	NV--LSFFLH--LP-----	KLDETVS---CEFRELD--
W1PMA9	147	TA--LCLMSQ--LP-----	ALDAQVS---GEFRDL--
W1PP20	145	TF--LSLVCQ--LP-----	ALDTKVS---GEYRDL--
AtUGT88A1	145	AC--LAFSfy--LP-----	TIDETTP---GKNLKD--
U5DB27	111	SL--LSLMLY--LP-----	TLHDQIA---SEFTDL--
U5DBY1	141	SL--LSLMLY--LP-----	TLHDQIT---SEFRDL--
U5DBY4	150	NS--LALMLH--LP-----	TLHDQIP---CEFKDC--
U5D276	149	NL--LSLMLY--LP-----	TLHDQIP---CEFRDC--
U5DB32	149	NF--LSLMLF--LP-----	TLHEQIP---CEFRDW--
W1NHX5	142	AD--LAIFLY--TP-----	TLHSRIP---ISFRDQ--
W1NVU7	148	AD--LVVFLY--LP-----	ILHFQIP-----
W1PAP0	141	AF--LVLFLY--FP-----	ELHKQNP---GTLKDL--
W1PD80	137	AF--LTVFLY--FP-----	ELNKQNP---GKFRDL--
W1PZW0	140	GF--LDIFFY--FP-----	ELHKENP---GSFTDL--
AtUGT82A1	135	AA--YRLIQA--IP-----	ELVRTGLVSQKGCPRQ--
W1NUV1	275	LV--FSLYHHAHLL-----	RQHGHDSEGNRKDP--
AtUGT86A1	155	LV--LNLYYH--MD-----	LLISNGHFKSLDNRKD--
AtUGT87A1	142	TI--LSLFINSDLL-----	ASHGHFPIEPSESKLD--
W1P188	148	TV--FSVFYHCEVL-----	LSKGHFANSSANKEE--
W1P188	1	-----	-----

U5CYW0	158	ISVHPLMQHIPLW	-----LKWQEL	-----HK-KV-VFVTV	-----ITDLNTC	-----HP
W1PAZ2	231	-----III	-----SAH	-----PLMQHVPL	-----RI-LRAKGLLKKIVFTT	-----
AtUGT81A1	234	-----EIAQGLMKYQ	PDIIISVHPLMQHVPL	-----RV-LRSKGLLKKIVFTT	-----	-----
W1PTT2	197	-----EEMEVV	TGSGEV	-----VRCSEREN	-----GELFF	-----GVLGGLGQFGIITR
U5D3V5	197	-----LQMEIV	TGKGEV	-----ITCSHTEE	-----EDLFY	-----GALGGLGQFGIITK
W1NUG7	198	-----YELDVV	TGKGEL	-----LITCSKHQN	-----SE-LFHSVGLGGLGQFGIITR	-----
W1PC48	188	-----YQLEV	TGKGEV	-----VNCSAQKN	-----AD-LFHAVLGGGLGQFGIITK	-----
W1PP63	178	-----LKLDVI	TGTGE	-----IVRCSPSKR	-----AELFY	-----GVLGGLGQFGIITS
OsUGT701A2	192	-----LQLEV	TGKGEV	-----VTCSPTEI	-----PELFF	-----AVLGGLGQFGIITR
W1PA48	190	-----F	PVL	-----YRCLQEAH	-----PG-KV-CWNDV	-----LHWMWPL
U5D0T8	198	AEALKVPLHIFFTM	-----PWTPTSEF	-----PH-PLSRVKQP	-----AGYRLSYQ	-----
AtUGT80A2	317	AEALKIPIHVFFTM	-----PWTPTSEF	-----PH-PLSRVKQP	-----AGYRLSYQ	-----
W1PJ19	124	-----	PGFPP	-----SALHLYPF	-----EAEQIIHAYTL	-----LESNATM
W1NU70	168	-----LSSPPFGF	PSSSLYV	-----QRYEAEQL	-----LW-IY-TYPEP	-----DISGIDR
W1NV64	168	-----PPDFP	PSA	-----VYFHPFEA	-----KQ-LQ-SLSTF	-----QKTDVSS
W1PKS4	166	-----LTSSPLDF	PLSA	-----IYFHPFEA	-----KQ-QV-GAHTF	-----PEPDIPC
AtUGT91A1	176	-----PKWV	PFETSVAFKLFECRFI	-----FKGFM	-----AETTEG	-----NVPDIMR
U5CMK2	168	-----APEWVPF	PSI	-----VALRMHEA	-----ARVSLGNKVEASGMSS	-----
U5CWM7	158	-----VPGWI	PPFST	-----IAFRPHEV	-----HK-IF-QDASF	-----DIPNASG
U5D1X9	167	-----VVPEWITF	PST	-----IAFRRHEA	-----QA-FL-QQVLTNLHNGSGVS	-----
W1PT00	171	-----ESQRIQ	PMLEQ	-----QTFGMRDL	-----	-----ERYKS
OsUGT94A1	171	-----EAISL	GGA	-----EEDA	-----RYTMLTCRDDGTALLPKGER	-----
AtUGT79B1	172	-----AKTPLGY	PSSK	-----VVLRPHEA	-----KS-LS-FVWRK	-----HEAIGSF
W1PQK6	176	-----RSPLGF	PSGCN	-----FVLRPFEA	-----RQ-FMYLYTSFAGKPSVYDR	-----
U5D602	170	-----SL	-----	RVLPSSSL	-----CV	-----YEGFAAS
U5D5X9	147	-----	PGL	-----PPPSFQNC	-----VS	-----ESFMD
U5D5Z2	199	-----	PIV	-----PGLPPPSF	-----RG-CV	-----NDSFIDF
U5D5X3	124	-----	PVV	-----PGLSPLIL	-----RS-FI	-----NESFMDV
ZmUGT93B1	162	-----	PGH	-----RLLSDYGL	QFLP	PPDAC-MSREF-VDLVFR
PoUGT95A1	191	-----	PGLPKE	-----MAVTFADL	SRGP	QORRI-RPPGGPGKSDGRAG
U5D0B7	186	IESQRVFGNKNQAF	PGWESN	-----PPPLPENM	-----SLFHKEMP	FDRKLPPPLPES
AtUGT89A1	170	-----STEPVCL	SDLPRS	-----PVFKTEHL	-----PS-LI	-----PQSP-LSQDLES
OsUGT96A1	167	-----VVLDTL	PGS	-----PAFPYEHV	-----PS-VV	-----RSYVA-GDPDWEV
AtUGT92A1	184	-----DF	PEA	-----GEIEKTQL	-----NS-FM	-----LEADG-TDDWSVF
U5CRD3	138	-----FEHIAL	PDFPK	-----TTLHRSQL	-----TN-EM	-----KLADG-TDFASVF
W1P7W1	177	-----SNEFEL	PGLPG	-----LKLQRSQL	-----TA-AL	-----KAADG-TDPFSAF
U5D7I9	168	-----ADEFPV	PGMPG	-----VRLHRTQL	-----AS-HL	-----RVADG-KDGWSIF
W1PFP0	168	-----ADEFPV	PGMPG	-----VRLHRKQI	-----PS-HL	-----RVADG-KDGWSIF
OsUGT99A1	173	-----APVVV	PGLARR	-----VEVTRAQA	-----PGFFR	-----DIPGWEK
AtUGT73B1	180	-----EPFVI	PDLPGD	-----ILITEEQV	-----	-----METE-EESVMGR
OsUGT98B1	184	-----EIVKV	SGF	-----PTPLEL	-----PK-AR	-----CPGTL-CVPGLKQ
W1PF90	192	-----HEPFEL	PGLS	-----IRLTKANL	-----PP-LM	-----RNPSA-EPPGVIE
W1NIK4	174	-----TEPFVL	PGLSDE	-----ITVTKAQL	-----PE-HSKENIAW	-----IVSGLGK
W1PQX3	178	-----AEPFLL	PGLPGE	-----LTFTRTQL	-----PE-FWKVNVEL	-----MASGFDR
W1PPW8	177	-----TEPFML	PGLPHD	-----ISLTRAQL	-----SE-FSKGNSEL	-----MAAGFSR
W1PS80	177	-----TEPFML	PGLPHD	-----IRLTRAQL	-----AE-FSKGNSEL	-----MAAGFSR
AtUGT90A1	175	-----EPVTV	PDF	-----PWIKVKKC	-----D-FDHGTT	TEPEESGALEL
OsUGT97A1	190	-----GAEFHV	PGFPDD	-----VRITADEV	-----PDAVI	-----QGGNP-DDPVTQF
W1PH20	172	-----TEPFRV	PGMPSP	-----VVITRAEL	-----SS-PV	-----KDLDP-NDPSFQLL
W1PBB6	189	-----SEPVLL	PGLPHE	-----VRLTHVEV	-----PP-TF	-----RTLDP-KDPSWAFV
W1PHN8	189	-----SEPVLL	PGLPHE	-----VRLAHVEV	-----PP-TF	-----RSLDP-KDPSWTFV
W1PRF4	159	-----NHPVDI	PGL	-----PPFPASI	-----PP-AL	-----KDP-NHAFTTL
AtUGT71B1	162	-----EMKFDV	PTLT	-----QFPKACL	-----PS-VM	-----L-NKKWFPY
W1P1M0	175	-----DFPVQV	PGC	-----FPIPGKDL	-----PE-QL	-----QDRED-EDPRAS
AtUGT72B1	166	-----TEPLML	PGC	-----VPVAGKDF	-----LD-PA	-----QDRKD-DAYKW
W1PMA9	170	-----PELRL	PGCS	-----SPFPGKDL	-----LA-PL	-----QDRKD-AAYSW
W1PP20	168	-----RELRL	PGCS	-----SPFPGKDL	-----VS-PL	

W1P302	180	-----HVDYL----	PGV----	SLTRILDL----	PH----	VGGRE--	EAQQRAR----	
AtUGT78D1	171	-----LGFI----	PGM----	ENYRVKDI----	PE-EV-	VFEDL--	DSVFPKA----	
W1PTN8	169	-----NVAGI----	PAL----	SFIKLKEL----	PE-GV-	IRGDL--	SSPFPLM----	
ZmUGT77A1	182	-----LLISH----	PGL----	ASYRVRDL----	PD-GV-	VSGDF--	NYVINLL----	
AtUGT83A1	180	-----NKTIQL----	SPGM----	PKMETDKF----	VW-	VCLKNKES--	QKNIFQL----	
W1NWE7	61	-----PNT----	PLIDPSHF----	FW-	LCVGDTMV--	QKFIYRY----		
W1NXD5	169	-----LLDTHMIQFS	PKM----	PLMNPRHF----	AW-	LCVGDTAE--	NKVIYRS----	
AtUGT75B1	156	-----EL----	PNL----	SSLEIRDL----	PS-FL-	TPSNT--	NKGAYDA----	
AtUGT84A1	177	-----DVKL----	PCV----	PVLKNDIEI----	PS-FL-	HPSSR--	FTGFRQA----	
W1PLB6	168	-----IDISL----	PGL----	PVLQASEL----	PS-FL-	LPSAA--	HRCCLADV----	
U5CXN6	167	-----IDVSL----	PGL----	PVLKRSEI----	PS-FL-	VPFEPTLYQCLGDV--		
U5D2S8	159	-----IDISL----	RGL----	PVLKTNEL----	PS-FL-	VPFAP--	YQCLADA----	
U5D817	166	-----IDVSL----	PGL----	PVLKTNEL----	PS-FL-	VPFAP--	YQCLADA----	
W1NFL7	166	-----IDVSL----	RGL----	PVLKTNEL----	PS-FL-	VPFGP--	YQCLADA----	
W1NFN9	166	-----IDVSL----	RGL----	PVLKTNEL----	PS-FL-	VPFAP--	YQCLADA----	
U5DBW3	162	-----EVPLTF----	PGL----	PHLKPEDF----	PT-LA-	SPSST--	YNRFPLL----	
W1PE57	161	-----EVPVNL----	PGL----	PELKLEDL----	PS-LS-	LPSNP--	YKSFPRI----	
U5D3G1	153	-----TTNVRV----	TGM----	PLLNIEDL----	PS-FL-	QPSNT--	NNIAVES----	
AtUGT74B1	160	-----SAPFRI----	RGL----	PSLSYDEL----	PS-FVGRHWLT--	HPEHGRV----		
U5DFQ6	170	-----EV----	PGL----	PMLGLQDI----	PS-FL-	APSNP--	YPAHLDL----	
U5DI88	194	-----ELPLSL----	PGM----	PLLDSDL----	PS-LI-	AQPEA--	YPAYLKL----	
U5DCN3	162	-----TTPISV----	PGM----	PILESSDL----	PS-YM-	SEPEL--	YPAYLKMV----	
U5D531	152	-----RGL----	QIIATCAF----	FF----				
U5CUG8	159	-----DMCVFL----	PRM----	PPLGLRDL----	PS-FI-	AQPES--	NPLILEM----	
W1PLP3	159	-----DMCVFL----	PRM----	PPLGLRDL----	PS-FI-	AQPES--	NPLILEM----	
U5DI92	162	-----DGCVAI----	PGL----	PLLGLRDL----	PS-FI-	TQTEG--	DPYHLEL----	
U5D3V6	160	-----NGRVAI----	PGM----	PLLGLRDL----	PS-FI-	AQPEG--	YGFVLEM----	
U5DDJ3	162	-----NGHVTI----	PGM----	PLLGLRDI----	PS-FI-	AQPEG--	NRFILEW----	
U5DFQ3	162	-----NGYVAI----	PGM----	PLLGLRDI----	PS-FI-	AQPES--	YGFFLEM----	
U5DI97	162	-----GARYSL----	PGL----	PLLSLQDL----	PS-FI-	VQSEG--	NGFFLDL----	
U5DCP2	163	-----DACFSL----	PGM----	PPLSLQDL----	PK-FI-	AQPKA--	DRFLDL----	
U5DDK2	163	-----DACFSL----	PGM----	PPLGLQDL----	PK-FI-	AQPEA--	DRFFLEL----	
OsUGT709A3	180	-----DEPVRGV----	PGME----	GFLRRDL----	PS-PCRHHGAN--	NNDDAAA----		
SgUGT720A1	173	-----NINQKL----	YGVAPAEAGLLRCKDL	PG-HWAFADEL--	KDDQLNF----			
U5CX27	64	-----AIVDWI----	PGM----	PDIRLRDL----	PS-FI-	RTTNL--	NDPMLQV----	
U5D008	84	-----AVVDWI----	PGM----	PNIRLRDS----	PS-FI-	RTTNL--	NDPM----	
W1PMY7	83	--AEGYLDTTLDWI----	PGM----	PNILLKDM----	PS-FI-	RTTDP--	NFFLLNY----	
AtUGT85A1	177	LTKEYLEDTVIDFI----	PTM----	KNVKLKDI----	PS-FI-	RTTNP--	DDVMISF----	
U5CVP6	175	--SNGYLNTPLDWI----	PGM----	PGAQLKDI----	PS-FI-	RTTNP--	EDIMNF----	
U5CNJ5	174	--NNGYLETPLDWI----	DGM----	LGIRLRDM----	PS-LI-	RTTDP--	NDIMLQF----	
U5CNG3	175	--TNGHLETPLNWI----	QSM----	PSIRLRDM----	PS-FL-	RTTDP--	DDIMLNFV----	
U5CXJ9	175	--TNGYLETPLNWI----	QSM----	PSIRLRDM----	PS-FL-	RTTDT--	DDIMLNFV----	
AtUGT76B1	161	-----SPV----	PEL----	PYLRMKDL----	PW-FQTEDPRS--	GDKLQIG----		
W1PV81	162	-----ESEERI----	SEL----	PPLRIKDL----	PA-FS-	SDNSV--	LESFWAG----	
W1PVY0	162	-----PSDEPI----	PDF----	SPFRFKDL----	P--FV-	NTKDP--	DSLCL----	
W1PX56	195	-----TSDELV----	PDL----	SPIRFKDL----	P--FV-	NTKDP--	YPDYFSL----	
AtUGT90A1	175	-----EPVTV----	PDF----	PWIKVKKC----	D-FDHGTTTEPEESGAAL	EL----		
OsUGT97A1	190	-----GAEFHV----	PGFPDD--	VRITADEV----	PD	AVI--	QGGNP--	DDPVTQF----
W1PH20	172	-----TEPFRV----	PGMPSP--	VVITRAEL----	SS-PV-	KDLDP--	NDPSFQLL----	
W1PBB6	189	-----SEPVL--	PGLPHE--	VRLTHVEV----	PP-TF-	RTLDP--	KDPSWAFV----	
W1PHN8	189	-----SEPVL--	PGLPHE--	VRLAHVEV----	PP-TF-	RSLDP--	KDPSWTFV----	
W1PRF4	159	-----NHPVDI----	PGL----	PPFPASI----	PP-AL--	KDP--	NHAFCTL----	
AtUGT71B1	162	-----EMKFDV----	PTLT--	QFPFAKCL----	PS-VM--	L--	NKKWFPY----	
W1P1M0	175	-----DFPVQV----	PGC----	FPIPGKDL----	PE-QL-	QDRED--	EDPRAS----	
AtUGT72B1	166	-----TEPLML----	PGC----	VPVAGKDF----	LD-PA-	QDRKD--	DAYKW----	
W1PMA9	170	-----PELRL----	PGCS----	SPFPKDL----	LA-PL-	QDRKD--	AAYSW----	
W1PP20	168	-----RELRL----	PGCS----	SPFPKDL----	VS-PL-	QDRKD--	AAYAW----	
AtUGT88A1	168	-----IPTVHI----	PGV----	PPMKGSDM----	PK--	AVLER--	DDEVYDV----	
U5DB27	134	-----KEPVAI----	PGM----	TPLPPLDM----	PTTLM-	NKTND--		
U5DBY1	164	-----KEPVAI----	PGM----	TPLPPLDM----	PM-PV-	MDKTN--	DAYTW----	
U5DBY4	173	-----KEPIIV----	PGL----	PPVPPIDL----	PL-VL-	SDKTN--	DAYKW----	
U5D276	172	-----KNPIPV----	PGL----	PPVPAIDL----	PL-VL-	QDRTN--	DAYKW----	
U5DB32	172	-----KNPIPV----	PGL----	PPVPPIDM----	PV-AF-	QDKTN--	DAYKW----	
W1NHX5	165	-----KELLIV----	PGL----	PLVPPTSM----	PD-PL-	LDRTN--	KAYDW----	
W1NVU7	165	-----IRFRDQ----	KE-LLQVPEPP----					
W1PAP0	164	-----DRDLFI----	PGL----	PPMPLSVF----	PD-SM-	QDRSQ--	KLYQW----	
W1PD80	160	-----ACDLVL----	PGL----	PPLPPSLI----	PE-VM-	QDRNK--	KVYEW----	
W1PZW0	163	-----DRDLV--	PGL----	PPFPPIIM----	PT-VM-	QDKSQ--	DVYDW----	
AtUGT82A1	161	-----LEKTIV----	QPEQ--	PLLSAEDL----	PW-LI-	QTPKA--	QKKRKFK----	
W1NUV1	303	-----IDYI----	PGL----	PSIDPKDI----	PS-YL-	GVSDT--	STVVHQI----	
AtUGT86A1	181	-----VIDYV----	PGV----	KAIEPKDL----	MSYLQVSDKD	VDTNTVVYRI----		
AtUGT87A1	170	-----EIVDYI----	PGL----	SPTRLSDL----	QILHGY--	SHQVFNI----		
W1P188	176	-----YVDYI----	PGV----	SPTRILEL----	PN-LFKGGESR--	EIAESLK----		
W1P188	1	-----	-----	-----	-----	-----	-----	



U5CYW0	196	TWFNTSVTRC	----	YC	--	PSEE	----	VAKRALLK	GL	ES	--	D	QVRVF
W1PAZ2	261	--VITDLSTC	----			HPTW	----	FHKLVTRCYCPTAE	VA	QRA	SKAGL		
AtUGT81A1	276	--VITDLSTC	----			HPTW	----	FHKLVTRCYCPTAE	VA	KRA	QKAGL		
W1PTT2	236	--ARILLQKA	----	PD	--	MVRW	----	IRVVYADFDD	--	FSRDQ	ELLVTRA		
U5D3V5	236	--ARIAIQPA	----	PQ	--	RTRW	----	IRAIYEEFEE	--	FKGDQ	E-MLISM		
W1NUG7	237	--ARIALEPA	----	PQ	--	RVRW	----	IRVLYSDFNT	--	FTRDQ	E-HLISL		
W1PC48	227	--ARIALEPA	----	PE	--	MVKW	----	IRVLYSDFSL	--	FTKDQ	E-LLISL		
W1PP63	217	--ARIVLEDA	----	PH	--	KVKW	----	VRAFYDDFGA	--	FTEDQ	E-MLVSM		
OsUGT701A2	231	--ARIPLQLA	----	PP	--	KVRW	----	VRAFYDSFET	--	FTGDQ	E-LLVSM		
W1PA48	218	--FMEDWGSW	----			RSNF	----	LKLSSCPL	--	MDP	--	VTGLPLL	
U5D0T8	238	--IVDSLIWL	----			GIRD	----	MINDFRKKK	LKL	RPV	TYLSGA		
AtUGT80A2	357	--IVDSLIWL	----			GIRD	----	MVNDLRKKK	LKL	RPV	TYLSGT		
W1PJ19	155	--AHRFLQNI	----	S	--	DSDM	----	VIFRSCNE	--	MEG	--	K-FLEFL	
W1NU70	207	--LLRTISNS	----	NM	----		----	VIVRSCYE	--	LEG	--	K-YFEYL	
W1NV64	200	--FERFTRTI	----	C	--	NSHM	----	VIIRSCYE	--	LEK	--	K-YIDYL	
W1PKS4	202	--AERLFRSI	----	S	--	NSHM	----	VIIIRSCYE	--	LEK	--	K-YIDYI	
AtUGT91A1	214	--VGGVIDGC	----	DV	----		----	IFVRSCYE	--	YEA	--	E-WLGLT	
U5CMK2	203	--HQRFAMTI	----	E	--	GCDF	----	VAVRSCYE	--	FEG	--	K-YLELL	
U5CWM7	192	--VSDGYRFG	----	STIEG	CRV	----	----	VAVRTCNE	--	FEE	--	G-YLDLL	
U5D1X9	204	--DWYRVQSI	----	LE	--	GCRV	----	VAFRTGKE	--	FDG	--	D-YIDLF	
W1PT00	195	--CVEQSTDF	----				----	LTCRSMHD	--	IEG	--	K-FINYL	
OsUGT94A1	203	--LPLSFAR	----	SSEF	----		----	VAVKTCVE	--	IES	--	K-YMDYL	
AtUGT79B1	207	--FDGKVTAM	----	R	--	NCDA	----	IAIRTCRE	--	TEG	--	K-FCDYI	
W1PQK6	214	--VTRSIR	----	EADA	----		----	LLFKTCSE	--	MEG	--	P-FCDYI	
U5D602	189	--IARRQQPL	----	K	--	FDQG	----	ILYNTFEA	--	IEG	--	Q-FLQQL	
U5D5X9	165	--FLQRTGRI	----	QH	--	LDRG	----	VLHNTFHA	--	LEG	--	Q-FLSKI	
U5D5Z2	221	--LPRAVKFR	----	H	--	LDRG	----	VFFNSFHA	--	IEG	--	Q-FLSRI	
U5D5X3	146	--LARAVRFQ	----	H	--	LDRG	----	LLFNTFHS	--	LEG	--	Q-FLSKI	
ZmUGT93B1	192	--MEEEEQGA	----	PVAG	----		----	LVMNTCRA	--	LEG	--	E-FLDVV	
PoUGT95A1	227	--PPNMRSGSRHGPGGGPSPGPGQKPRWVDEVDGSIALLINTCDD	----				----		--	LEH	--	V-FINYM	
U5D0B7	234	--MMSSAGKMFSGQGGLPPPPQPGGPPRWMEETQGSVVLMINTCSD	----				----		--	LER	--	P-FLDYM	
AtUGT89A1	206	--VKDSTMNF	----	SSYG	----		----	CIFNTCEC	--	LEE	--	D-YMEYV	
OsUGT96A1	200	--ALEGFRLN	----	A	--	RAWG	----	AVVNSFDE	--	MER	--	E-FLEWL	
AtUGT92A1	213	--MKKIIPGW	----	S	--	DFDG	----	FLFNTVAE	--	IDQ	--	M-GLSYF	
U5CRD3	173	--LRRHIAYC	----	M	--	RTGG	----	TLCNTLEG	--	LEG	--	I-GIEQL	
W1P7W1	212	--VRKNVLTS	----	L	--	RSKI	----	MICDTVEE	--	LEP	--	K-GIQQL	
U5D7I9	203	--LQKHISLS	----	MH	--	RSRG	----	DMLCNTVAE	--	LEP	--	D-GIRLL	
W1PFP0	203	--LQKHISLS	----	MH	--	RSRG	----	DMLCNTVAE	--	LEP	--	D-VLRL	
OsUGT99A1	204	--FADDLERA	----	RA	--	ESDG	----	VVINTVLE	--	MEP	--	E-YVAGY	
AtUGT73B1	210	--FMKAIRDS	----	ER	--	DSFG	----	VLVNSFYE	--	LEQ	--	A-YSDYF	
OsUGT98B1	214	--ISDKIYEA	----	ET	--	RSDG	----	RIMNSFQE	--	MES	--	L-YIESF	
W1PF90	226	--FFNEIRRA	----	DS	--	ESAG	----	IIFNSFYE	--	LEP	--	D-YFEHC	
W1NIK4	211	--VLEEMQKA	----	DA	--	QSYG	----	TVVNSFHE	--	LEP	--	R-YVDY	
W1PQX3	215	--VFEVMRRA	----	DV	--	QSYG	----	TLVNSFNE	--	LEP	--	E-YVDHY	
W1PPW8	214	--VLEEMRRA	----	NS	--	HSYG	----	SIVNSFEE	--	LES	--	E-YVNHY	
W1PS80	214	--VLEEMRRA	----	NA	--	HSYG	----	SIVNSFEE	--	LES	--	E-YVNHY	
AtUGT90A1	209	--SMDQIKST	----	T	--	TSHG	----	FLVNSFYE	--	LES	--	A-FVDYN	
OsUGT97A1	227	--LHDEVRDW	----	DH	--	RSWG	----	VLVNSFAA	--	LDGDY	AAILES	F	
W1PH20	209	--CEVGLADI	----	ESDG	----		----	VLVNTFYE	--	LEP	--	A-WVDCF	
W1PBB6	226	--MEAGVATF	----	RSYG	----		----	EILNSFYE	--	LEP	--	E-FVEAL	
W1PHN8	226	--LETGAAKL	----	RSYG	----		----	EILNSFYE	--	LEP	--	E-FVKTL	
W1PRF4	190	--FQANSNAL	----	P	--	KATG	----	IILNTFRA	--	FET	--	D-ALSAL	
AtUGT71B1	192	--VLGRARSF	----	R	--	ATKG	----	ILVNSVAD	--	MEP	--	Q-ALSFF	
W1P1M0	207	----	----	SNKN	----		----		----	LER	--	QEAWGAI	
AtUGT72B1	197	--LLHNTKRY	----	K	--	EAEG	----	ILVNTFFE	--	LEP	--	N-AIKAL	
W1PMA9	201	--LLHQAKRY	----	R	--	QADG	----	IFVNTFEG	--	LES	--	Q-ALQFL	
W1PP20	199	--FLHQAKRY	----	P	--	RADG	----	IFVNTFEG	--	LES	--	Q-ALQFL	
AtUGT88A1	199	--FIMFGKQL	----	S	--	KSSG	----	IIINTFDA	--	LEN	--	R-AIKAI	
U5DB27	161	----	----	AYTW	----		----	FLYTPAPS	----		----	CLPGH	
U5DBY1	195	--FLYHSRRL	----	R	--	EVEG	----	ILVNTFEE	--	FEP	--	Q-PLKAI	
U5DBY4	204	--FLYNSRRF	----	H	--	QAKG	----	ILINTFLD	--	LET	--	R-SLDAL	
U5D276	203	--FLYHAGRL	----	R	--	ESKG	----	IIINTFAE	--	LEP	--	L-TLKAL	
U5DB32	203	--FLYHCRRL	----	R	--	ESKG	----	IIINTFAE	--	LEP	--	L-TLKAL	
W1NHX5	196	--FVKACNRI	----	A	--	LTQG	----	ILVNSFDE	--	LEP	--	P-RALRAL	
W1NVU7	181	----	----				----	RVLEALAS	----		----	GECTPDV	
W1PAP0	195	--CLHHSARL	----	P	--	RGRG	----	IIINSFHD	--	LEP	--	L-GMRAL	
W1PD80	191	--FLYHSAKV	----	P	--	QGKG	----	ILLNSFEE	--	LEPLGL	KALQAL		
W1PZW0	194	--CMYYASTM	----	P	--	KADG	----	ILVNTFEQ	--	LEP	--	L-AKAL	
AtUGT82A1	195	--WQRTLERT	----	K	--	SLRW	----	ILTSFVKD	--	EYEDVDN	HKASY		
W1NUV1	334	--ILAAFNGA	----	K	--	RADW	----	VLSNTVEE	--	LEL	--	H-TIEAL	
AtUGT86A1	217	--LFKAFKDV	----	K	--	RADF	----	VVCNTVQE	--	LEP	--	D-SLSAL	
AtUGT87A1	200	--FKKSFGEL	----	Y	--	KAKY	----	LLFPSAYE	--	LEP	--	K-AIDFF	
W1P188	209	--FFHQIQNA	----	KS	----		----	ILFNSFYE	--	LEP	--	S-AIDAL	
W1P188	1	----	----				----		----		----		

W1P302	210	--CLQFFQF----	Q--QVNF-----	ILIYSFYE--	LES--P-TIDAL
AtUGT78D1	202	--LYQMSLAL----	P--RASA-----	VFISSFEE--	LEP---TLNYN
W1PTN8	201	--LLKMGEQL----	P--QATA-----	VILNCFED--	LDP--S-TLSDL
ZmUGT77A1	214	--VHRMGQCL----	PR--SAAA-----	VALNTFFG--	LDP--PDVTAAL
AtUGT83A1	215	--MLQNNNSI----	E--STDW-----	LLCNSVHE--	LET---AAFGL
W1NWE7	89	--IRQFMKNL----	E--GVEW-----	VLCNSFYE--	LEA--A-TFDSF
W1NXD5	207	--ADVCIKGL----	E--GVEW-----	LICNSFYE--	IES--T-TYDTF
AtUGT75B1	185	--FQEMMEFL----	IK--ETKP-----	KILINTFDS--	LEP--E-ALTAF
AtUGT84A1	208	--ILGQFKNL----	S--KSFC-----	VLIDSFDS--	LEQ--E-VIDYM
W1PLB6	200	--ILSHIKKI----	K--KVKW-----	VLGNSFYA--	LET--E-AIQLM
U5CXN6	201	--IFDHIRKL----	K--KVRW-----	VLGNSFHA--	LET--E-AIQSM
U5D2S8	191	--ILCHIRKI----	N--KVKW-----	VLANSFHA--	LET--E-AIRSM
U5D817	198	--ILGHIKKI----	K--KVKW-----	VLANSFHA--	LET--E-AIQSV
W1NFL7	198	--ILGHIKKI----	K--KVKW-----	VLANSFHA--	LET--E-AIQSV
W1NFN9	198	--ILGHIKKI----	K--KVKW-----	VLANSFHA--	LET--E-AIQSV
U5DBW3	195	--LTQLYEKL----	G--DVKM-----	VLGNSFNE--	LEPEEIWFAEGL
W1PE57	194	--LTQLYARL----	G--DVRM-----	VLGNSFDE--	LEPEEIRFVEGL
U5D3G1	186	--LVELFEML----	DSRRIDW----	VIASTFDA--	LEK--D-LISAM
AtUGT74B1	194	--LLNQFPNH----	E--NADW-----	LFVNGFEG--	LEETQD-CENGE
U5DFQ6	199	--LLSQFSNL----	D--KAQY-----	LFVNSFYE--	LEE--EAIVSLM
U5DI88	227	--VMEQFRNM----	D--KADF-----	VLENSFES--	LEG--E-FSREL
U5DCN3	196	--VLDQLSNM----	D--QADF-----	VLANSFDS--	LEG--E-LSREL
U5D531	165	-----	P--ECRH-----	WAYETSPR--	SSP---NVRAI
U5CUG8	192	--MLGQFKNM----	G--KADF-----	VLVNSFDK--	LEE--E-ARKEM
W1PLP3	192	--MLGQFKNM----	G--KADF-----	VLVNSFDK--	LEE--E-ARKEM
U5DI92	195	--LSGQFKNI----	D--QADY-----	VLVNSFDS--	LEA--E-VRREM
U5D3V6	193	--LPGQFKNI----	D--RADY-----	VLVNSFDS--	LEA--E-LRKEM
U5DDJ3	195	--LSGQFENI----	D--QADY-----	VLVNSFDS--	LEA--E-VRKEI
U5DFQ3	195	--LSGQFKNI----	D--QADY-----	VLVNSFDS--	LEA--E-VRKEI
U5DI97	195	--LLGQFKNI----	E--KADY-----	VLMNSFDS--	LES--K-VSEET
U5DCP2	196	--LLGQFKNI----	D--KADY-----	VLLNSFDC--	LET--G-VIEGM
U5DDK2	196	--LLGQFKNI----	D--KADY-----	VLLNSFDC--	LEA--G-VIEGM
OsUGT709A3	216	--LLGRLADA----	AVHCSKARA----	LILNTAAS--	LEA--P-ALAH
SgUGT720A1	212	--VDQTTASS----	-----RSSG-----	LILNTFDD--	LEA--P-FLGRL
U5CX27	97	--CTIESPNT----	-----LKSW-----	AIIILNTFED--	LDK--P-VLDAM
U5D008	114	--LQNCTVGC----	PEALKSSA----	LIINTFEE--	LEK--S-VLDAI
W1PMY7	122	--IKDEVQHA----	F--NASA-----	LILNTFDD--	LEK--D-VLNAI
AtUGT85A1	218	--ALRETERA----	K--RASA-----	IILNTFDD--	LEH--D-VVHAM
U5CVP6	214	--LKDEALAS----	L--KGS-----	LILNTFDA--	FEQ--T-ALNLV
U5CNJ5	213	--CTVESQLA----	T--TASA-----	MIINTFDH--	LEA--T-ILKIL
U5CNG3	215	--LKEPVIAI----	-----KSTA-----	VILNTFDS--	LEQ--P-VLDAM
U5CXJ9	215	--NEEPLIAI----	-----KSTA-----	VILNTFDS--	LEQ--P-VLDTM
AtUGT76B1	192	--VMKSLK-----	-----SSSG-----	IIFNAIED--	LET--D-QLDEA
W1PV81	195	--ISQLTKQT----	K--KASA-----	LILNSLSA--	LEN--E-ALKMI
W1PVY0	192	--FISSFTGK----	SF--RASA-----	LIFNTSDC--	LES--P-ALEKI
W1PX56	225	--FISSFTSK----	SF--RASA-----	LIFNTSDS--	LES--P-ALEKI
AtUGT90A1	209	--SMDQIKST----	T--TSHG-----	FLVNSFYE--	LES--A-FVDYN
OsUGT97A1	227	--LHDEV RDW----	DH--RSWG-----	VLVNSFAA--	LDGDYAAILES
W1PH20	209	--CEVGLADI----	-----ESDG-----	VLVNTFYE--	LEP--A-WVDCF
W1PBB6	226	--MEAGVATF----	-----RSYG-----	EILNSFYE--	LEP--E-FVEAL
W1PHN8	226	--LETGAAKL----	-----RSYG-----	EILNSFYE--	LEP--E-FVKTL
W1PRF4	190	--FQANSNAL----	P--KATG-----	IILNTFRA--	FET--D-ALSAL
AtUGT71B1	192	--VLGRARSF----	R--ATKG-----	ILVNSVAD--	MEP--Q-ALSFF
W1P1M0	207	-----	-----SNKN-----	-----	LER--QEAWGAI
AtUGT72B1	197	--LLHNTKRY----	K--EAEG-----	ILVNTFFE--	LEP--N-AIKAL
W1PMA9	201	--LLHQAKRY----	R--QADG-----	IFVNTFEG--	LES--Q-ALQFL
W1PP20	199	--FLHQAKRY----	P--RADG-----	IFVNTFEA--	LES--Q-ALQFL
AtUGT88A1	199	--FIMFGKQL----	S--KSSG-----	IIINTFDA--	LEN--R-AIKAI
U5DB27	161	-----	-----AYTW-----	FLYTPAPS--	-----CLPGH
U5DBY1	195	--FLYHSRRL----	R--EVEG-----	ILVNTFEE--	FEP--Q-PLKAI
U5DBY4	204	--FLYNSRRF----	H--QAKG-----	ILINTFLD--	LET--R-SLDAL
U5D276	203	--FLYHAGRL----	R--ESKG-----	IIINTFAE--	LEP--L-TLKAL
U5DB32	203	--FLYHCRRL----	R--ESKG-----	IIIVTFAE--	LEP--L-TLKAL
W1NHX5	196	--FVKACNRI----	A--LTQG-----	ILVNSFDE--	LEP--PRALRAL
W1NVU7	181	-----	-----RVLEALAS----	-----	-----GECTPDV
W1PAP0	195	--CLHHSARL----	P--RGRG-----	IIINSFHD--	LEP--L-GMRAL
W1PD80	191	--FLYHSAKV----	P--QGKG-----	ILLNSFEE--	LEPLGLKALQAL
W1PZW0	194	--CMYYASTM----	P--KADG-----	ILVNTFEQ--	LEP--L-AKAL
AtUGT82A1	195	--WQRTLERT----	K--SLRW-----	ILTSFVKD--	EYEDVDN-HKASY
W1NUV1	334	--ILAAFNGA----	K--RADW-----	VLSNTVEE--	LEL--H-TIEAL
AtUGT86A1	217	--LFKAFKDV----	K--RADF-----	VVCNTVQE--	LEP--D-SLSAL
AtUGT87A1	200	--FKKSFGEL----	Y--KAKY-----	LLFPSAYE--	LEP--K-AIDFF
W1P188	209	--FFHQIQNA----	KS-----	ILFNSFYE--	LEP--S-AIDAL
W1P188	1	-----	-----	-----	-----

U5CYW0	230	G	-----LPIRP	---SFCRPLLSKEELREELEMDMA	-----LPAV	
W1PAZ2	297	K	-----PSQIRVYGLPVRP	---SFVNPVRPKEELRREFGMDEE	-----LPAV	
AtUGT81A1	312	E	-----TSQIKVYGLPVRP	---SFVKPVRPKVELRRELGMDE	-----LPAV	
W1PTT2	272	S	-----SESFDYI	---EGFVFTNSDHPVNGCH	-----SVPL	
U5D3V5	271	P	-----SSSHHVFDYIEGFVACIGDDPIDGWDTI	-----PPNT		
W1NUG7	272	H	-----GRTKFDYV	---EGFVIVDEGLINNW	-----RSSF	
W1PC48	262	E	-----KGFDYV	---EGFVIINRNG	-----ILNN	
W1PP63	252	A	-----DKVDYV	---EGFMVLNEQ	-----SLEG	
OsUGT701A2	266	P	-----EQVDYV	---EGFMVLNEQSLHSS	-----SVAF	
W1PA48	248	H	---DWPASPLVLVYGFSKEVVECPDYWPQSTRICGFWFPPMEWELPYKKCGDFSFTSLENL			
U5D0T8	271	Q	-----GCTSDIPTGYIWS	---PHLVPKPKDWGPKVDCVGFCFLDLATNY		
AtUGT80A2	390	Q	-----GSGSNIPHGYMWS	---PHLVPKPKDWGPDIDVVGFCYLDLASNY		
W1PJ19	185	E	---KQLGNGYKENRREHEYNKYKNIFT	---VGIOAPRPGDEPPLVSGGEGG	---AMKP	
W1NU70	234	E	KEFQSHANRESSDRFYKNIGNLNLFLP	---VGFLSPRLGDEAPRDNSTGID	---GGSS	
W1NV64	230	V	KEYLNYFKECGG	---SGVKKFLP	---IGFLPPRPGEAHRD	---NGTM
W1PKS4	232	Q	---ENYQSYFKECRGGGDGDKFLP	---IGFLPPRLG	---GEAQ	
AtUGT91A1	241	Q	-----ELHRKPVIP	---VGVLPPKPDEKFE	---DSTD	
U5CMK2	233	R	-----ELYGKPVLP	---FGLVPSPPVEK	---RGAG	
U5CWM7	225	E	-----KLYEKSVIP	---IGFRPPARKEREG	---SGNS	
U5D1X9	235	E	-----KLYEKSVFP	---LGFLPPSQAEREG	---NDNS	
W1PT00	220	S	-----ALAGKRVIP	---VGPLVSS	---RTPA	
OsUGT94A1	231	S	-----KLVGKEIIP	---CGPLLVDS	---GDVS	
AtUGT79B1	237	S	-----RQYSKPVYL	---TGPVLPGSQPNQPS	---LDPQ	
W1PQK6	241	A	-----AQHKKPILL	---AGPAIPGPNQQRIGIAA	---LDNE	
U5D602	219	P	-----HKAWA	---VGPIILPLS	---PRPQ	
U5D5X9	196	S	-----QRSGLGLHVWA	---VGRTLLLR	---EEPQ	
U5D5Z2	251	A	-----SSHVA	---IGPTVLLQK	---KPQE	
U5D5X3	176	A	-----QRSPGLHVWA			
ZmUGT93B1	221	A	-----AQPPFQGRFFA	---VGPLNPLLLDADA	---PTTP	
PoUGT95A1	280	A	-----EQTKLPVWG	---VGPLLPEQFWKSAGELLHDHEMRSNHKS		
U5D0B7	287	A	-----DVAGKPVWG	---VGPLLPSSFWDWTHGEFHDSAVRATRDS		
AtUGT89A1	235	K	-----QKVSEN RVFG	---VGPLSSVGLSK	---EDSV	
OsUGT96A1	230	K	-----RFFGHGRVWA	---VGPVADSGC	---RGEE	
AtUGT92A1	243	R	-----RITGVPVWP	---VGPIVLSKSPDKK	---VGSR	
U5CRD3	203	R	-----KTTKTSVWA	---VGPLLPRSLINPNFMMEKGT	---DEHV	
W1P7W1	242	R	-----DASVGSV VFA	---MGPIMRRRPSLAH	---WGRD	
U5D7I9	235	Q	-----TMTGSRVLP	---IGPLLPLSLFSENWARER	---GGKP	
W1PFP0	235	Q	-----AMTGRRVLP	---IGPLLPLSLFSENWARER	---GGKP	
OsUGT99A1	235	A	-----EARGMKLWT	---VGPIVLYHRSTATLAA	---RGNT	
AtUGT73B1	241	K	-----SFVAKRAWH	---IGPLSLGNRKFEKAE	---RGKK	
OsUGT98B1	245	E	-----RTIGKKIWT	---IGPMCLCHRDSNMAAA	---RGNK	
W1PF90	257	R	-----KTTTAWH	---VGPIVSMVTPD	---TGSR	
W1NIK4	242	I	-----NVMGRKAWP	---IGPIVSLYNRDQADKAE	---RGMK	
W1PQX3	246	K	-----NMEGTKAWP	---IGPIVSLCNRDQIDKAA	---RGKK	
W1PPW8	245	R	-----NVVGMKAWP	---IGPIVSLCNRDQIDKAE	---RGKK	
W1PS80	245	R	-----NVVGMKAWP	---IGPIVSLCNRDQIDKAE	---RGKK	
AtUGT90A1	239	N	-----NSGDKPKSWC	---VGPLCLTDPPKQGS	---AKPA	
OsUGT97A1	261	Y	-----HPGSRAWL	---VGPLFLAAGESPET	---KQEE	
W1PH20	238	E	-----GFYKKGSRAWC	---VGPLCLYS	---RSPQ	
W1PBB6	255	N	-----TQGRRYWC	---VGPMCLWDEPK	---LVER	
W1PHN8	255	N	-----TQGQRYWC	---VGPMCLWDEPK	---PVEI	
W1PRF4	220	A	-----MQAHVPPIFP	---IGPLPPDPLGPSA		
AtUGT71B1	222	S	-----GGNGNTNIPPVYA	---VGPIMDL	---ESSG	
W1P1M0	221	S	-----VPKIVP	---VGPL	---TLDL	
AtUGT72B1	227	Q	-----EPGLDKPPVYP	---VGPLVNIG	---KQEA	
W1PMA9	231	K	-----ENRASFPFVFP	---VGPL	---TLEL	
W1PP20	229	K	-----ENRASFPFVFP	---VGPLTLE		
AtUGT88A1	229	T	-----EELCFRNIYP	---IGPLIV	---NGRI	
U5DB27	178	P	-----TPPVYA	---VGPLLNLD	---EQQP	
U5DBY1	225	R	-----DGQCLPDHPTPPVYA	---VGPLLNLD	---EQQP	
U5DBY4	234	H	-----KGICLSDHPSPPVYP	---VGPLLNLD	---EYQT	
U5D276	233	R	-----EGLCLPNHPTPIYT	---VGPLNLN	---DDQP	
U5DB32	233	R	-----EGLCLPEHPMPTIYT	---VGPLNLNLDLP		
W1NHX5	227	A	-----FGECTPDVPTPPVYC	---IGPLIA	---ASTS	
W1NVU7	196	P	-----TPPVYC	---LGPLLLTPA	---GGNR	
W1PAP0	225	A	-----FEECAPGVPMPLTYC	---VGPLIAA	---GDSR	
W1PD80	224	M	-----DHTHGGVPRPPVYW	---IGPLV	---GGED	
W1PZW0	224	A	-----ANEFRPGVPMPIYC	---VGPLITV	---GDAD	
AtUGT82A1	228	K	-----KSNDLNKENNGQNPQILH	---LGPLHNQEATNNITIT	---KTSF	
W1NUV1	364	N	-----NYFPFYA	---VGPIVLPKFTENSI	---STSL	
AtUGT86A1	247	Q	-----AKQPVYA	---IGPIVSTDSVV	---PTSL	
AtUGT87A1	230	T	-----SKFDFPVYS	---TGPIIPLLE	---LSVG	
W1P188	236	S	-----SLVPRPIFP	---VGPIIIPFPAP	---KDHE	
W1P188	1		-----			

W1P302	240	H	-----ALLPRGHIFP-----	VGPLIPLP-----	QENE
AtUGT78D1	231	L	-----RSKLKRFLN-----	IAPLTLLSS-----	TSEK
W1PTN8	231	R	-----ANMAPCFT-----	IGPLPPIP-----	SPNA
ZmUGT77A1	246	A	-----EILPNCVP-----	FGPYHLLLAEDD-----	ADTA
AtUGT83A1	244	G	-----PNIVP-----	IGPIGWAHSLEEGST-----	SLGS
W1NWE7	119	P	-----NLLP-----	IGPLLQSNHHGQ-----	PTSL
W1NXD5	237	P	-----NIRP-----	IGPLFIGNQPTQAK-----	PTSF
AtUGT75B1	217	P	-----NIDMVA-----	VGPLLPTEIFSGS-----	TNKS
AtUGT84A1	238	S	-----SLCPVKT-----	VGPLFKVARTVTSDV-----	SGDI
W1PLB6	230	E	-----ELAPIRP-----	IGPLVPSELLGQSTDTEV-----	RGDL
U5CXN6	231	S	-----DLTP IIP-----	VGPLVPMELLGKSTAVEA-----	GDDL
U5D2S8	221	S	-----ELTPIMP-----	VGPLVPSKLLGKSTASEM-----	QGDL
U5D817	228	S	-----ELTPIMT-----	IGPLVPLGLLERSTASEV-----	RGDL
W1NFL7	228	S	-----ELTPIMT-----	IGPLVPLGLLGRSTASEV-----	RGDL
W1NFN9	228	S	-----ELTPIMT-----	IGPLVPLGLLRRSTASEM-----	RGDL
U5DBW3	228	H	-----LMKL-----	VGPLIPQALLGCPTAPRL-----	RKDM
W1PE57	227	H	-----PIRL-----	VGPLVPQALLERSQPAAISDL-----	RRDM
U5D3G1	218	E	-----KENMTLLS-----	IGPLVPSAFIDGKNPEDTTF-----	GGDM
AtUGT74B1	226	S	-----DAMKATL-----	IGPMIPSAYLDDRMEDDKDY-----	GASL
U5DFQ6	230	G	-----RWPIKT-----	IGPMVPSAFTDTMDPSDRSF-----	GLSL
U5DI88	257	A	-----KGLPIKM-----	IGPAVPSAYLDNRIPDDK-----	GPTA
U5DCN3	226	A	-----KAFFLKM-----	IGPAVPSVYLDNMIADDK-----	GSDA
U5D531	186	H	-----QSLKWT-----	-----	RDEQ
U5CUG8	222	V	-----EPWS-----	-----	LKMI
W1PLP3	222	V	-----	-----	-----
U5DI92	225	A	-----EPWS-----	PKLIGPALPSVYIGSRNP-----	RASK
U5D3V6	223	A	-----EPWS-----	LKMIGPSLPSVYLGSRTP-----	RVTK
U5DDJ3	225	A	-----EAWS-----	LMMIGPALPAVYLGSKNP-----	RATK
U5DFQ3	225	A	-----ESWS-----	LMMIGPALPLVYLGSKNP-----	RATK
U5DI97	225	A	-----EPWS-----	PKMIGPALPLAYLVGRNA-----	RSTS
U5DCP2	226	A	-----EPWS-----	PKMIGPALPSLYLDSRNT-----	RATK
U5DDK2	226	A	-----EPWS-----	PKMIGPALPSLYLDSRNT-----	RTTK
OsUGT709A3	250	A	-----PRMRDVFA-----	VGPLHAMSPAPAA-----	ATSL
SgUGT720A1	241	S	-----TIFKKIYA-----	VGPIHSLLSH-----	HCGL
U5CX27	127	R	-----ERIGRPIYT-----	IGPVVSFSQFESNDRLKSV-----	SMSL
U5D008	147	R	-----ERTHCPIYT-----	IGPIASFQFESKDCCLKS-----	VSMS
W1PMY7	152	K	-----ERIPCPLYT-----	LGPLLTFSHDVTKEEVKPI-----	STSL
AtUGT85A1	248	Q	-----SILPPVYS-----	VGPLHLLANREIEEGSEIGMM-----	SSNL
U5CVP6	244	R	-----PIAPPMYT-----	IGPLPTLCHTLVDPKLLSI-----	GSSL
U5CNJ5	243	C	-----SRVPSIYT-----	IGPLHTLSRKISDPKLHSI-----	ESNL
U5CNG3	244	R	-----AKVPALYT-----	VGQLHMLCKKRAITEPKLGS I-----	GCSL
U5CXJ9	244	R	-----AKVPTLYT-----	VGQLSMLCKKRAITDSKLSSI-----	DSSL
AtUGT76B1	219	R	-----IEFPVPLFC-----	IGPFHRYVSAS-----	SSSL
W1PV81	225	Q	-----HDFHIPIYA-----	IGPLNCQ-----	ISLN
W1PVY0	223	R	-----PQCRGPVFA-----	VGPLNFP-----	SSSS
W1PX56	256	R	-----PQCRGPVYA-----	IGPLNLPS-----	SSSI
AtUGT90A1	239	N	-----NSGDKPKSWC-----	VGPLCLTDPPKQGS-----	AKPA
OsUGT97A1	261	Y	-----HPGSRAWL-----	VGPLFLAAGESPET-----	KQEE
W1PH20	238	E	-----GFYKKGSRAWC-----	VGPLCLYS-----	RSPQ
W1PBB6	255	N	-----TQGRRYWC-----	VGPMCLWDEPK-----	LVER
W1PHN8	255	N	-----TQGRRYWC-----	VGPMCLWDEPK-----	PVEI
W1PRF4	220	A	-----MQAHVPPIFP-----	IGPLPPDPLGPSA-----	-----
AtUGT71B1	222	S	-----GGNGNTNIPPVYA-----	VGPTMDL-----	ESSG
W1P1M0	221	S	-----VPKIVP-----	VGPL-----	TLDL
AtUGT72B1	227	Q	-----EPGLDKPPVYP-----	VGPLVNIG-----	KQEA
W1PMA9	231	K	-----ENRASFPFVFP-----	VGPL-----	TLEL
W1PP20	229	K	-----ENRASFPFVFP-----	VGPLTLE-----	-----
AtUGT88A1	229	T	-----EELCFRNIYP-----	IGPLIV-----	NGRI
U5DB27	178	P	-----TPPVYA-----	VGPLNLND-----	EQQP
U5DBY1	225	R	-----DGQCLPDHPTPPVYA-----	VGPLNLND-----	EQQP
U5DBY4	234	H	-----KGICLSDHPSPPVYP-----	VGPLNLND-----	EYQT
U5D276	233	R	-----EGLCLPNHPTPPIYT-----	VGPLNLNL-----	DDQP
U5DB32	233	R	-----EGLCLPEHPMPTIYT-----	VGPLNLNLHDLP-----	-----
W1NHX5	227	A	-----FGECTPDVPTPPVYC-----	IGPLIA-----	ASTS
W1NVU7	196	P	-----TPPVYC-----	LGPLLLTPA-----	GGNR
W1PAP0	225	A	-----FEECAPGVPMPLTYC-----	VGPLIAA-----	GDSR
W1PD80	224	M	-----DHTHGGVPRPPVYW-----	IGPLV-----	GGED
W1PZW0	224	A	-----ANEFRPGVPMPKIYC-----	VGPLITV-----	GDAD
AtUGT82A1	228	K	-----KSNDLNKENNGQNPKIYLH-----	LGPLHNQEATNNITIT-----	KTSF
W1NUV1	364	N	-----NYFFFYA-----	VGPILPKFTENSI-----	STSL
AtUGT86A1	247	Q	-----AKQPVYA-----	IGPVFSTDSVV-----	PTSL
AtUGT87A1	230	T	-----SKFDFPVYS-----	TGPLIPLEE-----	LSVG
W1P188	236	S	-----SLVPRPIFP-----	VGPLIPFPAP-----	KDHE
W1P188	1	-----	-----	-----	-----

U5CYW0	261	LLMGGGE---GM-----	GPVKKTAKALGDALFDQSLSRPIGQI-----	VIIICGRNQ-M	
W1PAZ2	336	LLMGGGE---GM-----	GPIEATARALGDLLEYDENMGGPIGQV-----	LIICGRNK-K	
AtUGT81A1	351	LLMGGGE---GM-----	GPIEATARALADALYDKNLGEAVGQV-----	LIICGRNK-K	
W1PTT2	300	LPHQTFD-----	LNLIIPANAGPVLYCLEIALHFANR-----	DDAKTIEK-R	
U5D3V5	304	MITHHTYDHHHA----	AWNSSSS--STVRYCLELAINYNTADSTH	DIDKKMKAMVG-S	
W1NUG7	299	FSPRNPI---KL-----	QSIVSGSK--GTVLY--	CLEV-TKNY----	DE-ATADTVDQ-E
W1PC48	283	WRSSFFTPENPI-----	QASRFNSN--GRTLYC	LEIAK-NFDF-----	NNANATDQ-E
W1PP63	272	ASVAFPS---HF-----	HFIASNTNNTSQVYYC	VEIAFYYSQ-----	KA-SHVEKVAK--
OsUGT701A2	291	PAQLNFS-----	PDFGSKGR--KKVYYC	IEFA--VHDFQQDS	SRADHVVKLVS-A
W1PA48	306	CIKVGSW---MVPTALCN	FLKGTNNFSAPIF-	IGLNS-IGRMGMKNP	QAFLELLKAV
U5D0T8	313	KPPESLE-----	KFIGDPGD--KKPIY-	IGFGS-LPVQ----	EP-EKMTQIIVEA
AtUGT80A2	432	EPPAELV-----	EWLEAG--DKPIY-	IGFGS-LPVQ----	EP-EKMTQIIVEA
W1PJ19	235	WVE-----AL-----	KWLDGQPD--RSVTY-	VAFGS-DFVL----	TA-AQIEAVAL-G
W1NU70	286	VEKSWTE---CL-----	DWLDKQPF--KSVVY-	VAFGT-EWTL----	TP-SQTRAVAI-G
W1NV64	270	DSGSCQK---FVKKPWAK	WLDKQPV--SSVTY-	VAFGT-ECLL----	NQ-SQTNAAVAI-G
W1PKS4	268	WSNDSGSCQKCM-----	DWLDKQPI--RSVTY-	VAFGT-ECRL----	NQ-AQTNAAVAI-G
AtUGT91A1	268	WLSVK-----	KWLDSRKS--KSIVY-	VAFGS-EAKP----	SQ-TELNEIAL-G
U5CMK2	258	EGGNGNEYSRIF----	SWLDEKAK--GSIVF-	VGFGT-ETRL----	SM-DEVHEMAF-G
U5CWM7	252	WNDENKWDI-AF-----	HWLDAQPL--RSVVF-	VGFGS-----	GA-LEVQDGS-
U5D1X9	262	WIDENKWST-AF-----	EWLDAQPL--RSVVF-	VGFGS-ECRL----	SI-EQVHEIAY-G
W1PT00	241	TTDEFFR-----	QWLDARPE--KSVVF-	TSFGS-EYFM----	SE-DEIKEIAL-G
OsUGT94A1	253	AGSEADG---VM-----	RWLDGQEP--GSVVL-	VSGFS-EYFM----	TE-KQLAEMAR-G
AtUGT79B1	265	WA-----	EWLAKFNH--GSVVF-	CAFGS-QPVV----	NKIDQFQELCL-G
W1PQK6	272	WS-----	TWLSSHPA--GSVVF-	CAFGS-ETFL----	TE-KEIQELL-G
U5D602	237	EQERQHG---CL-----	QWLDKQAE--ESVLY-	VSGFT-ISSL----	SA-PQVRALAE-G
U5D5X9	219	EPHKFHE---CL-----	QWLSKQAP--QSVLY-	ISFGT-CVSM----	CA-AEVRKLAP-R
U5D5Z2	271	PPHKLHE---CM-----	QWLDKQAP--RSVLY-	VSGFT-VVSM----	SA-AEVRKLAP-R
U5D5X3	187	-----	LDEQAP--QSVVY-	VAFGT-----	TVSVEVRELAQ-G
ZmUGT93B1	251	PGQARHE---CL-----	EWLDRQPP--ESVLY-	VSGFT-TSCL----	HA-DQVAELAA-A
PoUGT95A1	318	NYTEDE---VV-----	QWLESKPR--ESVIY-	ISFGS-EVGP----	TI-EYKELAK-A
U5D0B7	325	SVSEEE---VR-----	HWLDNMPH--GSVLY-	VAFGT-EVGP----	TR-TELAELAV-A
AtUGT89A1	261	SNVDAKA---LL-----	SWLDGCPD--DSVLY-	ICFGS-QKVL----	TK-EQCDLAL-G
OsUGT96A1	254	RLPEAEQ---LF-----	SWLDTCPA--RSVYV-	VCFGS-MYKP----	PP-AQAAALGA-A
AtUGT92A1	268	STEEAVK-----	SWLDSKPD--HSVVY-	VCFGS-MNSI----	LQ-THMLELAM-A
U5CRD3	236	WREQGLETVV	CV---ERMDQYPP--ASILY-	VSGFS-QFNI----	SE-KQMKDLAL-G
W1P7W1	269	FGITPER---CS-----	EWLDLHEP--RAVLF-	VCFSA-HNKV----	SA-WQMKELAL-G
U5D7I9	267	LGISAES---CI-----	AWLDTQPL--RSVLY-	VSGFS-QNTV----	SR-WOLKELAL-G
W1PFP0	267	LGISAES---CI-----	AWLDTQPL--RSVLY-	VSGFS-QNTV----	SG-WOLKELAL-G
OsUGT99A1	265	AAIGADE---CL-----	RWLDGKEP--GSVVY-	VSGFS-IVHP----	EE-KQAVELGL-G
AtUGT73B1	271	ASIDEHE---CL-----	KWLDKKK--DSVIY-	MAFGT-MSSF----	KN-EQOLIEIAA-G
OsUGT98B1	275	ASMDDAK---CL-----	QWLDKKK--GSVIF-	VSGFS-LSST----	DP-QQLVELGL-G
W1PF90	279	GKAGSVE---CL-----	AWLDMFER--GTVVY-	ACFGS-MCRF----	ES-DQLAEIGL-G
W1NIK4	272	ASIDERV---CL-----	SWLDSQKQ--GSVLY-	VCFGS-ISHF----	NP-AQLVEIAL-G
W1PQX3	276	ASVDKSA---CL-----	RWLDTKQP--ESVVY-	VCFGS-THKL----	AP-TQLTEIGL-G
W1PPW8	275	APVDESA---CL-----	RWLDKQK--ESVVY-	VCFGS-LCRL----	AP-QQLTDIGL-G
W1PS80	275	ASVDESA---CL-----	RWLDKQK--ESVVY-	VCFGS-LCRL----	AP-QQLTDIGL-G
AtUGT90A1	268	WI-----	HWLDQKREGRPVLY-	VAFGT-QAEI----	SN-KQLMELAF-G
OsUGT97A1	288	DDDDDDDDPEG	CV---AWLDERAARPGSVVY-	VSGFT-QAHL----	PD-AQLDELAH-G
W1PH20	262	DALDSNP---CI-----	DWLGRQEV--GSVVY-	VSGFT-QVAV----	SR-GOMREIAL-G
W1PBB6	279	PKTEQAE---CL-----	DWLNTKEE--GSVLY-	VAFGS-QARL----	EE-AQLREIGT-G
W1PHN8	279	PKTERAE---CL-----	DWLDMKDE--GSVLY-	VAFGS-QARL----	EE-AQLREIGA-G
W1PRF4	244	-----PM-----	DWLDGQPN--GSVIY-	VSGFS-RTTI----	SK-NOVDELGA-G
AtUGT71B1	247	DEEKRKE---IL-----	HWLKEQPT--KSVVF-	LCFGS-MGGF----	SE-EQAREIAV-A
W1P1M0	236	PDNPGEE---CL-----	KWLDEQPL--NSVLF-	VCFGS-GGTF----	TH-EQMNEAM-G
AtUGT72B1	251	KQTEESE---CL-----	KWLDNQPL--GSVLY-	VSGFS-GGTL----	TC-EQLNELAL-G
W1PMA9	251	PENDSE---CL-----	RWLDEQPP--GSVLF-	VSGFS-GGTL----	SC-GQYQNLAH-G
W1PP20	248	QPENDSD---CL-----	RWLDEQPP--GSVVF-	VSGFS-GGTL----	SY-EQYQNLAH-G
AtUGT88A1	250	EDRNDNKAVS	CL---NWLDSQPE--KSVVF-	LCFGS-LGLF----	SK-EQVIEIAV-G
U5DB27	197	PASEPHE---CL-----	KWLGTQPD--GSVLF-	LCFGS-WGAF----	EP-AQAKEIAL-G
U5DBY1	253	PASEPHE---CL-----	KWLGTQPD--GSVLF-	LCFGS-WGAF----	EP-AQAKEIAL-G
U5DBY4	262	SAGEHHK---CL-----	QWLDKQPQ--DSVVF-	LCFGS-LGTL----	SN-ROTKQVAL-G
U5D276	260	AGGEGHE---CL-----	RWLDKQPH--GSVVF-	LCFGS-LGAF----	PA-HQTNELAL-G
U5DB32	260	AGGERHQ---CL-----	QWLDKQPH--GSVVF-	LCFGS-LGAF----	SA-HQTNELAL-G
W1NHX5	253	GGDDDCQ---CL-----	EWLRVQPA--ASVVY-	LCFGS-QGTF----	SP-POIKEIAI-G
W1NVU7	216	YSSC-----CM-----	ESLDAQPA--GSVVY-	LCFGS-QGTF----	ST-AQIKEIAT-G
W1PAP0	252	NPSE-----SL-----	SWLDTQPA--GTVVF-	LCFGS-MGRL----	SA-AQLNEIAV-A
W1PD80	248	RSGGDND---TL-----	QWLDSQPA--GSVVF-	LSFGS-VGRF----	SE-AQIREIAV-G
W1PZW0	251	RSSE-----VL-----	AWLDTQPE--GSVVF-	LCFGS-VGRL----	SA-TQIREIAI-G
AtUGT82A1	267	WEEDMS---CL-----	GWLDQENP--NSVIY-	ISFGSWVSP-----	GE-SNIQTAL-G
W1NUV1	390	WPESD-----CS-----	SWLDTHPD--RSVIY-	ISFGS-YAHI----	SK-EEIQEIAE-G
AtUGT86A1	270	WAESD---CT-----	EWLKGKRP--GSVLY-	VSGFS-YAHV----	GK-KEIVEIAH-G
AtUGT87A1	253	NENRELD---YF-----	KWLDEQPE--SSVLY-	ISQGS-FLSV----	SE-AQMEIIVV-G
W1P188	260	LKTNARPELDCS-----	SWLDSQPH--GSTLY-	VSLGS-VMLV----	PA-KQMEELAH-G
W1P188	1	-----	-----	-----	-----

W1P302	263	FKTNARPEVD	CS	----	SWLDSQPH	-	GSTLY	-	VSLGS	-	LVTV	----	PD	-	RQMMELAF	-	G
AtUGT78D1	254	EMRDPHG	CF	----	AWMGKRSA	-	ASVAY	-	ISFGT	-	VMEP	----	PP	-	EELVAIAQ	-	G
W1PTN8	252	NPGARDE	CL	----	AWLDDQSK	-	ASVLY	-	VSFGT	-	VKAL	----	EA	-	PEVVALAE	-	G
ZmUGT77A1	271	APADPHG	CL	----	AWLGRQPA	-	RGVAY	-	VSFGT	-	VACP	----	RP	-	DELRELA	-	G
AtUGT83A1	269	FLPHDRD	CL	----	DWLDRQIP	-	GSVIY	-	VAFGS	-	FGVM	----	GN	-	PQLEELAI	-	G
W1NWE7	140	WTEDET	CL	----	EWLNKQPE	-	CSVIIY	-	VSFGS	-	LTLF	----	DK	-	COLHELAL	-	A
W1NXD5	260	WTEDNT	CL	----	EWLDQQPS	-	NSVIY	-	ISFGS	-	FTIF	----	DE	-	HQFLELTL	-	A
AtUGT75B1	241	VKDQSSS	YT	----	LWLDSKTE	-	SSVIY	-	VSFGT	-	MVEL	----	SK	-	KQIEELAR	-	A
AtUGT84A1	265	CKSTDK	CL	----	EWLDSRPK	-	SSVYV	-	ISFGT	-	VAYL	----	KQ	-	EQIEEIAH	-	G
W1PLB6	260	WKPAHD	CL	----	DWLSTQPO	-	GSVIY	-	VAFGS	-	VVTL	----	ST	-	KQIEELAW	-	G
U5CXN6	261	WKPEDD	CL	----	DWLSHQPH	-	KSVIY	-	VAFGS	-	VVIL	----	SP	-	KQIEELAW	-	G
U5D2S8	251	WKPEDD	CL	----	NWLSTQPR	-	EFVIY	-	VAFGS	-	VVSL	----	PP	-	KQIEELAW	-	G
U5D817	258	WKSEDD	CL	----	DWLNTQPK	-	ESVIY	-	VSFGS	-	IVSL	----	SP	-	KQIEELAW	-	G
W1NFL7	258	WKSEDD	CL	----	DWLNTQPK	-	ESVIY	-	VSFGS	-	IVSL	----	SP	-	KQIEELAW	-	G
W1NFN9	258	WKSEDD	CL	----	DWLNTQPK	-	ESVIY	-	VSFGS	-	IVSL	----	SP	-	KQIEELAW	-	G
U5DBW3	255	WVAPSN	CL	----	SWLDSKPE	-	GSVYV	-	VSLGS	-	VSVL	----	PP	-	KQTEEMAW	-	G
W1PE57	257	WDASPQ	CL	----	TWLDSKKA	-	TSVYV	-	VSMGS	-	LLVM	----	PP	-	KQMEEMAW	-	G
U5D3G1	251	WEKSKD	YM	----	EWLGSKPV	-	GSVYV	-	VSFGS	-	LRVL	----	SP	-	MQARNIAR	-	A
AtUGT74B1	258	LKPISKE	CM	----	EWLETQKA	-	QSVAF	-	VSFGS	-	FGIL	----	FE	-	KQLAEVAI	-	A
U5DFQ6	261	WEEEE	CL	----	VWLDTKPI	-	GSVYV	-	VSFGS	-	LVGL	----	DE	-	TTMSEIAW	-	G
U5DI88	287	HLCKAVD	CL	----	NWLDERPF	-	RSTVY	-	AAFGS	-	LVSM	----	AV	-	EQMEEIAW	-	G
U5DCN3	256	DLYKAVN	CL	----	GWLDERPV	-	RSTVY	-	VSFGS	-	LVGM	----	PK	-	EQMEEIAW	-	G
U5D531	197	GDPAD	CL	----	NWLDKRPV	-	SSVYV	-	VPFGS	-	LAAL	----	PA	-	EQMEEVAE	-	A
U5CUG8	231	WPEHESHPAD	CL	----	RWLDERPD	-	SSVYV	-	VSFGS	-	LATL	----	PA	-	EQMEEIAN	-	A
W1PLP3	223			----		-		-		-		----	EP	-		-	W
U5DI92	252	TSDEQ GKPTD	CL	----	HWLDDRSA	-	GSVYV	-	VSFGS	-	LAAL	----	SP	-	EQMEEVAG	-	A
U5D3V6	250	TSDEQ GKPID	CL	----	HWLDDKRPV	-	GSVYV	-	VSFGS	-	VAVL	----	SA	-	EKMEEIAG	-	T
U5DDJ3	252	MSGEQ GMLTD	CL	----	QWLDGRPV	-	GSVYV	-	VSFGS	-	MAVL	----	SA	-	EQMEEVSG	-	A
U5DFQ3	252	ISGEQ GMLTD	CL	----	QWLDGKPV	-	GSVYV	-	VSFGS	-	MAVL	----	SA	-	EQMEEVSG	-	A
U5DI97	252	TGDDQ GRLVN	CL	----	SWLDERPV	-	GSVYV	-	VSFGS	-	IAAL	----	SV	-	EQMEEIAS	-	A
U5DCP2	253	TGDEQ GKLVN	CL	----	GWVDERPD	-	GSVYV	-	VSFGS	-	LAAL	----	TV	-	EQMEEIGG	-	A
U5DDK2	253	TGDEQ EKLVN	CL	----	GWVNERPD	-	GSVYV	-	VSFGS	-	LASL	----	IT	-	EQMEEIAS	-	A
OsUGT709A3	276	WRADDG	CM	----	AWLDQCAD	-	RSVYV	-	VSLGS	-	LTVI	----	SP	-	EQFTEFLS	-	G
SgUGT720A1	265	WKEDHS	CL	----	AWLDSRAA	-	KSVVF	-	VSFGS	-	LVKI	----	TS	-	RQLMEFWH	-	G
U5CX27	160	WNEEDT	CV	----	GWLNDEKP	-	KSVYV	-	VNFGS	-	ATVA	----	TP	-	IQLNEFAW	-	G
U5D008	179	LGKEEDA	CV	----	EWLNNKET	-	SSAFL	-		-		----	TP	-	YQLNEFAW	-	G
W1PMY7	185	WKEESE	CL	----	DWLDSHQP	-	RSVIY	-	VNFGS	-	ITVL	----	TP	-	HQLNEFAW	-	G
AtUGT85A1	282	WKEEME	CL	----	DWLDTKTQ	-	NSVIY	-	INFGS	-	ITVL	----	SV	-	KQLVEFAW	-	G
U5CVP6	276	WKEDTR	CL	----	DWLGNET	-	ASVYV	-	VNFGS	-	ITTM	----	TP	-	SQLEVEFAW	-	G
U5CNJ5	275	WIEDTS	CL	----	EWLDNKQP	-	QSVLY	-	VNFGS	-	ITTV	----	TS	-	KQLLEFAW	-	G
U5CNG3	277	WTPDTS	VL	----	DWLDEKPA	-	GSVYV	-	VNFGS	-	ITIV	----	TP	-	QQLLEFAW	-	G
U5CXJ9	277	WTPDAS	VL	----	DWLDNKPA	-	GSVYV	-	VNFGS	-	ITIV	----	TP	-	QQLLEFAW	-	G
AtUGT76B1	244	LAHDMT	CL	----	SWLDKQAT	-	NSVIY	-	ASLGS	-	IASI	----	DE	-	SEFLEIAW	-	G
W1PV81	246	LLPEDSK	CL	----	SWLDAQPP	-	KSVIY	-	TSFGS	-	LAGM	----	DS	-	SQVAEIAW	-	G
W1PVY0	244	ILPEDDK	CL	----	SWLNTQPP	-	RSVYV	-	TSFGS	-	LASM	----	ES	-	SQVMEIAW	-	G
W1PX56	278	LLEDDE	CL	----	SWLDTQPP	-	RSVYV	-	TSFGS	-	IAGL	----	DS	-	SQVMEIAW	-	G
AtUGT90A1	268	WI		----	HWLDQKREGRPVLY	-	VAFGT	-	QAEI	-		----	SN	-	KQLMELAF	-	G
OsUGT97A1	288	DDDDDDDDPEG	CV	----	AWLDERAARPGSVYV	-	VSFGT	-	QABL	-		----	PD	-	AQLDELAH	-	G
W1PH20	262	DALDSNP	CL	----	DWLGRQEV	-	GSVYV	-	VSFGT	-	QVAV	----	SR	-	GOMREIAL	-	G
W1PBB6	279	PKTEQAE	CL	----	DWLNTKEE	-	GSVLY	-	VAFGS	-	QARL	----	EE	-	AQLREIGT	-	G
W1PHN8	279	PKTERAE	CL	----	DWLDMKDE	-	GSVLY	-	VAFGS	-	QARL	----	EE	-	AQOMREIGA	-	G
W1PRF4	244		PM	----	DWLDGQPN	-	GSVIY	-	VSFGS	-	RTTI	----	SK	-	NOVDELGA	-	G
AtUGT71B1	247	DEEKRKE	IL	----	HWLKEQPT	-	KSVVF	-	LCFGS	-	MGGF	----	SE	-	EQAREIAV	-	A
W1P1M0	236	PDNPGEE	CL	----	KWLDEQPL	-	NSVLF	-	VCFGS	-	GGTF	----	TH	-	EQMNEMAM	-	G
AtUGT72B1	251	KQTEESE	CL	----	KWLDNQPL	-	GSVLY	-	VSFGS	-	GGTL	----	TC	-	EQLNELAL	-	G
W1PMA9	251	PENDSE	CL	----	RWLDEQPP	-	GSVLF	-	VSFGS	-	GGTL	----	SC	-	GQYQNLAH	-	G
W1PP20	248	QPENDSD	CL	----	RWLDEQPP	-	GSVVF	-	VSFGS	-	GGTL	----	SY	-	EQYQNLAH	-	G
AtUGT88A1	250	EDRNDNKAVS	CL	----	NWLDSQPE	-	KSVVF	-	LCFGS	-	LGLF	----	SK	-	EQVIEIAV	-	G
U5DB27	197	PASEPHE	CL	----	KWLGTQPD	-	GSVLF	-	LCFGS	-	WGAF	----	EP	-	AQAKEIAL	-	G
U5DBY1	253	PASEPHE	CL	----	KWLGTQPD	-	GSVLF	-	LCFGS	-	WGAF	----	EP	-	AQAKEIAL	-	G
U5DBY4	262	SAGEHHK	CL	----	QWLDKQPQ	-	DSVVF	-	LCFGS	-	LGTL	----	SN	-	ROTKQVAL	-	G
U5D276	260	AGGEGHE	CL	----	RWLDKQPH	-	GSVVF	-	LCFGS	-	LGAF	----	PA	-	HQTNIEAL	-	G
U5DB32	260	AGGERHQ	CL	----	QWLDKQPH	-	GSVVF	-	LCFGS	-	LGAF	----	SA	-	HQTNEMAL	-	G
W1NHX5	253	GGDDDCQ	CL	----	EWLIRVQPA	-	ASVYV	-	LCFGS	-	QGTf	----	SP	-	POIKEIAI	-	G
W1NVU7	216	YSSC	CM	----	ESLDAQPA	-	GSVYV	-	LCFGS	-	QGTf	----	ST	-	AQIKEIAT	-	G
W1PAP0	252	NPSE	SL	----	SWLDTQPA	-	GTVVF	-	LCFGS	-	MGRl	----	SA	-	AQLNEIAV	-	A
W1PD80	248	RSGGDND	TL	----	QWLDSQPA	-	GSVVF	-	LSFGS	-	VGRF	----	SE	-	AQIREIAV	-	G
W1PZW0	251	RSSE	VL	----	AWLDTQPE	-	GSVVF	-	LCFGS	-	VGRl	----	SA	-	TQIREIAI	-	G
AtUGT82A1	267	WEEDMS	CL	----	GWLDQENP	-	NSVIY	-	ISFGS	-	WVSPi	----	GE	-	SNIQTLAL	-	A
W1NUV1	390	WPESD	CS	----	SWLDTHPD	-	RSVIY	-	ISFGS	-	YAHl	----	SK	-	EEIQEIAE	-	G
AtUGT86A1	270	WAESD	CT	----	EWLKGRPT	-	GSVLY	-	VSFGS	-	YAHV	----	GK	-	KEIVEIAH	-	G
AtUGT87A1	253	NENRELD	YF	----	KWLDEQPE	-	SSVLY	-	ISQGS	-	FLSV	----	SE	-	AQMEEIVV	-	G
W1P188	260	LKTNARPELD	CS	----	SWLDSQPH	-	GSTLY	-	VSLGS	-	VMLV	----	PA	-	KQMEELAH	-	G
W1P188	1			----		-		-		-		----		-		-	

[illegible]

W1P302	308	LIESEIRFIW	VARDP	-----	TRN	-----		
AtUGT78D1	296	LESSKVPFVW	SLKEK	-----	NMV	-----	HLP	
W1PTN8	294	LENSARPFVW	SMRLE	-----	QHE	-----	LLP	
ZmUGT77A1	313	LEDSCAPFLW	SL-RE	-----	DSWP	-----	HLP	
AtUGT83A1	311	LELTKRPFVW	VTGDQ	-----	QP	-----		
W1NWE7	181	LENLGRPFVW	VARPD	-----	LIDKAG	-----	VAYLE	
W1NXD5	301	LENLGRPFVW	VARPD	-----	LVDKSG	-----	AGYP	
AtUGT75B1	283	LIEGKRPFVW	VITDK	-----	SNRETKTEG	EE	-----	ETEIE
AtUGT84A1	306	VLKSGLSFLW	VIRPP	-----	PHDLKV	-----	ETHVLP	
W1PLB6	301	LSSSGRPFLW	AAKPV	-----	DSTSEF	-----	QLP	
U5CXN6	302	LAGGCRPFVW	VAKPF	-----	DRTSEF	-----	RLP	
U5D2S8	292	LASSGRPFLW	VGKPV	-----	ASTSKF	-----	LLP	
U5D817	299	LASSGRPFLW	VAKPV	-----	DSTSEF	-----	LLP	
W1NFL7	299	LASSGRPFLW	VAKPV	-----	DSTSEF	-----	LLP	
W1NFN9	299	LASSGRPFLW	VAKPV	-----	DSTSEF	-----	LLP	
U5DBW3	296	LKISRRAFIW	VVKPP	-----	ENSSET	-----	GLP	
W1PE57	298	LKASALPFLW	VAKPS	-----	ENSSNT	-----	TGMP	
U5D3G1	292	LSESRHSYLW	VVGSS	-----	EKALQN	-----		
AtUGT74B1	300	LQESDLNFLW	VIKEA	-----	HIA	-----	KLP	
U5DFQ6	301	LLQNQKPFVW	VVRPP	-----	GVPQGY	-----	MGNELP	
U5DI88	329	LHASKRPFVW	VVKPP	-----	PIYLEG	-----	GNLPL	
U5DCN3	298	LHASKRFFVW	VVRTL	-----	PRHLEG	RN	-----	LLP
U5D531	237	LHSSKRPFLW	VVKLP	-----	YAYQKG	-----	GNSLP	
U5CUG8	276	LLSSNRPFLW	VVKAP	-----	YAHQKG	-----	GNSLP	
W1PLP3	226	-----	SLKMIWPFV	VVKAP	-----	YAHQKG	-----	GNSLP
U5DI92	297	LRWCKWPFVW	VVRPL	-----	FANQKG	-----	GNALP	
U5D3V6	295	LHSIKWPFVW	VVRPP	-----	SAHQKG	-----	GNSLP	
U5DDJ3	297	LRRSKWAFVW	VVRPP	-----	SANEKA	-----	GNSLP	
U5DFQ3	297	LRWCKWPFVW	VVRPP	-----	SANEKG	GN	-----	SLP
U5DI97	297	LRSKWKPFVW	VVRIP	-----	FAHQQG	GN	-----	QLP
U5DCP2	298	LRSIKWPFVW	VVRPP	-----	YAYEQG	-----	RNSLP	
U5DDK2	298	LRSKRPFLW	VVKPP	-----	RAHEQG	RN	-----	SLP
OsUGT709A3	317	LVAAGNPFVW	VLRPD	-----	MVTARR	-----	RHAD	
SgUGT720A1	306	LLNSGKSFLE	VL-RS	-----	DVVEGD	-----	DEKQVVK	
U5CX27	201	LANSQRPFIW	VIREN	-----	LVFGKS	-----	ATLE	
U5D008	212	LANSQRPFIW	DIRKD	-----	LVVGES	-----	AMLE	
W1PMY7	226	LANSEKPFVW	IIRQG	-----	LVQGES	-----	TTLS	
AtUGT85A1	323	LAGSGKEFLW	VIRPD	-----	LVAGEE	-----	AMVP	
U5CVP6	317	LANSEAPFVW	IIRPD	-----	LVQGEA	-----	ALPL	
U5CNP5	316	LANSKMPFLW	VIRPD	-----	LVREEG	-----	ARLP	
U5CNG3	318	LANSGLPFVW	IIRPD	-----	LVRGEG	-----	AMIP	
U5CXJ9	318	LANSGLPFVW	IIRPD	-----	LVRGEG	-----	AMIP	
AtUGT76B1	285	LRNSNQPFVW	VVRPG	-----	LIHGKE	-----	WIEILP	
W1PV81	288	LANSGCCFVW	VVRPG	-----	SVNGYD	-----	AAELP	
W1PVY0	286	LANSGRPFVW	VVRPG	-----	LINVLN	-----	AACLP	
W1PX56	319	LANSGRPFVW	VVRSD	-----	LVNGLN	-----	TAGLP	
AtUGT90A1	305	LEDKVNFLW	VTRKD	-----	VEEIIIG	-----		
OsUGT97A1	335	LVDSGHAFVW	AIGRS	-----	GGE	-----	WSP	
W1PH20	304	LEERSGAKYLW	VVRGE	-----	EGEE	-----		
W1PBB6	321	LEGSGVNFLW	VVKGE	-----	AKLDDG	-----		
W1PHN8	321	LEGSGLNFLW	VVRGE	-----	PKLDDG	-----		
W1PRF4	279	LEASGVRFLA	VV-KS	-----	KVVDEG	AQ	-----	
AtUGT71B1	289	LEERSGHRFLW	SLRRA	-----	SPVGN	KSNPPPGFTNLEEILP		
W1P1M0	278	LEASEQRFVW	VIRKP	-----	HQTSSS	ASFFSSTSNGEDPLAFLP		
AtUGT72B1	293	LADSEQRFVW	VIRSP	-----	SGIANSSYFDSHSQTDPLTFLP			
W1PMA9	292	LEKSGQRFVW	VIRTP	-----	EVTEGP	AAFFTVESKGDPKAYLP		
W1PP20	290	LEKSGQRFVW	VIRTP	-----	ELTEGP	AAFFTVESKGDPKAYLP		
AtUGT88A1	295	LEKSGQRFVW	VVRNP	-----	PELEKT	-----	ELDLKSLP	
U5DB27	239	LEQSGHRFLW	SLRGP	-----	PKEKFS	-----	GPTNADLEVLP	
U5DBY1	295	IEQSGHRFLW	SLRGR	-----	PKEKFS	-----	GPTD	



[illegible]

W1P302	326	----	LRDMC	----	KD-NGL	--	VVTWCSQSKVLRHPSIGGFLTHCGWNSTMEAVLAGV	
AtUGT78D1	317	--K-G--	FLDRT	----	RE-QGI	--	VVPWAPQVELLKHEAMGVNVTHCGWNSVLESVSAGV	
W1PTN8	315	--D-G--	FDARV	----	GQ-RGR	--	VVWAPQAQVLGHDAVGAFVTHCGWNSVLESIIGV	
ZmUGT77A1	334	--P-G--	FLDRA	----	AG-TGSGL	VVPWAPQVAVLRHPSVGA	FVTHAGASVLEGLSSGV	
AtUGT83A1	328	-IKLG--	-----	SD-RVK--	VVRWAPQREVLSSGAIGCFVSHCGWNSTLEGAQNGI			
W1NWE7	207	----G--	FLDRM	----	EV-HGK--	VVGWCPQREVLTHPSIACFVTHCGWNSTLEGVSNV		
W1NXD5	326	--E-G--	FLGRV	----	AA-YGK--	VVGWCPQKKVLAHPSIACFVTHCGWNSTLEGLSNGV		
AtUGT75B1	314	-KIAG--	FRHEL	----	EE-VGM--	IVSWCSQIEVLSHRAVGC	FVTHCGWSSSTLESVLVGV	
AtUGT84A1	333	-QE----	LKESL	----	AKGKM--	IVDWCPQEQVLSHPSVACFVTHCGWNSTMESLSSGV		
W1PLB6	325	--D-G--	FLKVI	----	VG-RGK--	LVKWCPOVEVLTHPSVACFVTHCGWNSTLETIAAGT		
U5CXN6	326	-DE----	FLDAI	----	AG-RGK--	VVKWCPOVEVLTHPSITCFLTHCGWNSTLETIAAGT		
U5D2S8	316	--D-G--	FLDAT	----	AG-RGK--	VVKWCPOVEVLTHPAVACFVTHCGWNSTLETIAAGT		
U5D817	323	--T-G--	FLDAA	----	AG-RGK--	IVKWCPOVEVLTHPSVACFVTHCGWNSTLETIAAGT		
W1NFL7	323	--T-G--	FLDAT	----	AG-RGK--	IVKWCPOVEVLTHPSVSCFVTHCGWNSTLETIAAGT		
W1NFN9	323	--T-G--	FLDAT	----	AG-RGK--	IVKWCPOVEVLTHPSVSCFVTHCGWNSTLETIAAGT		
U5DBW3	320	--E-G--	FLEGV	----	EG-QGI--	VVPWCPOVEVLSHPSLACFLTHCGWNSTLETVAAGV		
W1PE57	323	--E-G--	FLEEV	----	QG-QGI--	VVPWCPOAEVLSHPSIACFVTHCGWNSTLETITAGV		
U5D3G1	313	-----	IEIED	----	SE-RGL--	VVGWCNQVELLAHPSIGCFVMHGGWNSTLESVLAGV		
AtUGT74B1	321	--E-G--	FVEST	----	KD-RAL--	LVSWCNQLEVLAHESIGCFVTHCGWNSTLEGLSLGV		
U5DFQ6	328	-VG----	FVDEV	----	KG-RGL--	VVEWCPQLEVLSHQSVGCFVTHCGWNSTLEGLSLGV		
U5DI88	355	--K-G--	FSEAT	----	ID-QGI--	VVPWCPOLEVLSHATACFLTHCGWNSTLEGLSLGV		
U5DCN3	324	--K-G--	FSEAT	----	KD-RGL--	VVSWCPQLEVLSHRAVACFWTHCGWNSTLEGLSLGV		
U5D531	263	--E-G--	FVEAT	----	SE-QGL--	VVPWCPOLDVLAHRAVGC	FVTHCGWNSTLEALSQGV	
U5CUG8	302	--E-G--	FVEAT	----	SE-QGL--	VVPWCPOLDVLAHRAVGC	FVTHCGWNSTLEGLSQGV	
W1PLP3	249	--E-G--	FVEAT	----	SE-QGL--	VVPWCPOLDVLAHRAVGC	FVTHCGWNSTLEGLSQGV	
U5DI92	323	-QG----	FIEAT	----	SE-QGL--	VVPWCPOLDVLAHRAVGC	FVTHCGWNSTLEGLTQGV	
U5D3V6	321	--E-G--	FIDAT	----	SE-QGL--	VVPWCPOLDVLAHRAVGC	FVTHCGWNSTLEGLTQGV	
U5DDJ3	323	--E-G--	FMEAT	----	SE-QGL--	VVPWCPOLDVLAHRAVGC	FVTHCGWNSTLEGLTQGV	
U5DFQ3	323	--E-G--	FIEAT	----	SE-QGL--	VVPWCPOLDVLAHRAVGC	FVTHCGWNSTLEGLTQGV	
U5DI97	323	--E-G--	FLEAT	----	FQ-QGL--	VVPWCPOLDVLAHRAVGC	FVTHCGWNSTLEGLSQGV	
U5DCP2	324	--D-G--	FLDAT	----	SE-QGL--	VVPWCPOLEVLAHRAIGCFVSHCGWNSTLEAISQGV		
U5DDK2	324	--D-G--	FLDAT	----	TE-QGL--	VVPWCPOLDVLAHRAIGCFVTHCGWNSTLEAISQGV		
OsUGT709A3	342	-----	LQESVTAAAG	----	DSKARVVGWAPQRDVLRRHRAVGC	FVTHAGWNSTLEAAVEGV		
SgUGT720A1	333	-EI----	YETKA	----	EG-KWL--	VVGWAPQEKVLAHEAVGCFVTHSGWNSILESIAAGV		
U5CX27	226	-KT----	FVEET	----	KE-RRL--	ILSWCNQIKVLSHPAVGC	FVTHSGWNSITESISNGV	
U5D008	237	-KE----	FVEAT	----	KE-CGL--	ILSWCNQMKVLPHHAI	GCFVTHNGWKSTLDSILNGV	
W1PMY7	251	-HD----	FYDKT	----	KG-RGL--	IASWCNQKKVLSHSSI	GCFVTHSGWNSILESICSGV	
AtUGT85A1	348	-PD----	FLMET	----	KD-RSM--	LASWCPOEKVLSHPAIGCFVTHCGWNSILESLSGCV		
U5CVP6	342	-KE----	FVEVT	----	KE-RGF--	LASWCNQEKVLSHPAVGCFVTHCGWNSIMESVCGGI		
U5CNJ5	341	-QG----	FAEET	----	KE-RGI--	VATWCNQEQVLGHRAIGCFVTHSGWNSIMESICNGV		
U5CNG3	343	-KA----	FVEDT	----	KE-RSL--	LASWCDQERVLOHPAVGCFVTHSGWNSITESLSGGV		
U5CXJ9	343	-EA----	FVEDT	----	KE-RSL--	LASWCDQERVLOHPAVGCFVTHSGWNSITESLSGGV		
AtUGT76B1	312	-KG----	FIENL	----	EG-RGK--	IVKWAPQPEVLAHRAATGCFVTHCGWNSTLEGICEAI		
W1PV81	314	--S-G--	FMDQV	----	GS-RGL--	VVGWAPQKDVLAHQAVGAFVTHCGWNSTLESLSCAA		
W1PVY0	312	--S-G--	FTEQV	----	GLRGL--	VVEWAPQKKVLAHGAVGAFVTHCGWNSTLESICAGV		
W1PX56	345	--S-G--	FMDQV	----	GS-CGL--	VVEWAPQKKVLAHRAVGA	FVTHCGWNSTLESICAGV	
AtUGT90A1	326	--E-G--	FNDRI	----	RE-SGM--	IVRDWVDQWEILSHESVKGFLSHCGWNSAQESICVGV		
OsUGT97A1	356	-----	PVDA	----	GG-DGK--	IVRGWVPQRRVLSHPAVGAFVTHAGWNSVLESLSAAGL		
W1PH20	323	-----	FEERE	----	NGL-IARVWVPQVAVLCHVAIGGFMSHCGWNSVLESVHGV			
W1PBB6	342	-----	FRDRV	----	KG-RGL--	VIQGWVSPQEVLSHNAVGGFMSHCGWNSVLESVFGV		
W1PHN8	342	-----	FGDRV	----	KG-RGL--	VIRGWVSPQEVLSHNAVGGFMSHCGWNSVLESVYGV		
W1PRF4	301	----G--	LSVV	----	KG-RGI--	VVDGWVDQGSVLGHQSVGGFVSHCGWNSVAEALNGV		
AtUGT71B1	326	--K-G--	FLDRT	----	VE-IGK--	IISWAPQVDVLNSPAIGA	FVTHCGWNSILESLSWFGV	
W1P1M0	317	-LG----	FVSRI	----	QG-RGL--	VIPDWAPQGRILAHSSI	GCFVTHCGWNSSTLESVKNGV	
AtUGT72B1	330	--P-G--	FLERT	----	KK-RGF--	VIPFWAPQAQVLAHPSTGGFVTHCGWNSTLESVVS	GI	
W1PMA9	330	--Q-G--	FLERT	----	KG-VGM--	VVPSWAPQTRVLAHAATGGFVTHCGWNSTLESFQNGI		
W1PP20	328	--E-G--	FLERT	----	KG-VGM--	VVPSWAPQTRVLAHAATGGFVTHCGWNSTLESIQNGI		
AtUGT88A1	325	-EG----	FLSRT	----	ED-KGM--	VVKSWAPQVPVLNHKAVGCFVTHCGWNSILESIAVAGV		
U5DB27	272	-EG----	FIDRT	----	RE-RGM--	VWPTWVPQVAVLAHPAVGGFVSHCGWNSILES	VWHGV	
U5DBY1	328	EG-----	FIDRT	----	RE-RGM--	VWPTWVPQVAVLAHPAVGGFVSHCGWNSILES	VWHGV	
U5DBY4	338	-EG----	FLERT	----	HD-LGM--	VWPKWAPQAAVLAHPAVGAFVSHCGWNSTLESVWFGV		
U5D276	325	-EG----	FLERT	----	QG-YGM--	VWPKWVPQVAVLTHPAVGGFVSHCGWNSTLES	LCHGV	
U5DB32	325	-EG----	FAERT	----	QE-YGM--	VWPKWVPQVAVLAHPAVGGFVSHCGWNSTLES	LWHGV	
W1NHX5	323	-EG----	FLGRT	----	AE-FGM--	VMTSWAPQVAVLNHPAVGGFVTHCGWNSALES	VACGV	
W1NVU7	283	-EG----	FSGRT	----	SW-LGM--	VVKSWAPQVAVLNHGAVGRFVTHRRRWN	SMLESVCAGG	
W1PAP0	327	-EG----	FLKRT	----	AG-KGL--	VVKTWAPQVAVLNHMAVGGFVTHCGWNSLLES	VACGV	
W1PD80	328	-QG----	FLQRT	----	AD-KGL--	VMKSWASQAAVLSCAAVGGFVSHCGWNSVLES	VACGV	
W1PZW0	327	-EG----	FLERT	----	SG-RGM--	VVKNSWAPQVAVLRHSAVGGFVTHCGWNSILES	ICAGV	
AtUGT82A1	330	--P-G--	FVHRT	TITKN	-QGR--	IVSWAPQLEVLNRDSVGCYVTHCGWNSTLE	AVASSR	
W1NUV1	456	-KD----	FQERT	----	RG-QGL--	VVHWCRQREVLSHRAIGCFVTHCGWNSIMES	VWCEV	
AtUGT86A1	336	-AG----	FVDQA	----	QD-RGL--	VVQWCCOMEVLSNPAVGGFFTHCGWNSILES	VWCGL	
AtUGT87A1	313	-----	LKEAL	----	EGSLGV--	VVSWCDQLRVLCHAAIGCFVTHCGYNSTLE	IGICS	GV
W1P188	323	-----	LRDMC	----	TD-RGL--	VVPWCSQSKVLRHPSVGGFLTHCGWNST	VEGVL	TGV
W1P188	1	-----						

U5CYW0	355	-----PIILNDFIPGQEV-----GNVPY-VVENGAG-----
W1PAZ2	430	-----PIILNDYIAGQEA-----GNVPY-VVENGAG-----
AtUGT81A1	445	-----PIILNGYIAGQEA-----GNVPY-VVENGCG-----
W1PTT2	409	LKNGIGGSILVYPLIKSKWD-PRMSVVVPDNEIFYLVALLRFN-----K--
U5D3V5	417	VRLGVGGPILVYPLNSNK-----
W1NUG7	409	LGKKTSGPILIIYPMNKNRWDEKTSAVTPDEDVFYL-VAFLRSA-----LDN
W1PC48	396	LTDSSNGPILIIYPLNKEKWD-NRTSAVTPNEDIFYLVAFSSS-----
W1PP63	384	SPDHFEGPILIIYPIRRDKWN-----GNTSAV-LPEDKEN-----ILYI
OsUGT701A2	399	SADDFEGPILVYPLLTDKWD-----GNTSAV-VPAAPDG-----V--
W1PA48	444	-----PQITCPFMLDQFY-----WAERMSWLGVAPEPLC-----
U5D0T8	416	-----PTTVVPFFGDQPF-----WGER-----VHA
AtUGT80A2	533	-----PTTIVPFFGDQPF-----WGER-----VHA
W1PJ19	349	-----RLVALPIQLDQGI-----NTRLV-AEELKV-----V--
W1NU70	404	-----RLVLLPLVFDQGL-----IARLV-ANEWKAA-----I--
W1NV64	389	-----RLVLLPLMILDQGL-----IARLV-ADEWRAA-----L--
W1PKS4	386	-----RLVLLPMIIDQGL-----IARLV-ADEWRAA-----L--
AtUGT91A1	382	-----PMAMLVVFYDQGL-----NARVI--EEKKIG-----
U5CMK2	378	-----TLIVLPFVFDQGL-----NAKLL--VEKGIA-----L--
U5CWM7	343	-----ALIILPFIADQGL-----NARLL--EEKKLA-----F--
U5D1X9	381	-----ALILLPFIIDQGI-----NARLL--GEKKLG-----F--
W1PT00	357	-----PLITLPLQLDQPF-----NSRVM-TREVRVG-----V--
OsUGT94A1	376	-----PMVALPLHIDQPV-----GANL--AAELGVA-----A--
AtUGT79B1	376	-----QIVLVPQHGEQIL-----NARLM-TEEMEVA-----V--
W1PQK6	381	-----QLVLLPLKGDQFL-----NARLM-GRELVRG-----V--
U5D602	361	-----PIATWPMHSDQPA-----NSHLV-TKILGMG-----V--
U5D5X9	336	-----PIVEWPMHSDQPA-----NAQLV-AGVLGVG-----V--
U5D5Z2	395	-----PMVAWPMHSDQPV-----NAQLV-TGVLGVG-----V--
U5D5X3	293	-----PIVTWPLHSDQPV-----NAQLV-TGVLGVG-----V--
ZmUGT93B1	375	-----PVLAWPMHSDQPW-----DSELL-CKYFKAG-----L--
PoUGT95A1	452	-----PILGWPIRGDQFD-----NAKLV-AYHLKIG-----HVM
U5D0B7	471	-----PLLAWPIRGDQHY-----NAKMV-ASWLKIG-----
AtUGT89A1	370	-----MILAWPMEADQFV-----DARLV-VEHMGVA-----V--
OsUGT96A1	365	-----PLLAWPMKADQFI-----DARLV-VDLRGAA-----V--
AtUGT92A1	390	-----PLLGWPMABEQFF-----NSILM-EKHIGVS-----V--
U5CRD3	330	-----PIIGWPMGAEQFF-----NVKLL-VEEVGVC-----I--
W1P7W1	392	-----PIIGWPMGADQFY-----ISKEL-EEELGVG-----L--
U5D7I9	388	-----PLIGWPMAGEQFY-----NTIMLGDEKVGVC-----V--
W1PFP0	388	-----PLIGWPLAGEQFY-----NTIMLGDEKVGVC-----V--
OsUGT99A1	384	-----PVVAWPHFTDQFL-----NAKMA-VEVLGIG-----V--
AtUGT73B1	388	-----PMVTWPLVGAQFY-----NEKLV-TQVLKTG-----V--
OsUGT98B1	392	-----PMITWPHCSEQFV-----NEKLV-VDHLKIG-----V--
W1PF90	395	-----AMVTWPLSABQFI-----NAKMV-SEVMGIG-----FGV
W1NIK4	387	-----PLAAWPMFABQPL-----NARLV-VDVLKTG-----V--
W1PQX3	391	-----PMVSWPLYABQPL-----NARLV-VDVLKVA-----V--
W1PPW8	390	-----PMVAWPLNABQPM-----NAKLV-VDVLKVA-----V--
W1PS80	390	-----PMVAWPLNABQPM-----NAKLV-VDVLKVA-----V--
AtUGT90A1	375	-----PLLAWPMMAEQPL-----NAKMV-VEEIKVG-----V--
OsUGT97A1	402	-----PMLAWPVMAEQAA-----NAKLV-ADIIGAG-----V--
W1PH20	368	-----PILGWGMIAEQQL-----NAKVV-EEVLGVG-----I--
W1PBB6	389	-----PILGWPMABEQSL-----NAKMV-EEELGVG-----S--
W1PHN8	389	-----PILGWPMMAEQSL-----NGAWA-GPRLVFA-----F--
W1PRF4	348	-----PILAWPFGDQMI-----NAGVV--EKSGLG-----
AtUGT71B1	374	-----PMAAWPIYABQF-----NAFHM-VDELGLA-----A--
W1P1M0	366	-----PMIAWPLYABQRM-----NALML-ANEIKVA-----L--
AtUGT72B1	379	-----PLIAWPLYABQKM-----NAVLL-SEDIRAA-----L--
W1PMA9	379	-----PLIAWPLYABQKM-----NAILL-VDEIKVA-----I--
W1PP20	377	-----PLIAWPLYABQKM-----NAILL-VDEIKVA-----I--
AtUGT88A1	374	-----PMVAWPLYABQRF-----NRVMI-VDEIKIA-----I--
U5DB27	321	-----PILAFPLYABQRL-----NAWEL-VKDMGVGVGVGVGLGVGVGV--
U5DBY1	377	-----PIVAFPLYABQRL-----NAWEL-VKDVGVGGVGVGVGVGVGVGV--
U5DBY4	387	-----PMVAWPLYABQRL-----NALEL-VREVGVA-----L--
U5D276	374	-----PMVAWPLYABQRL-----NALVL-VRELGVA-----L--
U5DB32	374	-----PMVAWPLYABQRL-----NALVL-VRELGVA-----L--
W1NHX5	372	-----PMLAWPLYABQHL-----NALFM-VEEMKIA-----M--
W1NVU7	332	-----MAPLCRATFE-----RAVF--GGRDGTG-----
W1PAP0	376	-----PMAAWPLYABQHV-----NAWLM-VGEREMG-----VAV
W1PD80	377	-----PMAAWPIYABQAM-----NAFLM-VGEMGLA-----V--
W1PZW0	376	-----PMAAWPLYABQES-----NAFMM-VGALQLS-----V--
AtUGT82A1	381	-----RLLCYPVAGDQFV-----NCKYI-VDVWKIG-----V--
W1NUV1	504	-----PMLGLPLLTDOFT-----NRKLI-VDDWVG-----L--
AtUGT86A1	384	-----PLLCYPLLTDOFT-----NRKLV-VDDWCIG-----I--
AtUGT87A1	360	-----PLLTFPVFWDOFL-----NAKMI-VEEWRVG-----M--
W1P188	369	-----PMLTFPIYFDOQT-----NSKLI-VDDWKVG-----L--
W1P188	1	-----

W1P302	372	-----PMLTFPINFDQPM-----	NSKLV-TDDWKVG-----	L--
AtUGT78D1	365	-----PMIGRPILADNRL-----	NGRAV-EVVWKVG-----	V--
W1PTN8	363	-----PMICHPPFFGDQRI-----	NARTV-TDLWRIG-----	V--
ZmUGT77A1	384	-----PMACRPPFFGDQRM-----	NARSV-AHVWGFG-----	A--
AtUGT83A1	373	-----PFLCIPYFADQFI-----	NKAYI-CDVWKIG-----	L--
W1NWE7	254	-----PLICWPKFVDQFL-----	NKSYI-VDIWKVG-----	L--
W1NXD5	374	-----PFICWPYFADQFL-----	NQTYI-VDIWKVG-----	V--
AtUGT75B1	364	-----PVVAFPMWSDQPT-----	NAKLL-EESWKTG-----	V--
AtUGT84A1	382	-----PVVCCPQWGDQVT-----	DAVYL-IDVFKTG-----	V--
W1PLB6	373	-----PVIALPHWGDQVT-----	NAKFL-VDIYGVG-----	V--
U5CXN6	374	-----PVLALAHWGDQVT-----	NEKFL-VDVYSVG-----	I--
U5D2S8	364	-----PILAFAHWGDQVT-----	NAKFL-VDVFGVG-----	V--
U5D817	371	-----PILAFSHWGDQVT-----	NAKFL-VDVYSVG-----	V--
W1NFL7	371	-----PILAFAHWGDQVT-----	NAKFL-VDVYSVG-----	V--
W1NFN9	371	-----PVLAFAHWGDQVT-----	NAKFL-VDVYSVG-----	V--
U5DBW3	368	-----PVIAFPQWTDQPT-----	NAMFL-VDVLRVG-----	V--
W1PE57	371	-----PVIAIPEWTDQPT-----	NAMLL-VEVLGVG-----	L--
U5D3G1	359	-----PMVVLPEWSDQTT-----	NAWL-ERVWKC-----	V--
AtUGT74B1	369	-----PMVGVPQWSDQMN-----	DAKFV-EEVWKVG-----	Y--
U5DFQ6	376	-----PLVAIPQWTDQLT-----	NAKYV-EDVWRVG-----	L--
U5DI88	403	-----PMVAVPQWTDQPT-----	DAKFV-SDVWQVG-----	I--
U5DCN3	372	-----PMVAMPQWTDQLT-----	NAKFV-SDVWRVG-----	M--
U5D531	311	-----PMVSVPPQWGDQQT-----	NSKFV-SDVWKTR-----	T--
U5CUG8	350	-----PMVTVPQRRYHPT-----	NAKFV-SDVWITG-----	A--
W1PLP3	297	-----PMVTVPQRSYQPT-----	NAKFV-SDVWITG-----	A--
U5DI92	371	-----PMIAIPQWSDQPT-----	NSKLV-SDVWKL-----	V--
U5D3V6	369	-----PMVAIPLRSDQPT-----	NSKFI-SDVWKM-----	V--
U5DDJ3	371	-----PMVAIPQWSDQPT-----	NSKLV-SDVWKM-----	V--
U5DFQ3	371	-----PMVAIPQWSDQPT-----	NSKLV-SDVWKM-----	V--
U5DI97	371	-----PMVAAPLRSDQPT-----	NSKFI-FDVWKVG-----	V--
U5DCP2	372	-----PMVAVPQWSDQPT-----	NAKFI-SDVWKM-----	I--
U5DDK2	372	-----PMVAVPQWSDQPT-----	NAKFI-SDVWKM-----	I--
OsUGT709A3	393	-----PTVCWPFFTDQOI-----	NSRFV-GGVWRTG-----	L--
SgUGT720A1	381	-----PMISCPKIGDQSS-----	NCTWI-SKVWKIG-----	L--
U5CX27	274	-----PMLCWPFFADHPT-----	ICRYV-CKEWGIG-----	M--
U5D008	285	-----PMICWPFFADPQT-----	NCWYV-CKELGIG-----	M--
W1PMY7	299	-----PVLCPWFFFAEQT-----	NCRFA-CVEWGIG-----	M--
AtUGT85A1	396	-----PMVCWPFFFADQOM-----	NCKFC-CDEWDVG-----	I--
U5CVP6	390	-----PVICWPFFFAEQT-----	NCWFA-CNEWGM-----	M--
U5CNJ5	389	-----PMICWPFFFADQQT-----	NCYLA-CAVWGIG-----	I--
U5CNG3	391	-----PMICWPFFFAEQT-----	NCFFA-CTEWEVG-----	M--
U5CXJ9	391	-----PMICWPFFFAEQT-----	NCFFA-CTEWGVG-----	M--
AtUGT76B1	360	-----PMICRPSFGDQRV-----	NARYI-NDVWKIG-----	L--
W1PV81	362	-----PMACWARFGDQKV-----	-----	L--
W1PVY0	360	-----PVACWPQFSDQRV-----	NARLI-CHVWRVG-----	A--
W1PS56	393	-----PMACWPQFSDQRV-----	NSRLI-CHVGVVG-----	A--
AtUGT90A1	375	-----PLLAWPMMAEQPL-----	NAKMV-VEEIKVG-----	V--
OsUGT97A1	402	-----PMLAWPVMAEQAA-----	NAKLV-ADIIGAG-----	V--
W1PH20	368	-----PILGWGMIAEQQL-----	NAKVV-EEVLGVG-----	I--
W1PBB6	389	-----PILGWPMMAEQSL-----	NAKMV-EEELGVG-----	S--
W1PHN8	389	-----PILGWPMMAEQSL-----	NGAWA-GPRLVFA-----	F--
W1PRF4	348	-----PILAWPQFGDOMI-----	NAGVV--EKSGLG-----	---
AtUGT71B1	374	-----PMAAWPIYAEQOF-----	NAFHM-VDELGLA-----	A--
W1P1M0	366	-----PMIAWPLYAEQRM-----	NALML-ANEIKVA-----	L--
AtUGT72B1	379	-----PLIAWPLYAEQKM-----	NAVLL-SEDIRAA-----	L--
W1PMA9	379	-----PLIAWPLYAEQKM-----	NAILL-VDEIKVA-----	I--
W1PP20	377	-----PLIAWPLYAEQKM-----	NAILL-VDEIKVA-----	I--
AtUGT88A1	374	-----PMVAWPLYAEQRF-----	NRVMI-VDEIKIA-----	I--
U5DB27	321	-----PILAFPLYAEQRL-----	NAWEL-VKDMGVGVGVGVGLGVGVDV--	---
U5DBY1	377	-----PIVAFPLYAEQRL-----	NAWEL-VKDVGVGVGVGVGVGVGVDV--	---
U5DBY4	387	-----PMVAWPLYAEQRL-----	NALVL-VREVGVA-----	L--
U5D276	374	-----PMVAWPLYAEQRL-----	NALVL-VRELGVA-----	L--
U5DB32	374	-----PMVAWPLYAEQRL-----	NALVL-VRELGVA-----	L--
W1NHX5	372	-----PMLAWPLYAEQHL-----	NALFM-VEEMKIA-----	M--
W1NVU7	332	-----MAPLCRATFE-----	RAVF-GGRDGTG-----	---
W1PAP0	376	-----PMAAWPLYAEQHV-----	NAWLM-VGEREMG-----	VAV
W1PD80	377	-----PMAAWPIYAEQAM-----	NAFLM-VGEMGLA-----	V--
W1PZW0	376	-----PMAAWPLYAEQES-----	NAFMM-VGALQLS-----	V--
AtUGT82A1	381	-----RLLCYPVAGDQFV-----	NCKYI-VDVWKIG-----	V--
W1NUV1	504	-----PMLGLPLLLTDQFT-----	NRKLI-VDDWVG-----	L--
AtUGT86A1	384	-----PLLCYPLLLTDQFT-----	NRKLV-VDDWCIG-----	I--
AtUGT87A1	360	-----PLLTFPVFWDQFL-----	NAKMI-VEEWRVG-----	M--
W1P188	369	-----PMLTFPIYFDQQT-----	NSKLI-VDDWKVG-----	L--
W1P188	1	-----	-----	---

U5CYW0	380	-VFS-----KSPKDTANTVG- <b>EWFGPKVE</b> -----
W1PAZ2	455	-KFS-----KSP----- <b>KEIANIVA</b> -----
AtUGT81A1	470	-KFS-----KSP----- <b>KEISKIVA</b> -----
W1PTT2	452	-PYP-----EGPSLQSL <b>LAQNQE</b> <b>IIDCCTSN</b> NFDFK-----
U5D3V5		-----
W1NUG7	454	GEET---- <b>QSLRYLQDQNERIL</b> RFC <b>EE</b> ANIEMK-----
W1PC48	438	-TVD-----SLEHSLSQNRRI <b>LEFCE</b> KQGIGMK-----
W1PP63	421	VGMLRSASPQCVSESPCLQSY <b>LQQNNK</b> ITEGATSISLHSNSKI <b>QIADPNGQD</b> HELETISG
OsUGT701A2	433	-MYI-----FGV <b>LRS</b> - <b>TD</b> PARCGR-----
W1PA48	473	-RDQ-----LLPN <b>NEGE</b> ITI- <b>LQASKL</b> V <b>L</b> -----
U5D0T8	436	RGVG-----PPPIPV <b>DQFSC</b> - <b>PKLVDAIR</b> -----
AtUGT80A2	553	RGVG-----PSPIPV <b>DEFSL</b> - <b>HKLEDAIN</b> -----
W1PJ19	375	-EVR-----RTN <b>LEDGS</b> V <b>SA</b> - <b>ENV</b> CEAIR-----
W1NU70	430	-EIE-----GRS <b>LEDGN</b> F <b>TS</b> - <b>ELINRAIV</b> -----
W1NV64	415	-EIE-----RAN <b>LEDGS</b> F <b>TA</b> - <b>DSV</b> CR <b>AVQ</b> -----
W1PKS4	412	-EIE-----RAN <b>LEDGS</b> F <b>TA</b> - <b>ESV</b> CR <b>AVQ</b> -----
AtUGT91A1	406	-YMI-----PRDETE <b>GFFTK</b> - <b>ESVANS</b> LR-----
U5CMK2	403	-EIE-----RNK-- <b>DGS</b> F <b>TK</b> - <b>EAVAKGLR</b> -----
U5CWM7	368	-EVE-----RNEN <b>DGS</b> F <b>TK</b> - <b>ISI</b> AKALR-----
U5D1X9	406	-EVE-----RNED <b>DGS</b> F <b>TK</b> - <b>VSI</b> AKALR-----
W1PT00	383	-EVE-----RES-- <b>DGG</b> F <b>KG</b> - <b>EKVAKALK</b> -----
OsUGT94A1	401	-RVR-----QER-- <b>FGE</b> F <b>EA</b> - <b>EEV</b> AR <b>AVR</b> -----
AtUGT79B1	402	-EVE-----REK-- <b>KGW</b> F <b>SR</b> - <b>QSL</b> EN <b>AVK</b> -----
W1PQK6	407	-EVE-----RRAED <b>GFFRR</b> - <b>EDV</b> CK <b>AVR</b> -----
U5D602	387	-AVR-----ELNE <b>DG</b> F <b>VIA</b> - <b>EAV</b> ER <b>AVR</b> -----
U5D5X9	362	-GVK-----EWHERED <b>IVRA</b> - <b>ERVEK</b> AVR-----
U5D5Z2	421	-AVG-----EWHERDD <b>IVRA</b> - <b>ESV</b> ER <b>AVR</b> -----
U5D5X3	319	-ALK-----EWHERDD <b>IVRT</b> - <b>ERVE</b> ER <b>AVR</b> -----
ZmUGT93B1	401	-LVR-----PWEKHAE <b>IVPA</b> - <b>QAI</b> Q <b>KVIE</b> -----
PoUGT95A1	480	SRGA-----NGEVGP <b>GKFTK</b> - <b>DDIT</b> SGIE-----
U5D0B7	496	-SII-----MDTEMD <b>GEISK</b> - <b>DVIL</b> AGIE-----
AtUGT89A1	396	-SVC-----EGG-- <b>KTVPD</b> PY <b>EMGR</b> IIA-----
OsUGT96A1	391	-RVA-----EGA-- <b>AAV</b> PD <b>A</b> - <b>ATL</b> AR <b>ALA</b> -----
AtUGT92A1	416	-EVA-----RGK-- <b>RCE</b> IK <b>C</b> - <b>DDIV</b> SKIK-----
U5CRD3	356	-ELG-----RGQ-- <b>EEV</b> V <b>GW</b> - <b>EKV</b> ER <b>AVR</b> -----
W1P7W1	418	-ELT-----RGQ-- <b>EAG</b> V <b>GR</b> - <b>EVV</b> AR <b>VG</b> -----
U5D7I9	415	-EVG-----RGK-- <b>EVG</b> V <b>DR</b> - <b>EKV</b> AR <b>VVA</b> -----
W1PFP0	415	-EVG-----RGK-- <b>EVG</b> V <b>DR</b> - <b>EKV</b> AR <b>VVA</b> -----
OsUGT99A1	410	-GVGV <b>EEPLVYQ</b> VRK-- <b>EIV</b> V <b>GR</b> - <b>GTVEA</b> AVR-----
AtUGT73B1	414	-SVG-----VKKMMQ <b>VVGDF</b> ISR- <b>EKV</b> EG <b>AVR</b> -----
OsUGT98B1	418	-EVGVKG <b>V</b> TQWGTEQK-- <b>EKV</b> V <b>TR</b> - <b>TAV</b> ET <b>AVS</b> -----
W1PF90	423	ERVG-----KEV <b>VRR</b> - <b>EKV</b> KE <b>AVE</b> -----
W1NIK4	413	-EIS-----KDDPN <b>GLVRK</b> - <b>EEI</b> H <b>RALC</b> -----
W1PQX3	417	-AIV-----DKETQ <b>GVV</b> PK- <b>EAV</b> ER <b>AVS</b> -----
W1PPW8	416	-PIV-----FDT-- <b>QGV</b> V <b>PK</b> - <b>EAVE</b> Q <b>AVS</b> -----
W1PS80	416	-PIV-----FDT-- <b>QGV</b> V <b>PK</b> - <b>EAVE</b> Q <b>AVS</b> -----
AtUGT90A1	401	-RVE-----TEDGS <b>VKG</b> F <b>VTR</b> - <b>EEL</b> SG <b>KIK</b> -----
OsUGT97A1	428	-RAV-----RGG-- <b>GVV</b> V <b>GR</b> - <b>AEV</b> AG <b>KVG</b> -----
W1PH20	394	-RVL-----EEGEGEG <b>GNL</b> VE <b>GEV</b> IS <b>GKVA</b> -----
W1PBB6	415	-RVV-----WGVGEK-- <b>GEI</b> VER- <b>EVV</b> ARE <b>VV</b> -----
W1PHN8	415	-PVA-----PFALSS <b>ALCPL</b> PYP <b>VPFALS</b> -----
W1PRF4	372	-VWP-----QGWCGER <b>VVNR</b> - <b>EDV</b> CK <b>QIK</b> -----
AtUGT71B1	400	-EVKK <b>KEYRRD</b> FLVEEP-- <b>EIV</b> TA- <b>DEI</b> ERG <b>IK</b> -----
W1P1M0	392	-RPK-----MED-- <b>DGI</b> V <b>YK</b> - <b>HEI</b> ER <b>AVR</b> -----
AtUGT72B1	405	-RPR-----AGD-- <b>DGL</b> V <b>RR</b> - <b>EEV</b> AR <b>VVK</b> -----
W1PMA9	405	-RPK-----MQE-- <b>DGI</b> IK <b>V</b> - <b>EEI</b> DR <b>VVR</b> -----
W1PP20	403	-RPK-----IQE-- <b>DGI</b> IK <b>E</b> - <b>EEI</b> ER <b>VVR</b> -----
AtUGT88A1	400	-SMN-----ESE-- <b>TGF</b> V <b>SS</b> - <b>TEV</b> E <b>KRVQ</b> -----
U5DB27	361	-EVD-----SGS-- <b>CGL</b> V <b>K</b> A- <b>EKL</b> E <b>KAVR</b> -----
U5DBY1	417	-GVG-----VGS-- <b>GLV</b> K <b>A</b> - <b>EELE</b> K <b>AVQ</b> -----
U5DBY4	413	-ELK-----MEE-- <b>DGW</b> V <b>K</b> A- <b>EEL</b> ER <b>VAR</b> -----
U5D276	400	-EME-----MAE-- <b>DGV</b> V <b>R</b> A- <b>EAL</b> GS <b>RVR</b> -----
U5DB32	400	-EVE-----MGE-- <b>DGV</b> V <b>R</b> A- <b>EEL</b> GS <b>RVR</b> -----
W1NHX5	398	-AME-----IGD-- <b>SGF</b> V <b>DG</b> - <b>GAV</b> AR <b>CVK</b> -----
W1NVU7	353	----- <b>NGD</b> GG <b>R</b> GR <b>WLCRCRC</b> -----
W1PAP0	404	GAVE-----RGE-- <b>DGV</b> V <b>G</b> A- <b>EAV</b> AR <b>LVR</b> -----
W1PD80	403	-AVE-----RGD-- <b>DGF</b> V <b>K</b> A- <b>EEV</b> AR <b>CVR</b> -----
W1PZW0	402	-RLE-----RDD-- <b>NGF</b> V <b>K</b> A- <b>EAL</b> AR <b>CLR</b> -----
AtUGT82A1	407	-RLS-----GFG <b>E</b> - <b>KEV</b> ED <b>GLR</b> -----
W1NUV1	530	-DLM----- <b>RKL</b> RR- <b>EEV</b> K <b>ENME</b> -----
AtUGT86A1	410	-NLC----- <b>EKK</b> T <b>ITR</b> - <b>DQV</b> SAN <b>VK</b> -----
AtUGT87A1	386	-GIE-----RKKQ <b>MELLIVS</b> - <b>DEI</b> K <b>ELVK</b> -----
W1P188	395	-RVR-----SGPMD <b>EME</b> V <b>VDRE</b> IAN <b>VVR</b> -----
W1P188	1	-----

W1P302	398	-RVR-----	SGPMGENELVGRGE	ETIASLVR-----
AtUGT78D1	391	-MMD-----	NGVFTK-	EGFEKCLN-----
W1PTN8	389	-TIE-----	GGVLTR-	EGVEGAVH-----
ZmUGT77A1	410	-AFE-----	GAMTS-	AGVATAVE-----
AtUGT83A1	399	-GLE-----	RDA--	RGVVPR-LEVKKKID-----
W1NWE7	280	-ELE-----	GNK--	DGFFSK-EEIRGKVE-----
W1NXD5	400	-GLK-----	ANE--	DGVFSK-EEIKSKVE-----
AtUGT75B1	390	-RVR-----	ENK--	DGLVER-GEIRRCLE-----
AtUGT84A1	408	-RLG-----	RGATEERVVPR-	EEVAEKLL-----
W1PLB6	399	-RLK-----	RGS--	EGFVRR-EEVCRCMD-----
U5CXN6	400	-RLE-----	RYS--	EGVVR-EEVSRCTE-----
U5D2S8	390	-RLE-----	RDA--	EGVVR-DEVCRCTE-----
U5D817	397	-RLE-----	RDA--	EGVVR-EEVCRCIK-----
W1NFL7	397	-RLE-----	RDA--	EGVVR-EEVCRCIE-----
W1NFN9	397	-RLE-----	RDA--	EGVVR-EEVCRCIE-----
U5DBW3	394	-RLK-----	---	VDLVTR-DEVERCIA-----
W1PE57	397	-RLR-----	AGP--	DGVVSR-EEVAKCIT-----
U5D3G1	385	-RAK-----	VRE--	DGVLEE-AELKRCIE-----
AtUGT74B1	395	-RAK-----	---	EEAGEVIVKS-EELVRCIK-----
U5DFQ6	402	-RAR-----	VND--	MGFVSR-GELERCIR-----
U5DI88	429	-RAK-----	ADD--	RGIVCR-DEVAKCLR-----
U5DCN3	398	-RPK-----	ADN--	RGIVGR-EEVERCLR-----
U5D531	337	-RVE-----	IGD--	KGFVLR-GELERCIR-----
U5CUG8	376	-RLE-----	VGN--	KGFVLK-GELERCIR-----
W1PLP3	323	-RLE-----	VGN--	KGFVLK-RELERCIR-----
U5DI92	397	-RAE-----	ADE--	TEVVRR-GELERCIR-----
U5D3V6	395	-RAE-----	ADE--	QEVVRR-GELERCIR-----
U5DDJ3	397	-RVE-----	VDE--	KEVVRS-GEVERCIR-----
U5DFQ3	397	-RVE-----	VDE--	KEVVRR-GEVERCIR-----
U5DI97	397	-CAE-----	VDG--	NEVIRK-GELERCIR-----
U5DCP2	398	-RVE-----	VDE--	KEVVRS-GELERCIR-----
U5DDK2	398	-RVE-----	VDD--	KKMVQR-GELERCIR-----
OsUGT709A3	419	-DMK-----	---	DVCDA-AVVARMVR-----
SgUGT720A1	407	-EME-----	---	DRYDR-VSVETMVR-----
U5CX27	300	-EIN-----	---	NDVKKR-EEVEALVR-----
U5D008	311	-EIN-----	---	NDVKKR-EDVEELVR-----
W1PMY7	325	-EIG-----	---	DDVKKR-QKVETQVK-----
AtUGT85A1	422	-EIG-----	---	GDVKKR-EEVEAVVR-----
U5CVP6	416	-EIE-----	---	NDVKKR-EEVEALVR-----
U5CNJ5	415	-EID-----	---	NNVKKR-EEVEAHVK-----
U5CNG3	417	-EID-----	---	NNVKKR-EEVEAQVR-----
U5CXJ9	417	-EID-----	---	NNVKKR-EEVEAQVR-----
AtUGT76B1	386	-HLE-----	---	NKVER-LVIENAVR-----
W1PV81	376	-----	---	ESSLEK-----
W1PVY0	386	-EMG-----	---	REVER-GEVEMVVR-----
W1PV56	419	-EMR-----	---	REVER-GEVEMVVR-----
AtUGT90A1	401	-RVE-----	TEDGSVK	GFVTR-EEELSGKIK-----
OsUGT97A1	428	-RAV-----	RGG--	GVVVGR-AEVAGKVG-----
W1PH20	394	-RVL-----	---	EEGEGEGGNLVEGEVISGKVA-----
W1PBB6	415	-RVV-----	WGVGEK-	GEIVER-EVVAREVV-----
W1PHN8	415	-PVA-----	---	PFALSSALCPLPYPPFALS-----
W1PRF4	372	-VWP-----	---	QGWCGERVVNR-EDVCKQIK-----
AtUGT71B1	400	-EVKKEYRRD	FLVEEP--	EIVTA-DEIERGIK-----
W1P1M0	392	-RPK-----	MED--	DGIVYK-HEIERAVR-----
AtUGT72B1	405	-RPR-----	AGD--	DGLVRR-EEVARVVK-----
W1PMA9	405	-RPK-----	MQE--	DGIIKV-EEIDRVVR-----
W1PP20	403	-RPK-----	IQE--	DGIIKE-EEIERVVR-----
AtUGT88A1	400	-SMN-----	---	ESE-TGFVSS-TEVEKRVQ-----
U5DB27	361	-EVD-----	SGS--	CGLVKA-EKLEKAVR-----
U5DBY1	417	-GVG-----	VGS--	GLVKA-EELEKAVQ-----
U5DBY4	413	-ELK-----	MEE--	DGWVKA-EELERVAR-----
U5D276	400	-EME-----	MAE--	DGVVRA-EALGSRVR-----
U5DB32	400	-EVE-----	MGE--	DGVVRA-EELGSRVR-----
W1NHX5	398	-AME-----	IGD--	SGFVDG-GAVARCVK-----
W1NVU7	353	-----	---	NGDGGRGRWLCRCRC-----
W1PAP0	404	GAVE-----	RGE--	DGVVGA-EAVARLVR-----
W1PD80	403	-AVE-----	RGD--	DGFVKA-EEVARCVR-----
W1PZW0	402	-RLE-----	RDD--	NGFVKA-EALARCLR-----
AtUGT82A1	407	-RLS-----	---	GFG-KEVEDGLR-----
W1NUV1	530	-DLM-----	---	RKLRR-EEVKENME-----
AtUGT86A1	410	-NLC-----	---	EKKTITR-DQVSANVK-----
AtUGT87A1	386	-GIE-----	---	RKKQMELLIVS-DEIKELVK-----
W1P188	395	-RVR-----	SGPMDEME	VVDREETIANVVR-----
W1P188	1	-----	-----	-----

U5CYW0	402	-----ELM-----	-----QMSECA	RLAQPDAVFNIVRDIDDLARKRGPM
W1PAZ2	469	-----QWF-----	-----GPKADELKSMSQNALKLARPD	AVFKIVH-----
AtUGT81A1	484	-----DWF-----	-----GPASKELEIMSQNALRLAKPEA	AVFKIVH-----
W1PTT2	482	-----VYI-----	-----PHCN SQDQWKAHFGNQWSRFVERK	AAFDPM AVL-AP
U5D3V5				
W1NUG7	483	-----QYL-----	-----PHHTKRAQWVQHYGPKWAEFEERK	ATFD PKNIL-AP
W1PC48	465	-----QYL-----	-----PHYTTKSEWAAHFSHRWQE-FVRR	-----KA
W1PP63	481	SDSLKRS DLGGKLY	-----LSYYS	EEHWWKKHFGGKWERFLARKKMFDP LQIL-AP
OsUGT701A2	450	-----ACVDSIMARHRRVADEACRDGGGGRGIGAKQYLA	RQSPARWRDHF GA	
W1PA48	495	-----NAI-----	-----EVALSTKVKT CASQI-ARRISFED	-----GIGE
U5D0T8	459	-----FML-----	-----DPKVKERAEELARVMA	SED-----GVAG
AtUGT80A2	576	-----FM-----	-----LDDKVKSSAETLAKAMKDED-GVAG	AVKAF F KHL-PS
W1PJ19	397	-----RAV-----	-----SE--GDDTETWRN	AKDLQERVVH KLELE-----
W1NU70	452	-----RVV-----	-----ME--AEDTETWIN	AKDLQARVFGNMELQ-----
W1NV64	437	-----RAV-----	-----SE--EDDSETWRN	AKDLQARIFCDTELE-----
W1PKS4	434	-----RAV-----	-----SE--EDDAKTWSN	AKDLQARVFGNTELE-----
AtUGT91A1	428	-----LVM-----	-----VE--EEGKVYR	ENVKEMKGVFGDMDRQD-----
U5CMK2	423	-----QAM-----	-----VE--EEGEPLRVK	AREAE AIFADR-----GL
U5CWM7	389	-----LAM-----	-----VE--EEGEPLRIK	AREMNP IFGNRELSN-----
U5D1X9	427	-----FVM-----	-----VE--EEGEPLRVK	AREM KPIFGNKELSD-----
W1PT00	403	-----MVV-----	-----LE--REGELVRER	ARRLAE-KIK-----ED
OsUGT94A1	421	-----AVM-----	-----RGGEALRRR	ATELREVARRDAEC--DEQIGA
AtUGT79B1	422	-----SVM-----	-----EEGSEI	GEKVRKNHDKWRCVLTDS--GF
W1PQK6	428	-----CVM-----	-----VEADKE	PGKRVRENHERLKQFL LDDKVQC-----
U5D602	409	-----SLM-----	-----AS--EEGSEVREK	ALRLRD-SARQAE--G-GT
U5D5X9	384	-----KLM-----	-----GS--GEGAEMKRK	AAELRD-AARRAVGK--G-GT
U5D5Z2	443	-----KLM-----	-----AS--EGGAEMGRK	AAELRD-AAQQAVGE--G-GT
U5D5X3	341	-----KLMVFEEGGGDEE	EGGGAEGRRPKGGGRGLAPPLIPFSNSS LVLKTI LA	
ZmUGT93B1	423	-----EAM-----	-----LS--DSGMAVR	QRAKELGE-AVRASVAD--G-GN
POUGT95A1	503	-----KLM-----	-----KDEKVHKO	AKELSK-EFEGGFPV--S
U5D0B7	518	-----RVM-----	-----SAVEAR	RQVESIRK-IFSGGFPA--SSRS
AtUGT89A1	416	-----DTM-----	-----G--ESGGEAR	ARAKEM--G--
OsUGT96A1	411	-----DAV-----	-----DG--AKCGDVRAK	AAALAA-AAAAAVEE--G-GS
AtUGT92A1	436	-----LVM-----	-----EET--EVGKEIRK	KAREVKE-LVRRAMVD--GVK-GS
U5CRD3	376	-----VVM-----		
W1P7W1	438	-----EVM-----	-----GG--KKGEELR	KRAATASE-ALRTAAED--G-GS
U5D7I9	435	-----EVV-----	-----KG--EKGAEMRRK	AAEMRE-DLRKGMAEEESGG-GS
W1PFP0	435	-----EVV-----	-----KG--EKGAEMRRK	AGEMRE-ALRKGMAEEESGG-GS
OsUGT99A1	439	-----SAM-----	-----DGG--EGGEARRWR	ARALAA-KARAAARE--G-GS
AtUGT73B1	439	-----EVM-----	-----VGEERRK	RAKELAE-MAKNVKE--G-GS
OsUGT98B1	447	-----MLM-----	-----DEG--EVAQEIR	MRAKDFGM-KARRALEE--G-GS
W1PF90	441	-----EVM-----	-----G--EGGERKRM	RAKELKE-MGRRAVEE--G-GS
W1NIK4	434	-----EVM-----	-----SNSEMRD	RAMKVGE-MAGKAVEE--G-GS
W1PQX3	438	-----EMM-----	-----GNGEMRGR	ARELGE-MARRAVED--G-GS
W1PPW8	436	-----EMM-----	-----GNGEMRGR	ARELGE-MARRAVEE--G-GS
W1PS80	436	-----EMM-----	-----GNG--EMRGR	ARELGE-MARRAVEE--G-GS
AtUGT90A1	424	-----ELM-----	-----EG--ETGKTARK	KNVKEYSK-MAKAALVE--GTGS
OsUGT97A1	448	-----RLM-----	-----DGG--EGGRAIR	ARAAEEVRE-AARAAVGE--G-GA
W1PH20	418	-----ELM-----	-----RG--ERGRKARR	RAAEVAE-AAAREAVAP--G-GS
W1PBB6	438	-----ELM-----	-----SG--EKGRKAR	ERAREIKE-KARKAVGE--G-GS
W1PHN8	438			
W1PRF4	394	-----GFM-----	-----GDVCA	REGAARVRE-EARKAVAD--G-GD
AtUGT71B1	428	-----CAM-----	-----EQDSKMR	KRVMEMKD-KLHV ALVD--G-GS
W1P1M0	412	-----CLM-----	-----EE--EEGKLLRE	KMGELKT-ATDSALAK--G-GT
AtUGT72B1	425	-----GLM-----	-----EG--EEGKGVNR	NKMKE LKE-AAACRV LKD--D-GT
W1PMA9	425	-----GLM-----	-----EG--EEGKALRA	KMRDLRD-AASTAVAE--G-GS
W1PP20	423	-----GLM-----	-----EG--EEGKALRA	KMRDLRDAAAATALAE--G-GS
AtUGT88A1	420	-----EII-----	-----GECPVRE	RTMAMKN-AAELALTE--T-GS
U5DB27	381	-----RLM-----	-----EA--EEGQVR	RRRGKELKE-AARKAVEE--G-GP
U5DBY1	436	-----RLM-----	-----EA--EEGQRL	TRRVKELRE-VARKVVEE--G-GP
U5DBY4	433	-----RLM-----	-----EG--DEGKIVR	KRVKELKE-ASTKVLEE--G-GS
U5D276	420	-----ALM-----	-----EE--EEGRRVR	KRAKELKA-AAMKVVEE--G-GS
U5DB32	420	-----ALM-----	-----EEE--EEGRRVR	KRAKELKE-AAMKALEE--G-GS
W1NHX5	418	-----GLM-----	-----ES--EKGNMLR	DRSKALKE-KAATALSE--G-GT
W1NVU7	368			
W1PAP0	425	-----ELM-----	-----DS--SRSMRV	RERVAKLKE-RAVAALAE--G-GT
W1PD80	423	-----ELM-----	-----ES--EVGKRIR	ERMAAVKD-SAAARALRV--G-GS
W1PZW0	422	-----ELM-----	-----ET--ESGKRLR	ERTTVLKD-GAAKALSE--G-GT
AtUGT82A1	422	-----KVM-----	-----EDQDMGER	LRKL RD-RAMGNEAR--LS
W1NUV1	546	-----RVF-----	-----GEEGFRE	RVREV RGVLA RAIGEE--GS
AtUGT86A1	428	-----RLM-----	-----NG--ETSSSEL	RNNVEKVKR-HLKDAVTT--V-GS
AtUGT87A1	408	-----RFM-----	-----DGES	EEGKEMRRRTCDLSE-ICRGAVAK--G-GS
W1P188	418	-----RLM-----	-----EG--EESKEMR	RRRIEELRE-AGEKALEK--G-GS
W1P188	1			

W1P302	421	-----R	L	F	-----D	G	-----E	S	K	E	M	R	R	I	E	K	L	K	E	-	A	G	L	K	T	F	E	R	---	G	-	G	S				
AtUGT78D1	408	-----D	V	F	-----V	H	-----D	D	G	K	T	M	K	A	N	A	K	K	L	K	E	-	K	L	Q	E	D	F	S	M	---	K	-	G	S		
W1PTN8	406	-----R	L	M	-----A	I	-----E	G	Q	V	L	R	G	N	V	R	T	L	M	D	-	L	A	T	Q	A	T	S	N	---	E	-	G	S			
ZmUGT77A1	426	-----E	L	L	-----R	G	-----E	E	G	A	R	M	R	A	R	A	K	E	L	Q	A	-	L	V	A	E	A	F	G	P	---	G	-	G	E		
AtUGT83A1	419	-----E	I	M	-----R	D	-----G	G	E	Y	E	E	R	A	M	K	V	K	E	-	I	V	M	K	S	V	A	K	---	D	-	G	I				
W1NWE7	300	-----E	L	L	-----G	D	-----Q	A	I	R	E	R	A	L	K	L	K	E	-	Q	A	I	Y	S	V	T	E	---	---	---	---	---	G	T			
W1NXD5	420	-----D	L	M	-----G	D	-----E	G	E	G	M	R	E	R	V	L	K	L	K	E	-	E	A	I	S	S	V	T	E	---	---	---	---	G	S		
AtUGT75B1	410	-----A	V	M	-----E	E	-----K	S	V	E	L	R	E	N	A	K	K	W	K	R	-	L	A	M	E	A	G	R	E	---	G	-	G	S			
AtUGT84A1	430	-----E	A	T	-----V	G	-----E	K	A	E	E	L	R	K	N	A	L	K	W	K	A	-	E	A	E	A	V	A	P	---	G	-	G	S			
W1PLB6	419	-----E	I	M	-----E	G	-----P	S	A	L	R	I	R	D	N	A	I	K	L	K	E	-	A	A	R	D	A	W	E	T	---	G	-	G	S		
U5CXN6	420	-----E	I	T	-----K	G	-----P	R	A	S	T	I	R	E	K	A	M	K	L	K	D	-	A	A	R	E	A	L	E	V	---	E	-	G	S		
U5D2S8	410	-----E	I	R	-----E	G	-----P	R	A	S	K	M	R	E	N	A	M	K	L	K	E	-	A	A	R	E	A	L	E	E	---	G	-	G	S		
U5D817	417	-----E	I	R	-----E	G	-----Q	R	A	S	K	I	R	E	N	A	M	K	L	K	E	-	A	A	R	E	A	L	E	E	---	G	-	G	S		
W1NFL7	417	-----E	I	R	-----E	G	-----P	R	A	A	K	I	R	E	N	A	M	K	L	K	E	-	A	A	R	E	A	L	E	E	---	G	-	G	S		
W1NFN9	417	-----E	I	R	-----E	G	-----S	R	A	A	K	I	R	E	N	A	M	K	L	K	E	-	A	A	R	E	A	L	E	E	---	G	-	G	S		
U5DBW3	411	-----E	V	T	-----D	G	-----E	K	A	T	E	M	K	K	A	A	A	R	C	K	E	-	M	A	R	A	S	V	A	K	---	C	-	G	S		
W1PE57	417	-----A	T	T	-----Q	G	-----A	M	A	E	E	M	K	T	K	A	W	T	R	K	E	-	A	A	R	A	A	L	A	H	---	G	-	G	S		
U5D3G1	405	-----L	V	M	-----G	G	-----E	G	A	E	M	K	K	K	A	R	E	L	S	W	-	L	A	K	D	A	W	K	E	---	G	-	G	S			
AtUGT74B1	416	-----G	V	M	-----E	G	-----E	S	S	V	K	I	R	E	S	S	K	K	W	K	D	-	L	A	V	K	A	M	S	E	---	G	-	G	S		
U5DFQ6	422	-----E	I	M	-----D	G	-----D	R	G	V	E	I	K	K	N	A	A	K	W	K	I	-	L	A	M	M	A	R	E	I	---	S	-	G	T		
U5DI88	449	-----D	V	L	-----D	D	-----D	R	A	A	Q	I	R	R	N	A	E	R	W	R	E	-	L	A	K	E	A	L	D	E	---	G	-	G	S		
U5DCN3	418	-----E	A	M	-----E	G	-----E	T	A	A	E	M	R	R	N	A	E	R	W	S	E	-	L	A	K	E	A	L	D	E	---	G	-	G	S		
U5D531	357	-----E	V	M	-----E	G	-----E	T	G	A	H	I	R	E	N	A	Q	R	W	R	D	-	L	T	R	E	A	V	A	E	---	G	-	G	S		
U5CUG8	396	-----E	V	M	-----E	G	-----E	R	G	A	H	I	R	A	N	A	Q	R	W	R	D	-	Q	A	R	E	A	V	A	E	---	G	-	G	P		
W1PLP3	343	-----E	V	I	-----E	G	-----E	R	G	A	H	I	R	A	T	A	Q	R	W	R	S	-	---	---	---	---	---	---	---	---	---	---	G	-	---		
U5DI92	417	-----E	F	R	-----	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	-	---	---	---	---	---	---	---	---	---	---	---	---	---			
U5D3V6	415	-----E	V	M	-----E	G	-----E	R	G	A	E	L	R	R	N	A	Q	R	W	R	D	-	L	A	L	E	A	V	A	E	---	G	-	G	S		
U5DDJ3	417	-----E	V	M	-----E	G	-----E	R	G	A	E	L	R	R	N	A	Q	R	W	K	D	-	L	A	W	E	A	V	A	E	---	G	-	G	S		
U5DFQ3	417	-----E	V	M	-----E	G	-----E	R	G	A	E	L	R	R	N	A	R	R	W	R	D	-	F	A	W	E	A	V	A	E	---	G	-	G	S		
U5DI97	417	-----E	V	M	-----E	G	-----E	R	G	A	E	L	R	R	N	A	H	R	W	R	G	-	L	T	T	E	A	V	A	E	---	G	-	G	T		
U5DCP2	418	-----E	V	M	-----D	G	-----E	T	G	A	E	L	R	E	N	G	Q	R	W	K	K	-	L	A	R	A	A	V	A	D	---	G	-	G	S		
U5DDK2	418	-----E	I	M	-----D	G	-----E	K	G	A	E	F	R	E	N	A	Q	R	W	K	G	-	L	A	R	A	A	V	A	E	---	R	-	G	T		
OsUGT709A3	435	-----E	A	M	-----	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	-	---	---	---	---	---	---	---	---	---	---	---	---	---			
SgUGT720A1	423	-----S	I	M	-----E	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	-	---	---	---	---	---	---	---	---	---	---	---	---	---			
U5CX27	316	-----E	L	M	-----E	G	-----E	K	G	K	E	M	Q	L	K	A	K	K	W	K	E	-	I	S	K	T	V	V	Q	L	---	G	-	G	S		
U5D008	327	-----K	L	M	-----G	G	-----E	K	G	K	E	L	Q	L	K	A	K	K	S	K	V	-	S	S	K	I	V	V	Q	F	---	G	-	G	S		
W1PMY7	341	-----E	M	I	-----E	G	-----L	K	G	M	K	M	R	A	N	A	M	K	W	K	E	-	S	S	E	R	A	I	G	S	---	G	-	G	S		
AtUGT85A1	438	-----E	L	M	-----D	G	-----E	K	G	K	K	M	R	E	K	A	V	E	W	Q	R	-	L	A	E	K	A	T	E	H	---	K	-	L	S		
U5CVP6	432	-----E	M	M	-----H	G	-----E	K	G	K	A	M	R	A	K	V	R	R	W	R	E	-	L	S	E	K	S	V	E	A	---	G	-	G	Y		
U5CNJ5	431	-----E	L	L	-----Q	G	-----D	K	G	K	E	M	R	K	M	A	M	K	W	K	E	-	L	A	E	N	A	I	E	---	G	-	G	S			
U5CNG3	433	-----E	L	M	-----K	G	-----E	K	G	K	E	M	R	E	K	A	M	K	W	K	E	-	E	S	E	K	A	I	Q	C	---	G	-	G	S		
U5CXJ9	433	-----E	L	M	-----K	G	-----E	K	G	K	E	M	R	E	K	A	M	K	W	K	E	-	E	S	E	K	A	I	Q	C	---	G	-	G	S		
AtUGT76B1	402	-----T	L	M	-----T	S	-----S	E	G	E	E	I	R	K	R	I	M	P	M	K	E	-	T	V	E	Q	C	L	K	L	---	G	-	G	S		
W1PV81	382	-----	---	---	-----	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	-	---	---	---	---	---	---	---	---	---	---	---	---	---			
W1PVY0	402	-----R	L	L	-----V	E	-----R	E	G	E	E	M	R	E	K	A	S	E	L	K	K	-	V	V	Q	R	S	L	G	K	---	G	-	G	S		
W1PX56	435	-----R	L	L	-----E	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	-	V	V	E	K	S	L	G	K	---	G	-	G	S			
AtUGT90A1	424	-----E	L	M	-----E	G	-----E	T	G	K	T	A	R	K	N	V	K	E	Y	S	K	-	M	A	K	A	A	L	V	E	---	G	-	G	S		
OsUGT97A1	448	-----R	L	M	-----D	G	-----E	E	G	R	A	I	R	A	R	A	E	E	V	R	E	-	A	A	R	A	A	V	G	E	---	G	-	G	A		
W1PH20	418	-----E	L	M	-----R	G	-----E	R	G	R	K	A	R	R	R	A	A	E	V	A	E	-	A	A	R	E	A	V	A	P	---	G	-	G	S		
W1PBB6	438	-----E	L	M	-----S	G	-----E	K	G	R	K	A	R	E	R	A	R	E	I	K	E	-	K	A	R	K	A	V	G	E	---	G	-	G	S		
W1PHN8	438	-----	---	---	-----	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	-	---	---	---	---	---	---	---	---	---	---	---	---	---			
W1PRF4	394	-----G	F	M	-----G	D	-----V	C	A	R	E	G	A	A	R	V	R	E	-	E	A	R	K	A	V	A	D	---	---	---	---	---	---	G	-	G	D
AtUGT71B1	428	-----C	A	M	-----	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	-	E	Q	D	S	K	M	R	K	R	V	M	E	M	K	D	
W1P1M0	412	-----C	L	M	-----E	E	-----E	E	G	K	L	L	R	E	K	M	G	E	L	K	T	-	A	T	D	S	A	L	A	K	---	G	-	G	T		
AtUGT72B1	425	-----G	L	M	-----E	G	-----E	E	G	K	G	V	R	N	K	M	K	E	L	K	E	-	A	A	C	R	V	L	K	D	---	D	-	G	T		
W1PMA9	425	-----G	L	M	-----E	G	-----E	E	G	K	A	L	R	A	K	M	R	D	L	R	D	-	A	A	S	T	A	V	A	E	---	G	-	G	S		
W1PP20	423	-----G	L	M	-----E	G	-----E	E	G	K	A	L	R	A	K	M	R	D	L	R	D	-	A	A	A	A	T	A	L	A	E	---	G	-	G	S	
AtUGT88A1	420	-----E	I	I	-----	---	---	---	---	---	---	---	---	---	---	---	---	---	---	---	-	---	---	---	---	---	---	---	---	---	---	---	---	---	---		
U5DB27	381	-----R	L	M	-----E	A	-----E	E	G	Q	R	V	R	R	R	G	K	E	L	K	E	-	A	A	R	K	A	V	E	E	---	G	-	G	P		
U5DBY1	436	-----R	L	M	-----E	A	-----E	E	G	Q	R	L	T	R	R	V	K	E	L	R	E	-	V	A	R	K	V	V	E	E	---	G	-	G	P		
U5DBY4	433	-----R	L	M	-----E	G	-----D	E	G	K	I	V	R	K	R	V	K	E	L	K	E	-	A	S	T	K	V	L	E	E	---	G	-	G	S		
U5D276	420	-----A	L	M	-----E	E	-----E	E	G	R	R	V	R	K	R	A	K	E	L	K	A	-	A	A	M	K	V	V	E	E	---	G	-	G	S		



U5CYW0	437	SSLTYSSMTSS	---	FASIPI	-----
W1PAZ2	500	---D	HELV	RQ---	RSMLPQYACAS
AtUGT81A1	515	---DM	HELV	RK---	KNSLPQLSCTA
W1PTT2	520	GQRIFPRVQSSQ	-----		
U5D3V5					
W1NUG7	521	GQRIFSAAQPI	---	ILPSASSS	-----
W1PC48	493	AYDP	AILAPG	---	QRIFPKANAF
W1PP63	531	GQRIFKR	---	KYSA-HL	-----
OsUGT701A2	499	GWGRFAARKAR	---	FDPLHVLGPGQGIFPRTDSAGSM	-----
W1PA48	525	ALRI	KEEKIC	---	IPRPED
U5D0T8	485	AVKAFHKHLPRNMPQ	Q	Q	Q
AtUGT80A2	613	AKQNTSDPIPEPSGFLSFRKCFGCS	-----		
W1PJ19	426	-DQYVQEFIDR	---	VAF	-----
W1NU70	481	-DKYIKLFVDH	---	VDTLVCCKKE	-----
W1NV64	466	-MHYISKFVNC	---	ATKLVC PKS	-----
W1PKS4	463	-KHYISKFIDC	---	ATKLDYSKS	-----
AtUGT91A1	457	--RYVDSFLEY	---	LVTNR	-----
U5CMK2	450	HDRYMNDFIKY	---	LQDHRRN	-----
U5CWM7	418	--MYLDGFANF	---	LKDNK	-----
U5D1X9	456	--MYLDGFANF	---	LKNNK	-----
W1PT00	428	GDKGVDELVKE	---	IRRLSLIKGDENLA	-----
OsUGT94A1	454	LLHRMARLCGK	---	GTGRAAQLGH	-----
AtUGT79B1	451	SDGYIDKFEQN	---	LIELVKS	-----
W1PQK6	460	-RTFEEDFVKK	---	LRCLLV	-----
U5D602	438	SHTATNSFLAL	---	ISRP	-----
U5D5X9	415	SRAALDSFLAH	---	ISRPWSILPDSCP	-----
U5D5Z2	474	SGAALDTFLAL	---	ISRP	-----
U5D5X3	390	AIYYLMHLLDY	---	LTLIAFSRICL	-----
ZmUGT93B1	454	SRKDLDDFIGY	---	ITR	-----
POUGT95A1	529	SVKALGAFVEF	---	ISQKAT	-----
U5D0B7	547	ALDDFRQLVQQ	---	LNQQE	-----
AtUGT89A1					
OsUGT96A1	442	SRVAFESMAKE	---	LETACMSPSFG	-----
AtUGT92A1	470	SVIG	EEFLDQ	-A-	MVKKVEN
U5CRD3	381	EE	-----		
W1P7W1	469	SLRAVEEFAKT	---	LVEGMAC	-----
U5D7I9	470	SLRALDEFVAS	---	IVSPHVHFA	-----
W1PFP0	470	SLRALDEFVAS	---	IVSPHV	-----
OsUGT99A1	471	SHANLDDLVER	---	FRPRHVAASEAANGTTAPPPPPRQ	-----
AtUGT73B1	467	SDLEVDRLMEE	---	LTLVLQKEKV	-----
OsUGT98B1	479	SYNNIKLLIQE	---	MGNKQNASG	-----
W1PF90	471	SHMSLGRIVED	---	LLNGLKQGA	-----
W1NIK4	462	SHLSLSLLIEE	---	LVSYNNRKQ	-----
W1PQX3	466	SHMNLTLFIQD	---	MITYKKPHAM	-----
W1PPW8	464	SYMNLTLFIQD	---	MIAYKKARTMDTAPVCDSPPTCTSSK	-----
W1PS80	464	SYMNLTLFIQD	---	MIAYKKARTMDTAPVCDSPPPCTSSE	-----
AtUGT90A1	456	SWKNLDMILKE	---	LCKSRDSNGASE	-----
OsUGT97A1	480	SREALRRLVDE	---	LRSSYVVAGDGTAAASSANGGSGKC	-----
W1PH20	449	SYTALANLVED	---	LAGKRR	-----
W1PBB6	469	SHNNLSGFIDE	---	FCKRKP	-----
W1PHN8	440	TPYIYNRIV	---		
W1PRF4	422	SHLGTVRAMEK	---	WSHH	-----
AtUGT71B1	457	SNCALKKFVQD	---	VVDNVP	-----
W1P1M0	443	SYESVNDVAEE	---	WRFSGSPIWKDMKKVSFVVGNR	-----
AtUGT72B1	456	STKALSLVALK	-WKAHKK	ELEQNGNH	-----
W1PMA9	456	SYHSVVNATQI	---	WRSTV	-----
W1PP20	455	SYGSVVNATQK	---	WRSNV	-----
AtUGT88A1	448	SHTALTTLQ	---	WSPK	-----
U5DB27	412	SYAALATVAGK	---	WVQEK	-----
U5DBY1	467	SYSALATVAGK	-W	VQEK	-----
U5DBY4	464	SYASLASAIHR	---	ILKG	-----
U5D276	451	SQSSLKAAIHE	---	ILKAGVVS	-----
U5DB32	452	SQSSLKAAINE	---	MLKGGEA	-----
W1NHX5	449	SRLSIDAAVEA	---	WLGAVQP	-----
W1NVU7	388	R	-----		
W1PAP0	456	SVTSTAELVNA	---	WLEGPPPPPPPPR	-----
W1PD80	454	SLKNLEAMVNA	---	GKHLPS SLETEA	-----
W1PZW0	453	SLKSLELLVKA	---	WDQAPN	-----
AtUGT82A1	449	SEMNF TFLKNE	---	LN	-----
W1NUV1	574	SQANLDKFVVD	---	LKRKLGGPSKGEVISFDRDVYGE	-----
AtUGT86A1	459	SETNFNLFVSE	---	VRNRIETKLCNVNGLEISPSN	-----
AtUGT87A1	441	SDANIDAFIKD	---	ITKIV	-----
W1P188	449	SDANMNDFLKS	---	LRS	-----
W1P188	1				

W1P302	452	SDISLNAFLES	---	LDC	-----
AtUGT78D1	439	SLENFKILLDE	---	IVKV	-----
W1PTN8	437	STANIKALVEL	---	VVSL	-----
ZmUGT77A1	457	CRKNFDRFVEI	---	VCRA	-----
AtUGT83A1	448	SCENLNKFVNW	---	IKSQVN	-----
W1NWE7	327	SRKNLTSFIEA	---	MKMHV	-----
W1NXD5	447	SMENLHGFMEA	---	MKRKS	-----
AtUGT75B1	440	SDKNMEAFVED	---	ICGESLIQNLCEAEEVKVK	-----
AtUGT84A1	461	SDKNFREFEKLGAGVTKTKDNGY	---		-----
W1PLB6	450	SDKNLKAFTVEE	---	VISLGRQEEVIEARLPSNLKDHALTE	-----
U5CXN6	451	SDKNLRAFAEE	---	VMAMAMARGEAAIRACSPTLNEFEGPIT	-----
U5D2S8	441	SYKNLRFVVEN	---	LMSLALEVQAIRVRLPEDQSPD	-----
U5D817	448	SDKNLRFVVED	---	LISLAREEEAIRVRLPNDQSPDD	-----
W1NFL7	448	SDKNLMVFVED	---	LISLASEEEAIRLRLPKDQSPDD	-----
W1NFN9	448	SDKNLRFVVED	---	LISLASEEEAIRLLLPLKDQSPDD	-----
U5DBW3	442	SERNMQAFVDD	---	IMDNGPIHEPKPGNGVLC	-----
W1PE57	448	SDRNIVAFVDD	---	VMKSGHSQGP	-----
U5D3G1	437	SEINLDRLLEK	---	IVA	-----
AtUGT74B1	447	SDRSINEFIES	---	LGK	-----
U5DFQ6	453	SHRNIEDFVGE	---	LLHT	-----
U5DI88	480	SDRNIDEFVAA	---	VLENKDSGRDSLGVGGPNQA	-----
U5DCN3	449	SDRNINEFVAT	---	VCFRQVRHSCCIGH	-----
U5D531	388	SDNNINEFITK	---	ISIHEGDGNI	-----
U5CUG8	427	SDNNVKEFVTK	---	VPFLLLDREK	-----
W1PLP3					-----
U5DI92					-----
U5D3V6	446	SDNNIKEFVAK	---	VVVSLE	-----
U5DDJ3	448	SDNNIKKFVAN	---	MSSSHLNSM	-----
U5DFQ3	448	SDKNIKQFVAK	---	LSSSHLNSK	-----
U5DI97	448	SDNNIKELVAT	---	LSNFHLNNYHK	-----
U5DCP2	449	SDNNIKEFVAM	---	VSRC	-----
U5DDK2	449	SDNNIEEFVAM	---	VSRCRLKK	-----
OsUGT709A3	463	SAMEIKRLVGFIGELATPIQHAKSESEV	---		-----
SgUGT720A1	453	SYQNLDECLIQD	---	IKKLNQIEGFINNPNFSDLRLV	-----
U5CX27	347	SYNNLERLIKQ	---	VLPEKR	-----
U5D008	358	SHNNFERLIKE	---	VLLKKH	-----
W1PMY7	372	SSENLDRLVVE	---	VLLKKHGE	-----
AtUGT85A1	470	SVMNFETVVS	---	FLLGQKSQD	-----
U5CVP6	463	SLENLDRVIKE	---	VMLKPCQQLGDAC	-----
U5CNJ5	461	SINNLDRLVTQ	---	GQLKLS	-----
U5CNG3	464	SLTNFDALG	---		-----
U5CXJ9	464	SLTNLDALVND	---	VLFKKSRA	-----
AtUGT76B1	433	SFRNLLENLIAY	---	ILSF	-----
W1PV81	385	SYEAFEALVNK	---	LKS	-----
W1PVY0	433	SYEALDSLILQ	---	LMSC	-----
W1PX56	465	SYDALESILILQ	---	LMSC	-----
AtUGT90A1	456	SWKNLDMILKE	---	LCKSRDSNGASE	-----
OsUGT97A1	480	SREALRRLVDE	---	LRSSYVVAGDGTAAASSANGSGKC	-----
W1PH20	449	SYTALANLVED	---	LAGKRR	-----
W1PBB6	469	SHNNLSGFIDE	---	FCKRKP	-----
W1PHN8	440	TPYIYNRIV	---		-----
W1PRF4	422	SHLGLVRAMEK	---	WSHH	-----
AtUGT71B1	457	SNCALKKFVQD	---	VVDNVP	-----
W1P1M0	443	SYESVNDVAEE	---	WRFSGSPIWKDMKKVSFVVGNR	-----
AtUGT72B1	456	STKALSLVALK	---	WKAHKKELEQNGNH	-----
W1PMA9	456	SYHSVVNATQI	---	WRSTV	-----
W1PP20	455	SYGSTVNATQK	---	WRSNV	-----
AtUGT88A1	448	SHTALTTLQ	---	WSPK	-----
U5DB27	412	SYAALATVAGK	---	WVQEK	-----
U5DBY1	467	SYSALATVAGK	---	WVQEK	-----
U5DBY4	464	SYASLASAIHR	---	ILKG	-----
U5D276	451	SQSSLKAAIHE	---	ILKAGVVS	-----
U5DB32	452	SQSSLKAAINE	---	MLKGGEA	-----
W1NHX5	449	SRLSLDAAVEA	---	WLGAVQP	-----
W1NVU7	388	R	---		-----
W1PAP0	456	SVTSTAELVNA	---	WLEGPPPPPPPPR	-----
W1PD80	454	SLKNLEAMVNA	---	GKHLPSLSLETEA	-----
W1PZW0	453	SLKSLLELVKA	---	WDQAPN	-----
AtUGT82A1	449	SEMNFTEFLKNE	---	LN	-----
W1NUV1	574	SQANLTKFVVD	---	LKRKLGGPSKGEVISFDRDVYGE	-----
AtUGT86A1	459	SETNFNLFVSE	---	VRNRIETKLCNVNGLEISPSN	-----
AtUGT87A1	441	SDANIDAFIKD	---	ITKIV	-----
W1P188	449	SDANMNDFLKS	---	LRS	-----
W1P188	1				-----

U5CYW0	-----	FLES	----	LDC	-----
W1PAZ2	-----	LLDE	----	IVKV	-----
AtUGT81A1	-----	LVEL	----	VVSL	-----
W1PTT2	-----	FVEI	----	VCRA	-----
U5D3V5	-----	FVNW	----	IKSQVN	-----
W1NUG7	-----	FIEA	----	MKMHV	-----
W1PC48	-----	FMEA	----	MKRKS	-----
W1PP63	-----	FVED	----	ICGESLIQNLCEAEVVKV	-----
OsUGT701A2	-----	FVEKLGAGVT	-----	TKDNGY	-----
W1PA48	-----	FVEE	----	VISLGRQEEVIEARLPSLNLKDHALTE	-----
U5D0T8	545	KFMC	-----	GMARGEAAIRAC	-----
AtUGT80A2	-----	FVEN	----	LMSLALEVQAIRVRLPEDQSPD	-----
W1PJ19	-----	FVED	----	LISLAREEEAIRVRLPNDQSPDD	-----
W1NU70	-----	FVED	----	LISLASEEEAIRLRLPKDQSPDD	-----
W1NV64	-----	FVED	----	LISLASEEEAIRLLLPLKQSPDD	-----
W1PKS4	-----	FVDD	----	IMDNGPIHEPKPGNGVLC	-----
AtUGT91A1	-----	FVDD	----	VMKSGHSQGP	-----
U5CMK2	-----	LLEK	----	IVA	-----
U5CWM7	-----	FIES	----	LGK	-----
U5D1X9	-----	FVGE	----	LLHT	-----
W1PT00	-----	FVAA	----	VLENKDSGRDSLGVGGPNQA	-----
OsUGT94A1	-----	FVAT	----	VCFRQVRHSCCIGH	-----
AtUGT79B1	-----	FITK	----	ISIHEGDGNI	-----
W1PQK6	-----	FVTK	----	VPFLLLDREK	-----
U5D602	-----				-----
U5D5X9	-----				-----
U5D5Z2	-----	FVAK	----	VVVSLE	-----
U5D5X3	-----	FVAN	----	MSSSHLNSM	-----
ZmUGT93B1	-----	FVAK	----	LSSSHLNSK	-----
PoUGT95A1	-----	LVAT	----	LSNFHLNNYHK	-----
U5D0B7	-----	FVAM	----	VSRC	-----
AtUGT89A1	-----	FVAM	----	VSRCRLKK	-----
OsUGT96A1	-----	LVGF	-----	IGELATPIQHAKSESEV	-----
AtUGT92A1	-----	LIQD	----	IKKLNQIEGFINNPNFSDLLRV	-----
U5CRD3	-----	LIKQ	----	VLPEKR	-----
W1P7W1	-----	LIKE	----	VLLKKH	-----
U5D7I9	-----	LVVE	----	VLLKKHGE	-----
W1PFP0	-----	VVSK	----	FLLGQKSQD	-----
OsUGT99A1	-----	VIKE	----	VMLKPCQQLGDAC	-----
AtUGT73B1	-----	LVTQ	----	GQLKLS	-----
OsUGT98B1	-----	LG	-----		-----
W1PF90	-----	LVND	----	VLFKKSRA	-----
W1NIK4	-----	LIAY	----	ILSF	-----
W1PQX3	-----	LVNK	----	LKS	-----
W1PPW8	-----	LILQ	----	LMSC	-----
W1PS80	-----	LILQ	----	LMSC	-----
AtUGT90A1	-----	ILKE	----	LCKSRDSNGASE	-----
OsUGT97A1	-----	LVDE	----	LRSSYVVAGDGTAAASSANGSGKC	-----
W1PH20	-----	LVED	----	LAGKRR	-----
W1PBB6	-----	FIDE	----	FCKRKP	-----
W1PHN8	-----	IV	-----		-----
W1PRF4	-----	AMEK	----	WSHH	-----
AtUGT71B1	-----	FVQD	----	VVDNVP	-----
W1P1M0	-----	VAEE	----	WRFSGSPIWKDMKKVSFVVGNR	-----
AtUGT72B1	-----	VALK	----	WKAHKKLEQNGNH	-----
W1PMA9	-----	ATQI	----	WRSTV	-----
W1PP20	-----	ATQK	----	WRSNV	-----
AtUGT88A1	-----	LLQS	----	WSPK	-----
U5DB27	-----	VAGK	----	WVQEK	-----
U5DBY1	-----	VAGK	W-	VQEK	-----
U5DBY4	-----	AIHR	----	ILKG	-----
U5D276	-----	AIHE	----	ILKAGVVS	-----
U5DB32	-----	AINE	----	MLKGGEA	-----
W1NHX5	-----	AVEA	----	WLGAVQP	-----
W1NVU7	-----				-----
W1PAP0	-----	LVNA	----	WLEGPPPPPPPPR	-----
W1PD80	-----	MVNA	----	GKHLPSSELETA	-----
W1PZW0	-----	LVKA	----	WDQAPN	-----
AtUGT82A1	-----	LKNE	----	LN	-----
W1NUV1	-----	FVVD	----	LKRKLGGPSKGEVISFDRDVYGE	-----
AtUGT86A1	-----	FVSE	----	VRNRIETKLCNVNGLEISPSN	-----
AtUGT87A1	-----	FIKD	----	ITKIV	-----
W1P188	-----	FLKS	----	LRS	-----
W1P188	1				-----

W1P302	-----FLES---	LDC-----
AtUGT78D1	-----LLDE---	IVKV-----
W1PTN8	-----LVEL---	VVSL-----
ZmUGT77A1	-----FVEI---	VCRA-----
AtUGT83A1	-----FVNW---	IKSQVN-----
W1NWE7	-----FIEA---	MKMHV-----
W1NXD5	-----FMEA---	MKRKS-----
AtUGT75B1	-----FVED---	ICGESLIQNLCEAEVKVK-----
AtUGT84A1	-----FVEKLGAGVTKTKDNGY-----	
W1PLB6	-----FVEE---	VISLGRQEEVIEARLPSLNLKDHALTE-----
U5CXN6	-----FAEE---	VMAMAMARGEAAIRACSPTLNEFEGPIT-----
U5D2S8	-----FVEN---	LMSLALEVQAIRVRLPEDQSPD-----
U5D817	-----FVED---	LISLAREEEAIRVRLPNDQSPDD-----
W1NFL7	-----FVED---	LISLASEEEAIRLRLPKDQSPDD-----
W1NFN9	-----FVED---	LISLASEEEAIRLLLPKDQSPDD-----
U5DBW3	-----FVDD---	IMDNGPIHEPKPGNGVLC-----
W1PE57	-----FVDD---	VMKSGHSQGP-----
U5D3G1	-----LLEK---	IVA-----
AtUGT74B1	-----FIES---	LGK-----
U5DFQ6	-----FVGE---	LLHT-----
U5DI88	-----FVAA---	VLENKDSGRDSLGVGGPNQA-----
U5DCN3	-----FVAT---	VCFRQVRHSCCIGH-----
U5D531	-----FITK---	ISIHEGDGNI-----
U5CUG8	-----FVTK---	VPFLLLDREK-----
W1PLP3	-----	
U5DI92	-----	
U5D3V6	-----FVAK---	VVVFSL-----
U5DDJ3	-----FVAN---	MSSSHLNSM-----
U5DFQ3	-----FVAK---	LSSSHLNSK-----
U5DI97	-----LVAT---	LSNFHLNNYHK-----
U5DCP2	-----FVAM---	VSRC-----
U5DDK2	-----FVAM---	VSRCRLKK-----
OsUGT709A3	-----LVGFIGELATPIQHAKSESEV-----	
SgUGT720A1	-----LIQD---	IKKLNQIEGFINNPNFSDLLRV-----
U5CX27	-----LIKQ---	VLPEKR-----
U5D008	-----LIKE---	VLLKKH-----
W1PMY7	-----LVVE---	VLLKKHGE-----
AtUGT85A1	-----VVSK---	FLLGQKSQD-----
U5CVP6	-----VIKE---	VMLKPCCKQLGDAC-----
U5CNJ5	-----LVTQ---	GQLKLS-----
U5CNG3	-----LG-----	
U5CXJ9	-----LVND---	VLFKKSRA-----
AtUGT76B1	-----LIAI---	ILSF-----
W1PV81	-----LVNK---	LKS-----
W1PVY0	-----LILQ---	LMSC-----
W1PX56	-----LILQ---	LMSC-----
AtUGT90A1	-----ILKE---	LCKSRDSNGASE-----
OsUGT97A1	-----LVDE---	LRSSYVVAGDGTAAASSANGSGKC-----
W1PH20	-----LVED---	LAGKRR-----
W1PBB6	-----FIDE---	FCKRKP-----
W1PHN8	-----IV-----	
W1PRF4	-----AMEK---	WSHH-----
AtUGT71B1	-----FVQD---	VVDNVP-----
W1P1M0	-----VAEE---	WRFSGSPIWKDMKKVSFVVGNR-----
AtUGT72B1	-----VALK---	WKAHKKELEQNGNH-----
W1PMA9	-----ATQI---	WRSTV-----
W1PP20	-----ATQK---	WRSNV-----
AtUGT88A1	-----LLQS---	WSPK-----
U5DB27	-----VAGK---	WVQEK-----
U5DBY1	-----VAGK---	WVQEK-----
U5DBY4	-----AIHR---	ILKG-----
U5D276	-----AIHE---	ILKAGVVS-----
U5DB32	-----AINE---	MLKGGEA-----
W1NHX5	-----AVEA---	WLGAVQP-----
W1NVU7	-----	
W1PAP0	-----LVNA---	WLEGPPPPPPPPR-----
W1PD80	-----MVNA---	GKHLPSSELETA-----
W1PZW0	-----LVKA---	WDQAPN-----
AtUGT82A1	-----LKNE---	LN-----
W1NUV1	-----FVVD---	LKRKLGGPSKGEVISFDRDVYGE-----
AtUGT86A1	-----FVSE---	VRNRIETKLCNVNGLEISPSN-----
AtUGT87A1	-----FIKD---	ITKIV-----
W1P188	-----FLKS---	LRS-----
W1P188	-----	

W1P302	-----FLES---	LDC-----
AtUGT78D1	-----LLDE---	IVKV-----
W1PTN8	-----LVEL---	VVSL-----
ZmUGT77A1	-----FVEI---	VCRA-----
AtUGT83A1	-----FVNW---	IKSQVN-----
W1NWE7	-----FIEA---	MKMHV-----
W1NXD5	-----FMEA---	MKRKS-----
AtUGT75B1	-----FVED---	ICGESLIQNLCEAEVKVK-----
AtUGT84A1	-----FVEKLGAGVTKTKDNGY-----	
W1PLB6	-----FVEE---	VISLGRQEEVIEARLPSLNLKDHALTE-----
U5CXN6	-----FAEE---	VMAMAMARGEAAIRACSPTLNEFEGPIT-----
U5D2S8	-----FVEN---	LMSLALEVQAIRVRLPEDQSPD-----
U5D817	-----FVED---	LISLAREEEAIRVRLPNDQSPDD-----
W1NFL7	-----FVED---	LISLASEEEAIRLRLPKDQSPDD-----
W1NFN9	-----FVED---	LISLASEEEAIRLLLPLKQSPDD-----
U5DBW3	-----FVDD---	IMDNGPIHEPKPGNGVLC-----
W1PE57	-----FVDD---	VMKSGHSQGP-----
U5D3G1	-----LLEK---	IVA-----
AtUGT74B1	-----FIES---	LGK-----
U5DFQ6	-----FVGE---	LLHT-----
U5DI88	-----FVAA---	VLENKDSGRDSLGVGGPNQA-----
U5DCN3	-----FVAT---	VCFRQVRHSCCIGH-----
U5D531	-----FITK---	ISIHEGDGNI-----
U5CUG8	-----FVTK---	VPFLLLDREK-----
W1PLP3	-----	
U5DI92	-----	
U5D3V6	-----FVAK---	VVVFSL-----
U5DDJ3	-----FVAN---	MSSSHLNSM-----
U5DFQ3	-----FVAK---	LSSSHLNSK-----
U5DI97	-----LVAT---	LSNFHLNNYHK-----
U5DCP2	-----FVAM---	VSRC-----
U5DDK2	-----FVAM---	VSRCRLKK-----
OsUGT709A3	-----LVGFIGELATPIQHAKSESEV-----	
SgUGT720A1	-----LIQD---	IKKLNQIEGFINNPNFSDLLRV-----
U5CX27	-----LIKQ---	VLPEKR-----
U5D008	-----LIKE---	VLLKKH-----
W1PMY7	-----LVVE---	VLLKKHGE-----
AtUGT85A1	-----VVSK---	FLLGQKSQD-----
U5CVP6	-----VIKE---	VMLKPCCKQLGDAC-----
U5CNJ5	-----LVTQ---	GQLKLS-----
U5CNG3	-----LG-----	
U5CXJ9	-----LVND---	VLFKKSRA-----
AtUGT76B1	-----LIAI---	ILSF-----
W1PV81	-----LVNK---	LKS-----
W1PVY0	-----LILQ---	LMSC-----
W1PX56	-----LILQ---	LMSC-----
AtUGT90A1	-----ILKE---	LCKSRDSNGASE-----
OsUGT97A1	-----LVDE---	LRSSYVVAGDGTAAASSANGSGKC-----
W1PH20	-----LVED---	LAGKRR-----
W1PBB6	-----FIDE---	FCKRKP-----
W1PHN8	-----IV-----	
W1PRF4	-----AMEK---	WSHH-----
AtUGT71B1	-----FVQD---	VVDNVP-----
W1P1M0	-----VAEE---	WRFSGSPIWKDMKKVSFVVGNR-----
AtUGT72B1	-----VALK---	WKAHKKELEQNGNH-----
W1PMA9	-----ATQI---	WRSTV-----
W1PP20	-----ATQK---	WRSNV-----
AtUGT88A1	-----LLQS---	WSPK-----
U5DB27	-----VAGK---	WVQEK-----
U5DBY1	-----VAGK---	WVQEK-----
U5DBY4	-----AIHR---	ILKG-----
U5D276	-----AIHE---	ILKAGVVS-----
U5DB32	-----AINE---	MLKGGEA-----
W1NHX5	-----AVEA---	WLGAVQP-----
W1NVU7	-----	
W1PAP0	-----LVNA---	WLEGPPPPPPPPR-----
W1PD80	-----MVNA---	GKHLPSSELETA-----
W1PZW0	-----LVKA---	WDQAPN-----
AtUGT82A1	-----LKNE---	LN-----
W1NUV1	-----FVVD---	LKRKLGGPSKGEVISFDRDVYGE-----
AtUGT86A1	-----FVSE---	VRNRIETKLCNVNGLEISPSN-----
AtUGT87A1	-----FIKD---	ITKIV-----
W1P188	-----FLKS---	LRS-----
W1P188	-----	