

Supplementary Table S4a. List of 646 nonsynonymous mutations of PC-B-142CA

| Number | HUGO Symbol | Chromosome | Transcript ID   | HGVSp    | MT Epitope Seq | WT Epitope Seq |
|--------|-------------|------------|-----------------|----------|----------------|----------------|
| 1      | AASDH       | chr4       | ENST00000205214 | p.L144R  | LVLFRRHWK      | LVLFRLHWK      |
| 2      | ABCA10      | chr17      | ENST00000269081 | p.D552H  | LLHEPTAGL      | LLDEPTAGL      |
| 3      | ABCA6       | chr17      | ENST00000284425 | p.E659Q  | LLRQRADHVIL    | LLRERRADHVIL   |
| 4      | ABCG1       | chr21      | ENST00000343687 | p.F264L  | SASCLQVVSLMK   | SASCFQVVSLMK   |
| 5      | ABHD11      | chr7       | ENST00000222800 | p.A238V  | DVLTQHLDK      | DALTQHLDK      |
| 6      | ABL2        | chr1       | ENST00000344730 | p.E720Q  | LPKKSQESAA     | LPKKSEESAA     |
| 7      | ACAP3       | chr1       | ENST00000353662 | p.E625K  | GAEVNWADAK     | GAEVNWADAE     |
| 8      | ACCS        | chr11      | ENST00000263776 | p.D487N  | KSQVAENPR      | KSQVAEDPR      |
| 9      | ACP2        | chr11      | ENST00000256997 | p.E314Q  | PYASCHIFQL     | PYASCHIFEL     |
| 10     | ACSL6       | chr5       | ENST00000379246 | p.A580V  | AQGEYVVPEK     | AQGEYVAPEK     |
| 11     | ACSL6       | chr5       | ENST00000651250 | p.A541V  | LPGEYVVPE      | LPGEYVAPE      |
| 12     | ACTL7A      | chr9       | ENST00000333999 | p.S326C  | KPCLIKSM       | KPSLIKSM       |
| 13     | ACTR5       | chr20      | ENST00000243903 | p.L476V  | LQYIVDRYPK     | LOYILDYRYPK    |
| 14     | ADAM12      | chr10      | ENST00000368676 | p.A571T  | KVSKSSFTK      | KVSKSSFAK      |
| 15     | ADAM29      | chr4       | ENST00000404450 | p.G125E  | CFGGFQEI       | CFGGFQGI       |
| 16     | ADAM8       | chr10      | ENST00000415217 | p.N436T  | RNRCCTSTTCQL   | RNRCCNSTTCQL   |
| 17     | ADCY10      | chr1       | ENST00000367848 | p.Q1154E | ETENCFQIIK     | ETQNCFQIIK     |
| 18     | ADCY9       | chr16      | ENST00000294016 | p.S140C  | IYFAVHMRCRLI   | IYFAVHMRSRLI   |
| 19     | ADGRL1      | chr19      | ENST00000340736 | p.E274K  | KTDIDLAVDK     | KTDIDLAVDE     |
| 20     | ADK         | chr10      | ENST00000372734 | p.E340Q  | RTGCTFPQK      | RTGCTFPEK      |
| 21     | ADRA2A      | chr10      | ENST00000280155 | p.F405L  | FPLFFTYTLTAV   | FPPFFTYTLTAV   |
| 22     | AGFG1       | chr2       | ENST00000310078 | p.L163V  | KPLKSVLGDSA    | KPLKSLLGDSA    |
| 23     | AHCYL2      | chr7       | ENST00000325006 | p.E555K  | ALIELYNAPK     | ALIELYNAPE     |
| 24     | AH11        | chr6       | ENST00000265602 | p.M56I   | TIRSNLHYIK     | TIRSNLHYMK     |
| 25     | AKAP13      | chr15      | ENST00000361243 | p.L1136V | LPVAVQDKA      | LPVQDKA        |
| 26     | AKAP17A     | chrX       | ENST00000313871 | p.R318T  | ERKTEEKLK      | ERKREEKLK      |
| 27     | ALDH9A1     | chr1       | ENST00000354775 | p.S50F   | ARVEPADAF      | ARVEPADAS      |
| 28     | ALK         | chr2       | ENST00000389048 | p.S326L  | LLNLTADSK      | LLNNTADSK      |
| 29     | ALMS1       | chr2       | ENST00000423048 | p.E644Q  | RSPLQEAQSK     | RSPLQEAESK     |
| 30     | ALPK3       | chr15      | ENST00000258888 | p.P1410A | VPGSPGTAG      | VPGSPGTPG      |
| 31     | AMER3       | chr2       | ENST00000321420 | p.R168T  | NLFHIRTNK      | NLFHIRRNK      |
| 32     | AMER3       | chr2       | ENST00000321420 | p.R197Q  | DPGGRQSKAF     | DPGGRRSKAF     |
| 33     | ANAPC5      | chr12      | ENST00000261819 | p.R313C  | CCFGHYQQA      | CRFGHYQQA      |
| 34     | ANGPTL3     | chr1       | ENST00000371129 | p.P31A   | SSFDSLAEPEK    | SSFDSLSEPEK    |
| 35     | ANK2        | chr4       | ENST00000357077 | p.E1204Q | AQPMHSQLVK     | AQPMHSELVK     |
| 36     | ANK3        | chr10      | ENST00000280772 | p.M1005I | SRHHGIRII      | SRHHGMRII      |
| 37     | ANK3        | chr10      | ENST00000280772 | p.E3205Q | KPSPIPEVSQ     | KPSPIPEVSE     |
| 38     | ANKRD44     | chr2       | ENST00000409919 | p.H284D  | FAAASTDGA      | FAAASTHGA      |
| 39     | AP3M2       | chr8       | ENST00000396926 | p.E111Q  | VYQVLEEML      | VYEVLEEML      |
| 40     | APAF1       | chr12      | ENST00000359972 | p.L251V  | CQILVTTRDK     | CQILLTTRDK     |
| 41     | ARFGEF1     | chr8       | ENST00000262215 | p.E1518Q | FTLQIWDKT      | FTLEIWDKT      |
| 42     | ARHGAP26    | chr5       | ENST00000274498 | p.E28Q   | AQLDKTNKFIK    | AELDKTNKFIK    |
| 43     | ARNT2       | chr15      | ENST00000303329 | p.E427K  | FTFQNPYSDK     | FTFQNPYSDE     |
| 44     | ATAD2B      | chr2       | ENST00000381024 | p.H41Y   | YYQPTSYPRLI    | YHQPTSYPRLI    |
| 45     | ATG13       | chr11      | ENST00000359513 | p.P422S  | SPETESSL       | SPETESPL       |
| 46     | ATIC        | chr2       | ENST00000236959 | p.E347K  | VSDGIIAPGYK    | VSDGIIAPGYE    |
| 47     | ATMIN       | chr16      | ENST00000299575 | p.S240C  | AQNQKLCNK      | AQNQKLSNK      |
| 48     | ATP5F1B     | chr12      | ENST00000262030 | p.E448K  | AILGMDLSK      | AILGMDLSE      |
| 49     | AURKC       | chr19      | ENST00000302804 | p.E91K   | RRKIEIAH       | RREIEIAH       |
| 50     | B3GNT5      | chr3       | ENST00000326505 | p.S105Y  | RRYGIRRTW      | RRSGIRRTW      |
| 51     | B4GALNT4    | chr11      | ENST00000329962 | p.E412K  | KYMKMDKEKG     | KYMKMDKEEG     |

| Number | HUGO Symbol | Chromosome | Transcript ID   | HGVSp    | MT Epitope Seq | WT Epitope Seq |
|--------|-------------|------------|-----------------|----------|----------------|----------------|
| 52     | BBC3        | chr19      | ENST00000449228 | p.L74V   | SVLRPVRAR      | SVLRPLRAR      |
| 53     | BCL2L11     | chr2       | ENST00000393256 | p.H57Q   | CPQGSPPQGPL    | CPHGSPPQGPL    |
| 54     | BCOR        | chrX       | ENST00000378444 | p.P397R  | YPKAREGGEGA    | YPKAPEGGEGA    |
| 55     | BEST1       | chr11      | ENST00000378043 | p.W445C  | KACKLKAVDAFK   | KAWKLVAVDAFK   |
| 56     | BHLHE41     | chr12      | ENST00000242728 | p.G81A   | KLTTLAHLEK     | KLTTLGHLEK     |
| 57     | BLM         | chr15      | ENST00000355112 | p.Q615E  | LPVSSTAENI     | LPVSSTAQNI     |
| 58     | BLZF1       | chr1       | ENST00000329281 | p.E137K  | LKNSKRRL       | LKNSRLL        |
| 59     | BMT2        | chr7       | ENST00000297145 | p.G336A  | NYPAMLYIPQDF   | NYPGMLYIPQDF   |
| 60     | BRAF        | chr7       | ENST00000288602 | p.S642C  | CRWSGSHQF      | SRWSGSHQF      |
| 61     | BRCA1       | chr17      | ENST00000354071 | p.S425C  | EYSGCSEKI      | EYSGSSEKI      |
| 62     | BRWD1       | chr21      | ENST00000333229 | p.P944A  | MEHLYEFHPA     | MEHLYEFHPP     |
| 63     | BRWD3       | chrX       | ENST00000373275 | p.E1196Q | LQNRFYRRISAL   | LENRFYRRISAL   |
| 64     | BTBD18      | chr11      | ENST00000436147 | p.Q102H  | SHEEAQDVL      | SQEEAQDVL      |
| 65     | BTNL9       | chr5       | ENST00000327705 | p.L505V  | HPDPLTICPV     | HPDPLTICPL     |
| 66     | BUB1B       | chr15      | ENST00000287598 | p.L664V  | GTIYSQTVSIKK   | GTIYSQTLSIKK   |
| 67     | C10orf113   | chr10      | ENST00000534331 | p.E141Q  | GIKQKFNVSK     | GIKEKFNVSK     |
| 68     | C10orf120   | chr10      | ENST00000329446 | p.Q23H   | ASDTMVHERK     | ASDTMVQERK     |
| 69     | C11orf80    | chr11      | ENST00000525449 | p.S189L  | RISLVSIFLY     | RISSVSIFLY     |
| 70     | C1orf56     | chr1       | ENST00000368926 | p.S230F  | FGRLRVGAL      | SGRLRVGAL      |
| 71     | C3orf20     | chr3       | ENST00000253697 | p.E9Q    | QLYQQYTAMAPK   | ELYQQYTAMAPK   |
| 72     | C4orf54     | chr4       | ENST00000511828 | p.E920K  | HTKVCEIKK      | HTEVCEIKK      |
| 73     | C8orf34     | chr8       | ENST00000348340 | p.I18M   | AYLEKNKMGPLF   | AYLEKNKIGPLF   |
| 74     | C9orf72     | chr9       | ENST00000380003 | p.K156N  | ERQENVQNI      | ERQENVQKI      |
| 75     | CA9         | chr9       | ENST00000378357 | p.A260V  | VVHLSTAFVR     | VVHLSTAFAR     |
| 76     | CAAP1       | chr9       | ENST00000333916 | p.E342D  | LELDMRARA      | LELEMARARA     |
| 77     | CACNA1A     | chr19      | ENST00000360228 | p.G319R  | TVFQCITMER     | TVFQCITMEG     |
| 78     | CACNG6      | chr19      | ENST00000252729 | p.Q201H  | VRALLHRVS      | VRALLQRVS      |
| 79     | CAMSAP3     | chr19      | ENST00000446248 | p.M1248I | IPAKTMSISVDA   | IPAKTMSMSVDA   |
| 80     | CAMSAP3     | chr19      | ENST00000446248 | p.R1046C | GRRAWCS        | GRRAWRS        |
| 81     | CARF        | chr2       | ENST00000402905 | p.H377Y  | AYQYHELETPL    | AHQYHELETPL    |
| 82     | CASTOR1     | chr22      | ENST00000407689 | p.S111F  | APLAEHVVF      | APLAEHVVS      |
| 83     | CASZ1       | chr1       | ENST00000377022 | p.E1077K | AAFPAFAAK      | AAFPAFAAE      |
| 84     | CC2D1A      | chr19      | ENST00000318003 | p.E639Q  | RFQRTFSVI      | RFEQRTFSVI     |
| 85     | CCDC130     | chr19      | ENST00000221554 | p.R203T  | ETDQALQAK      | ERDQALQAK      |
| 86     | CCDC158     | chr4       | ENST00000434846 | p.L108F  | YFRQSVIDL      | YLRQSVIDL      |
| 87     | CCDC171     | chr9       | ENST00000380701 | p.S908C  | GAAKNCFK       | GAAKNSFK       |
| 88     | CCDC39      | chr3       | ENST00000651046 | p.E81K   | SLCKARERETK    | SLCKARERETE    |
| 89     | CCDC6       | chr10      | ENST00000263102 | p.S31L   | AAMQSSCSSTL    | AAMQSSCSSTS    |
| 90     | CCDC85A     | chr2       | ENST00000407595 | p.Q195K  | SIDSQASLCK     | SIDSQASLCQ     |
| 91     | CCDC88A     | chr2       | ENST00000263630 | p.E1321Q | NLQENRHL       | NLEENRHL       |
| 92     | CCR6        | chr6       | ENST00000341935 | p.R339S  | KILKDLWCVRSK   | KILKDLWCVRRK   |
| 93     | CD109       | chr6       | ENST00000287097 | p.P811S  | LVSSDGATVL     | LVPSEDGATVL    |
| 94     | CD177       | chr19      | ENST00000618265 | p.L131F  | FRCPVCLSM      | LRCPVCLSM      |
| 95     | CDC14A      | chr1       | ENST00000336454 | p.E201Q  | HPKSKIQNGYPL   | HPKSKIENGYPL   |
| 96     | CDH8        | chr16      | ENST00000577390 | p.P424A  | SSAIRFSIDR     | SSPIRFSIDR     |
| 97     | CDHR3       | chr7       | ENST00000317716 | p.E198Q  | DFQAGHRFS      | DFAAGHRFS      |
| 98     | CDKL3       | chr5       | ENST00000265334 | p.S557F  | RESKKTESFK     | RESKKTESK      |
| 99     | CDR1        | chrX       | ENST00000370532 | p.L45F   | SRLEDINFM      | SRLEDINLM      |
| 100    | CEBPB       | chr20      | ENST00000303004 | p.S341Y  | LPEPLLAYSG     | LPEPLASSG      |
| 101    | CENPC       | chr4       | ENST00000273853 | p.L801V  | RICVDNDERK     | RICLDNDERK     |
| 102    | CENPC       | chr4       | ENST00000515140 | p.L87V   | CVDNDERSM      | CLDNDERSM      |
| 103    | CEP57       | chr11      | ENST00000325486 | p.R30W   | SMVWHSSSPY     | SMVRHSSSPY     |
| 104    | CERCAM      | chr9       | ENST00000372838 | p.D172V  | LPVVAPMLV      | LPVVAPMLD      |

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|--------|-------------|------------|-----------------|----------|----------------|----------------|
| 105    | CFP         | chrX       | ENST00000377005 | p.E228G  | CSAPGPSQK      | CSAPEPSQK      |
| 106    | CHD1L       | chr1       | ENST00000369258 | p.K546N  | ILGETNDGQ      | ILGETKDGQ      |
| 107    | CHD9        | chr16      | ENST00000398510 | p.D2582Y | GAFAPPLKYLGR   | GAFAPPLKDLGR   |
| 108    | CHPF2       | chr7       | ENST0000035307  | p.E767Q  | MALFEQQQA      | MALFEQEQA      |
| 109    | CHRNA1      | chr2       | ENST00000348749 | p.E404Q  | GIKYIAQTMK     | GIKYIAETMK     |
| 110    | CIITA       | chr16      | ENST00000324288 | p.R539Q  | KKLLQGCTL      | KKLLRGCTL      |
| 111    | CLCN2       | chr3       | ENST00000265593 | p.E475K  | AAFGRVLGK      | AAFGRVLGE      |
| 112    | CLEC3A      | chr16      | ENST00000651443 | p.V16A   | CPRAMAKNGLAI   | CPRAMAKNGLVI   |
| 113    | CLEC3A      | chr16      | ENST00000299642 | p.V7A    | LAICILVIT      | LVICILVIT      |
| 114    | CLPB        | chr11      | ENST00000294053 | p.E332Q  | KREAQERRR      | KREAERERR      |
| 115    | CMPK2       | chr2       | ENST00000256722 | p.S430C  | VVDDCREK       | VVDDSREK       |
| 116    | CNTNAP5     | chr2       | ENST00000431078 | p.A1162T | NAMGFTGCM      | NAMGFAGCM      |
| 117    | COL24A1     | chr1       | ENST00000370571 | p.G732A  | YPADKGAV       | YPGDKGAV       |
| 118    | COL27A1     | chr9       | ENST00000356083 | p.I218M  | FSMYPVTQVA     | FSIYPVTQVA     |
| 119    | COL4A3      | chr2       | ENST00000396578 | p.E547K  | QPKGQVGVPG     | QPEGQVGVPG     |
| 120    | COL6A3      | chr2       | ENST00000295550 | p.P2914R | KPARAKPVA      | KPAPAKPVA      |
| 121    | COL6A5      | chr3       | ENST00000312481 | p.L34V   | VYADVVFVV      | VYADVFLV       |
| 122    | COPZ2       | chr17      | ENST00000621465 | p.E89K   | NVFNKTSRTK     | NVFNKTSRTE     |
| 123    | CPS1        | chr2       | ENST00000233072 | p.D865N  | NMSLNEIEK      | NMSLDEIEK      |
| 124    | CREBRF      | chr5       | ENST00000296953 | p.L441R  | RTPSQQERMLR    | LTPSQQERMLR    |
| 125    | CREG1       | chr1       | ENST00000370509 | p.F61L   | ARVARLVTH      | ARVARFVTH      |
| 126    | CRLF3       | chr17      | ENST00000324238 | p.E72K   | GTLGKLLDK      | GTLGKLLDE      |
| 127    | CSMD3       | chr8       | ENST00000297405 | p.W3337C | GTCSSSPH       | GTWSSSPH       |
| 128    | CSTF3       | chr11      | ENST00000323959 | p.R402K  | KSGRMIFKKAK    | KSGRMIFKKAR    |
| 129    | CXorf38     | chrX       | ENST00000327877 | p.R152Q  | NSCDHFVVDQK    | NSCDHFVVDRK    |
| 130    | CYBB        | chrX       | ENST00000378588 | p.D496N  | FAVHHNEEK      | FAVHHDEEK      |
| 131    | CYP1A2      | chr15      | ENST00000343932 | p.L161M  | SSSCYMEEHVSK   | SSSCYLEEHVSK   |
| 132    | CYP1A2      | chr15      | ENST00000343932 | p.Q273E  | TVQEHYEDFDK    | TVQEHYQDFDK    |
| 133    | CYP1A2      | chr15      | ENST00000343932 | p.R34W   | RPWVPKGL       | RPRVPKGL       |
| 134    | CYP4V2      | chr4       | ENST00000378802 | p.S482W  | KTILWCILR      | KTILSCILR      |
| 135    | CYTH4       | chr22      | ENST00000248901 | p.E10K   | LCHPEPAKL      | LCHPEPAEL      |
| 136    | DALRD3      | chr3       | ENST00000341949 | p.S113L  | SPALLGQRVL     | SPASLGQRVL     |
| 137    | DARS2       | chr1       | ENST00000647645 | p.R402T  | IMESQTLEL      | IMESQRLEL      |
| 138    | DCD         | chr12      | ENST00000546807 | p.E47K   | KPPSKTAKF      | KPPSETAKF      |
| 139    | DCLRE1C     | chr10      | ENST00000357717 | p.D535H  | STNADSQSSSH    | STNADSQSSSD    |
| 140    | DDX21       | chr10      | ENST00000354185 | p.D351N  | FANQVEEIL      | FADQVEEIL      |
| 141    | DDX41       | chr5       | ENST00000330503 | p.G173E  | LVEEDGIPPIK    | LVEGDGIPPIK    |
| 142    | DDX53       | chrX       | ENST00000327968 | p.R28T   | RGSTGSGWSGPF   | RGRSGSGWSGPF   |
| 143    | DENND5A     | chr11      | ENST00000328194 | p.I871M  | HMQNIGEIK      | HIQNIGEIK      |
| 144    | DGKI        | chr7       | ENST00000453654 | p.H4D    | HDIEEPCSL      | HHIEEPCSL      |
| 145    | DGKQ        | chr4       | ENST00000273814 | p.R287T  | GTETQATPESGK   | GRETQATPESGK   |
| 146    | DHRS4       | chr14      | ENST00000313250 | p.E155Q  | MTKAVVPQMEK    | MTKAVVPEMEK    |
| 147    | DIAPH1      | chr5       | ENST00000647433 | p.S28L   | GRSPDELPL      | GRSPDELPS      |
| 148    | DIDO1       | chr20      | ENST00000354665 | p.F385L  | LQPVIEAPGA     | FQPVIEAPGA     |
| 149    | DIRAS3      | chr1       | ENST00000646789 | p.L20M   | MPALLILRA      | LPALLILRA      |
| 150    | DMXL1       | chr5       | ENST00000311085 | p.R2569L | SAGPAILLHK     | SAGPAILRHK     |
| 151    | DMXL1       | chr5       | ENST00000311085 | p.E407Q  | QVFLQQLRK      | EVFLQQLRK      |
| 152    | DNAAF1      | chr16      | ENST00000378553 | p.D351Y  | DYGENVPAS      | DDGENVPAS      |
| 153    | DNAJC10     | chr2       | ENST00000264065 | p.G701A  | FYAPWCAPCQNF   | FYAPWCGPCQNF   |
| 154    | DNAJC30     | chr7       | ENST00000395176 | p.E89K   | GSAEAAKRFR     | GSAEAAERFR     |
| 155    | DOC2A       | chr16      | ENST00000350119 | p.I345T  | TVWDYDTGK      | TVWDYDIGK      |
| 156    | DOCK4       | chr7       | ENST00000423057 | p.D38H   | LTQNGDMLHLLK   | LTQNGDMLDLLK   |
| 157    | DOCK6       | chr19      | ENST00000294618 | p.F1756L | TYFRVGGAHF     | TYFRVGFYGAHF   |

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|--------|-------------|------------|-----------------|----------|----------------|----------------|
| 158    | DOP1A       | chr6       | ENST00000349129 | p.S1238L | LPCISGTTHTL    | SPCISGTTHTL    |
| 159    | DPY19L1     | chr7       | ENST00000310974 | p.P21L   | TGRALRGRRRRAV  | TGRAPRGRRRRAV  |
| 160    | E2F8        | chr11      | ENST00000250024 | p.E821K  | SQLVAKSFFR     | SQLVAESFFR     |
| 161    | EAF2        | chr3       | ENST00000273668 | p.D11H   | HRRERVLKL      | DRRERVLKL      |
| 162    | EBF1        | chr5       | ENST00000313708 | p.V93M   | RTAFVGFMEK     | RTAFVGFVEK     |
| 163    | ECE2        | chr3       | ENST00000357474 | p.L324V  | AYVDYMEEL      | AYLDYMEEL      |
| 164    | ECPAS       | chr9       | ENST00000259335 | p.I273M  | VTNFTIMYVK     | VTNFTIHYVK     |
| 165    | EFCAB6      | chr22      | ENST00000396231 | p.E1034Q | HYHAITQEFQNF   | HYHAITQEFENF   |
| 166    | EFHC1       | chr6       | ENST00000371068 | p.F343L  | TILGRFTLIY     | TILGRFTFIY     |
| 167    | EGFL6       | chrX       | ENST00000361306 | p.R81I   | CICFPGYTGK     | CRCFPGYTGK     |
| 168    | EHBP1       | chr2       | ENST00000263991 | p.E1084G | NGQKQIDTRAAL   | NEQKQIDTRAAL   |
| 169    | EMC1        | chr1       | ENST00000375199 | p.D349H  | HGSMGSFSEK     | DGSMGSFSEK     |
| 170    | EPHX2       | chr8       | ENST00000521400 | p.E435Q  | SPEQPSLSRM     | SPEEPSLSRM     |
| 171    | EPYC        | chr12      | ENST00000261172 | p.L244F  | MYDLHHLFY      | MYDLHHLFY      |
| 172    | ERBB2       | chr17      | ENST00000269571 | p.P1211A | HPPAAFSPA      | HPPAFSPA       |
| 173    | ERG         | chr21      | ENST00000288319 | p.D285Y  | STVPKTEYQR     | STVPKTEDQR     |
| 174    | ERICH6      | chr3       | ENST00000295910 | p.L437V  | HYKHGSKFVTSF   | HYKHGSKFLTFSF  |
| 175    | ETV5        | chr3       | ENST00000306376 | p.E209K  | LQMPKMMPK      | LQMPKMMPE      |
| 176    | EVPL        | chr17      | ENST00000301607 | p.R1452Q | KQPPTVQEK      | KRPPTVQEK      |
| 177    | EYS         | chr6       | ENST00000370621 | p.D1741N | HPSNSSLDF      | HPSDSSLDF      |
| 178    | EYS         | chr6       | ENST00000370621 | p.Q1719E | VLNEESLLDMEK   | VLNQESLLDMEK   |
| 179    | F8          | chrX       | ENST00000360256 | p.Q209H  | SLAKEKTHLHK    | SLAKEKTQTLHK   |
| 180    | FAM114A1    | chr4       | ENST00000358869 | p.E183Q  | VPQITDAAT      | VPEITDAAT      |
| 181    | FAM13B      | chr5       | ENST00000033079 | p.L712F  | ASFQKSLLYY     | ASLQKSLLYY     |
| 182    | FAM162A     | chr3       | ENST00000477892 | p.F117L  | CILMVEIGK      | CIFMVEIGK      |
| 183    | FAM83A      | chr8       | ENST00000276699 | p.D16N   | KRLENVKSQ      | KRLEDVKSQ      |
| 184    | FBLN1       | chr22      | ENST00000262722 | p.E575K  | ATRCERLPCHK    | ATRCERLPCHE    |
| 185    | FBN1        | chr15      | ENST00000316623 | p.M1034I | KIIPSLCTHGK    | KMIPSLCTHGK    |
| 186    | FBXO4       | chr5       | ENST00000281623 | p.E302Q  | KRHQWQDEF      | KRHEWQDEF      |
| 187    | FCSK        | chr16      | ENST00000288078 | p.E114Q  | LPVQNPEAPVEA   | LPVENPEAPVEA   |
| 188    | FCSK        | chr16      | ENST00000288078 | p.E208Q  | YYQGTEAQI      | YYQGTEAEI      |
| 189    | FER1L6      | chr8       | ENST00000522917 | p.S149F  | IIKIFVFHHK     | IIKISVFHHK     |
| 190    | FES         | chr15      | ENST00000328850 | p.E304D  | TVDSVQHTLTSV   | TVESVQHTLTSV   |
| 191    | FGA         | chr4       | ENST00000403106 | p.G381S  | SVSSSTGQWHS    | SVSGSTGQWHS    |
| 192    | FGD2        | chr6       | ENST00000274963 | p.E627D  | YTFKAETEDLK    | YTFKAETEELK    |
| 193    | FGF3        | chr11      | ENST00000334134 | p.E150K  | RRQPSAKRL      | RRQPSAERL      |
| 194    | FKBP14      | chr7       | ENST00000222803 | p.D152N  | DLNDNWKLSK     | DLNDDWKLSK     |
| 195    | FKBP15      | chr9       | ENST00000238256 | p.S881C  | AACDPSEKVKK    | AADSPSEKVKK    |
| 196    | FLNA        | chrX       | ENST00000360319 | p.E2056Q | TFQPAEFII      | TFEPAEFII      |
| 197    | FLOT2       | chr17      | ENST00000394908 | p.E315Q  | AQAQAEKIRK     | AQAQAEKIRK     |
| 198    | FMN1        | chr15      | ENST00000334528 | p.V582I  | IQTDRETFLK     | VQTDRETFLK     |
| 199    | FMNL2       | chr2       | ENST00000288670 | p.R177K  | RSIEDLHK       | RSIEDLHR       |
| 200    | FMO1        | chr1       | ENST00000354841 | p.I499M  | MTQWDRTFKVMK   | MTQWDRTFKVIK   |
| 201    | FNDC1       | chr6       | ENST00000297267 | p.F433L  | LQPGERYLLK     | LQPGERYLFK     |
| 202    | FOLH1       | chr11      | ENST00000256999 | p.F32L   | LFLGLFLF       | FFLLGLFLF      |
| 203    | FOXL1       | chr16      | ENST00000320241 | p.P338A  | FPLQVADTV      | FPLQVPDTV      |
| 204    | FREM2       | chr13      | ENST00000280481 | p.E2021D | YSVDDSAGY      | YSVDESAGY      |
| 205    | FUT4        | chr11      | ENST00000358752 | p.A227V  | RVSYGQAQAVLF   | RASYGQAQAVLF   |
| 206    | FYCO1       | chr3       | ENST00000296137 | p.E59D   | QFDQKDKATLLG   | QFDQKEKATLLG   |
| 207    | G3BP1       | chr5       | ENST00000356245 | p.F124L  | KLYVHNDIFR     | KFYVHNDIFR     |
| 208    | GABRR2      | chr6       | ENST00000402938 | p.V321I  | ASMPRVSYIK     | ASMPRVSYVK     |
| 209    | GABRR2      | chr6       | ENST00000402938 | p.F263L  | RRHIFLFL       | RRHIFLFL       |
| 210    | GAD1        | chr2       | ENST00000358196 | p.F188L  | VRTGHPFL       | VRTGHPFF       |

| Number | HUGO Symbol | Chromosome | Transcript ID   | HGVSp    | MT Epitope Seq | WT Epitope Seq |
|--------|-------------|------------|-----------------|----------|----------------|----------------|
| 211    | GALNT16     | chr14      | ENST00000337827 | p.D311Y  | FNHLGKYA       | FNHLGKYDA      |
| 212    | GALR1       | chr18      | ENST00000299727 | p.I79M   | SMADLAYLLF     | SIADLAYLLF     |
| 213    | GATM        | chr15      | ENST00000396659 | p.S46F   | STQAATASFR     | STQAATASSR     |
| 214    | GCNT2       | chr6       | ENST00000265012 | p.E332Q  | IKWSDMQDR      | IKWSDMEDR      |
| 215    | GFRA1       | chr10      | ENST00000369236 | p.D298H  | TPNYIHSSSL     | TPNYIDSSSL     |
| 216    | GFRA3       | chr5       | ENST00000274721 | p.F304V  | TPNVVSNV       | TPNFVSNV       |
| 217    | GIMAP7      | chr7       | ENST00000313543 | p.G15R   | RSLRIVLVRK     | RSLRIVLVGK     |
| 218    | GIMAP8      | chr7       | ENST00000307271 | p.E539K  | LVFQLGRFTK     | LVFQLGRFTE     |
| 219    | GINS3       | chr16      | ENST00000318129 | p.E172D  | ARLDEMARG      | ARLDEMERG      |
| 220    | GJB1        | chrX       | ENST00000361726 | p.T130I  | KVHGILWWTY     | KVHGTLWWTY     |
| 221    | GK2         | chr4       | ENST00000358842 | p.E77K   | KLNIDISNIK     | ELNIDISNIK     |
| 222    | GLI2        | chr2       | ENST00000361492 | p.A1405S | YARATGHAMASM   | YARATGHAMAAM   |
| 223    | GLIPR1L2    | chr12      | ENST00000378692 | p.E202Q  | KKQKEEMEM      | KKEKEEMEM      |
| 224    | GLRX3       | chr10      | ENST00000331244 | p.S94F   | FLFFKNFQK      | FLFFKNSQK      |
| 225    | GMEB1       | chr1       | ENST00000294409 | p.R191K  | FDLLISSAKA     | FDLLISSARA     |
| 226    | GNB2        | chr7       | ENST00000303210 | p.S161C  | SCGDTTCAL      | SSGDTTCAL      |
| 227    | GP5         | chr3       | ENST00000401815 | p.G59A   | HILLFAMGR      | HILLFGMGR      |
| 228    | GPA33       | chr1       | ENST00000367868 | p.S232F  | SPFMNV         | SPSMNV         |
| 229    | GPR162      | chr12      | ENST00000311268 | p.S260W  | SSLDGWESAK     | SSLDGSESAK     |
| 230    | GPRIN2      | chr10      | ENST00000374314 | p.R309S  | LVPEPGSSTK     | LVPEPGSRTK     |
| 231    | GSDMB       | chr17      | ENST00000360317 | p.Q116H  | GSFQGFHHHK     | GSFQGFHHQK     |
| 232    | GTDC1       | chr2       | ENST00000409214 | p.D223N  | CNTHCGLDTA     | CDTHCGLDTA     |
| 233    | GTPBP8      | chr3       | ENST00000295864 | p.E35K   | SQAFKVLRLPK    | SQAFKAEVRLPK   |
| 234    | GUCY1A1     | chr4       | ENST00000296518 | p.S565Y  | YPHGEPKIM      | SPHGEPKIM      |
| 235    | HBD         | chr11      | ENST00000643122 | p.S51C   | LSCPDAVMGNPK   | LSSPDAVMGNPK   |
| 236    | HCFC2       | chr12      | ENST00000229330 | p.P124A  | PACPRLGHSFSL   | PPCPRLGHSFSL   |
| 237    | HDAC5       | chr17      | ENST00000336057 | p.P817A  | RYDNGNFFAG     | RYDNGNFFPG     |
| 238    | HELQ        | chr4       | ENST00000295488 | p.D81H   | SPECLVLGGGH    | SPECLVLGGGD    |
| 239    | HERC1       | chr15      | ENST00000443617 | p.Q4794E | ISQRFEIMK      | ISQRFQIMK      |
| 240    | HERC1       | chr15      | ENST00000443617 | p.F4757L | QWLWHTLEEF     | QWFWHTLEEF     |
| 241    | HFM1        | chr1       | ENST00000370425 | p.E1289D | VTSFSTDTDK     | VTSFSTDTEK     |
| 242    | HIP1        | chr7       | ENST00000336926 | p.E328Q  | ASSPDSEPVLQK   | ASSPDSEPVLEK   |
| 243    | HIPK3       | chr11      | ENST00000379016 | p.P523R  | TLNHRFVNMK     | TLNHFPVNMK     |
| 244    | HT1H2AH     | chr6       | ENST00000377459 | p.R30P   | FPVGPVHRL      | FPVGRVHRL      |
| 245    | HT1H3C      | chr6       | ENST00000612966 | p.E98K   | AVMALQEACK     | AVMALQEACE     |
| 246    | HIVEP2      | chr6       | ENST00000367603 | p.D2437Y | YPSSEKSQL      | DPSSEKSQL      |
| 247    | HK1         | chr10      | ENST00000359426 | p.G179V  | SVVEGADVVK     | SGVEGADVVK     |
| 248    | HKDC1       | chr10      | ENST00000354624 | p.E672K  | MTCGYEDPNCK    | MTCGYEDPNCE    |
| 249    | HSD17B13    | chr4       | ENST00000302219 | p.P224A  | ASYINIFLR      | PSYINIFLR      |
| 250    | HSPA2       | chr14      | ENST00000247207 | p.E107Q  | QYKGETKTF      | EYKGETKTF      |
| 251    | IDH1        | chr2       | ENST00000345146 | p.D347H  | RAKLHNNKELAF   | RAKLDNNKELAF   |
| 252    | IFT172      | chr2       | ENST00000260570 | p.E1608Q | RFLDLTDAIQE    | RFLDLTDAIEE    |
| 253    | IFT88       | chr13      | ENST00000319980 | p.D684H  | HTYKDTK        | DTYKDTK        |
| 254    | IGKC        | chr2       | ENST00000390237 | p.K100N  | SSPVTNSFNR     | SSPVTKSFNR     |
| 255    | IGSF10      | chr3       | ENST00000282466 | p.V568M  | YRITMVEPL      | YRITVVEPL      |
| 256    | IKZF3       | chr17      | ENST00000346872 | p.R410W  | LSWARNGMPLLK   | LSRARNGMPLLK   |
| 257    | IL17D       | chr13      | ENST00000304920 | p.E40Q   | RPEELLQQL      | RPEELLEQL      |
| 258    | IL7R        | chr5       | ENST00000303115 | p.L382F  | APIFSSSRSL     | APILSSSRSL     |
| 259    | INSM1       | chr20      | ENST00000310227 | p.F231L  | KPKAIRKLHL     | KPKAIRKLHF     |
| 260    | IQCG        | chr3       | ENST00000265239 | p.E44Q   | IPKETDIQI      | IPKETDIEI      |
| 261    | IQSEC2      | chrX       | ENST00000375365 | p.S355L  | LPPVPPVPL      | LPPVPPVPS      |
| 262    | IRAK3       | chr12      | ENST00000261233 | p.S12T   | GRALTAHTLL     | GRALSAHTLL     |
| 263    | IRS2        | chr13      | ENST00000375856 | p.C409Y  | TLSGGYGGRGSK   | TLSGGCGGRGSK   |

| Number | HUGO Symbol | Chromosome | Transcript ID   | HGVSp    | MT Epitope Seq | WT Epitope Seq |
|--------|-------------|------------|-----------------|----------|----------------|----------------|
| 264    | ITCH        | chr20      | ENST00000262650 | p.L790F  | DFNDWQRHA      | DLNDWQRHA      |
| 265    | ITGA1       | chr5       | ENST00000650673 | p.R259G  | GIDTRHSRK      | GIDTARRHSRK    |
| 266    | ITGA1       | chr5       | ENST00000282588 | p.E260G  | GAFTERARR      | EAFETERARR     |
| 267    | ITGA5       | chr12      | ENST00000293379 | p.E913Q  | CPQAECFRL      | CPEAECFRL      |
| 268    | ITGB4       | chr17      | ENST00000200181 | p.L17F   | PWARLLLAAF     | PWARLLLAAL     |
| 269    | ITGB6       | chr2       | ENST00000283249 | p.R489C  | HPGHMGPC       | HPGHMGR        |
| 270    | ITPR2       | chr12      | ENST00000381340 | p.I1277M | MRHMFMNYY      | MRHIFMNYY      |
| 271    | JMJD1C      | chr10      | ENST00000542921 | p.F2271L | VRTCTLIQL      | VRTCTLIQF      |
| 272    | KANK4       | chr1       | ENST00000371153 | p.Q466H  | NHSPAERVL      | NQSPAERVL      |
| 273    | KAT5        | chr11      | ENST00000341318 | p.I474M  | RPQITMNEI      | RPQITINEI      |
| 274    | KCND1       | chrX       | ENST00000218176 | p.P604H  | IPTHPANTPD     | IPTPPANTPD     |
| 275    | KCTD4       | chr13      | ENST00000379108 | p.D74N   | CPFDANGHYF     | CPFDADGHYF     |
| 276    | KIAA0319    | chr6       | ENST00000378214 | p.S264C  | QLQEQQSSNSCGK  | QLQEQQSSNSSGK  |
| 277    | KIF11       | chr10      | ENST00000260731 | p.E489Q  | STQEKLHDAASK   | STEEKLHDAASK   |
| 278    | KIF13B      | chr8       | ENST00000524189 | p.F1752L | GSIGGKQYLR     | GSIGGKQYFR     |
| 279    | KIF16B      | chr20      | ENST00000354981 | p.E722K  | KKFQIFQEL      | EKFQIFQEL      |
| 280    | KIF1B       | chr1       | ENST00000263934 | p.L174F  | LRVREHPLF      | LRVREHPLL      |
| 281    | KIF3C       | chr2       | ENST00000264712 | p.E190Q  | NVKQIEHVM      | NVKEIEHVM      |
| 282    | KIT         | chr4       | ENST00000288135 | p.E839K  | KWMAKPSIF      | KWMAKESIF      |
| 283    | KLB         | chr4       | ENST00000257408 | p.R58T   | FSGDGTAIWSK    | FSGDGRAIWSK    |
| 284    | KLF17       | chr1       | ENST00000372299 | p.Q121E  | RMSPPQEMTIF    | RMSPPQEMTIF    |
| 285    | KLK1        | chr19      | ENST00000301420 | p.S242F  | KPFVAVRVL      | KPSVAVRVL      |
| 286    | KLLN        | chr10      | ENST00000445946 | p.R160T  | LTERGETVPK     | LTERGERVPK     |
| 287    | KNL1        | chr15      | ENST00000346991 | p.S447C  | SIYSNPCIQGCK   | SIYSNPSIQGCK   |
| 288    | KNTC1       | chr12      | ENST00000333479 | p.R578T  | HRANFESTF      | HRANFESRF      |
| 289    | KPRP        | chr1       | ENST00000606109 | p.P258T  | LPTPRLQL       | LPPPRLQL       |
| 290    | L1TD1       | chr1       | ENST00000498273 | p.E614K  | KEADLTEETK     | KEADLTEETE     |
| 291    | LCOR        | chr10      | ENST00000286067 | p.L925F  | SSLQAERFKK     | SSLQAERLKK     |
| 292    | LCOR        | chr10      | ENST00000286067 | p.E752K  | KAAQVNPIMPK    | EAAQVNPIMPK    |
| 293    | LCOR        | chr10      | ENST00000286067 | p.S482I  | TIIDSLEENLDK   | TSIDSLEENLDK   |
| 294    | LCOR        | chr10      | ENST00000286067 | p.Q855H  | HKCSPVQML      | QKCSVPQML      |
| 295    | LCOR        | chr10      | ENST00000286067 | p.H737D  | YNLRHADSLGSL   | YNLRHAHSLGSL   |
| 296    | LLGL2       | chr17      | ENST00000167462 | p.Q411H  | RHNAHFSTM      | RQNAHFSTM      |
| 297    | LONP2       | chr16      | ENST00000285737 | p.G403E  | FHRIALGEV      | FHRIALGGV      |
| 298    | LPA         | chr6       | ENST00000316300 | p.R1692P | TPCSDTEGTVVA   | TRCSDTEGTVVA   |
| 299    | LPIN3       | chr20      | ENST00000632009 | p.L387V  | VPSLDSENAA     | LPSLDSENAA     |
| 300    | LRCH1       | chr13      | ENST00000311191 | p.E111K  | QADLSKNRLVK    | QADLSKNRLVE    |
| 301    | LRFN5       | chr14      | ENST00000298119 | p.H126Y  | MFSGLSNLYHLI   | MFSGLSNLHHLI   |
| 302    | LRP1        | chr12      | ENST00000243077 | p.S2131F | FVPLRTGIGV     | SVPLRTGIGV     |
| 303    | LRP11       | chr6       | ENST00000239367 | p.S179G  | GGYSSYSLSR     | SGYSSYSLSR     |
| 304    | LRRC40      | chr1       | ENST00000370952 | p.D178N  | LSNLENLDL      | LSNLEDLDL      |
| 305    | LRRC41      | chr1       | ENST00000343304 | p.E350Q  | ATSHQAPGTK     | ATSHEAPGTK     |
| 306    | LTBP4       | chr19      | ENST00000204005 | p.K66N   | SPSVNRQVSL     | SPSVRKRQVSL    |
| 307    | LYG1        | chr2       | ENST00000308528 | p.L66V   | MPYLVKYQP      | MPYLLKYQP      |
| 308    | MACF1       | chr1       | ENST00000671089 | p.E698K  | LLSLKNHPAK     | LLSLENHPAK     |
| 309    | MAFG        | chr17      | ENST00000357736 | p.V70M   | ASCRMKRVTQK    | ASCRVKRVTQK    |
| 310    | MAGEE1      | chrX       | ENST00000361470 | p.S259F  | TRDEGPSTF      | TRDEGPSTS      |
| 311    | MAP1LC3B    | chr16      | ENST00000268607 | p.E18Q   | RVQDVRLIR      | RVEDVRLIR      |
| 312    | MAP2K5      | chr15      | ENST00000178640 | p.R282T  | TYLWCLKILHTD   | TYLWCLKILHRD   |
| 313    | MAP4        | chr3       | ENST00000360240 | p.D931N  | ATNTSAPNLK     | ATNTSAPDLK     |
| 314    | MAP4K5      | chr14      | ENST00000013125 | p.E823Q  | GSDRVVVLQSR    | GSDRVVVLRESR   |
| 315    | MAP7D3      | chrX       | ENST00000316077 | p.S174C  | SAMANCESK      | SAMANSESK      |
| 316    | MAP9        | chr4       | ENST00000311277 | p.S372F  | STNNRASSAFAR   | STNNRASSASAR   |

| Number | HUGO Symbol | Chromosome | Transcript ID   | HGVSp    | MT Epitope Seq | WT Epitope Seq |
|--------|-------------|------------|-----------------|----------|----------------|----------------|
| 317    | MAPK8IP1    | chr11      | ENST00000241014 | p.E334K  | SISEEEKGF      | SISEEEEGF      |
| 318    | MD1         | chr3       | ENST00000337774 | p.S478C  | QPFCGGCLL      | QPFCGGSLL      |
| 319    | MAST2       | chr1       | ENST00000361297 | p.E1440K | KKKLPPREV      | KKELPPREV      |
| 320    | MAST4       | chr5       | ENST00000403666 | p.E615K  | VISDEINWPK     | VISDEINWPE     |
| 321    | MAZ         | chr16      | ENST00000219782 | p.E181Q  | AVAPVASALQK    | AVAPVASALEK    |
| 322    | MAZ         | chr16      | ENST00000219782 | p.K344N  | KPYNCSHCGNSF   | KPYNCSHCGKSF   |
| 323    | MBOAT2      | chr2       | ENST00000305997 | p.Q495H  | GHNSFSTTN      | GQNSFSTTN      |
| 324    | MCM2        | chr3       | ENST00000265056 | p.E862K  | AQQDTIEVPK     | AQQDTIEVPE     |
| 325    | MDH1B       | chr2       | ENST00000374412 | p.D94H   | LYYHVTSSM      | LYYDVTSSM      |
| 326    | MED16       | chr19      | ENST00000312090 | p.S362L  | ILLTNTDLK      | ISLTNTDLK      |
| 327    | MED24       | chr17      | ENST00000394126 | p.K346N  | KLNKYSHGDK     | KLKKYSHGDK     |
| 328    | MED24       | chr17      | ENST00000578901 | p.E48Q   | GFGEVEQVL      | GFGEVEEVL      |
| 329    | MEPE        | chr4       | ENST00000361056 | p.E512K  | RRDDSSKSS      | RRDDSSSESS     |
| 330    | MAP1        | chr4       | ENST00000296411 | p.E234K  | GYHGDLNKTF     | GYHGDLNETF     |
| 331    | MFSD6       | chr2       | ENST00000281416 | p.S183F  | LPTNFSFTSF     | LPTNSFSFTSF    |
| 332    | MGA         | chr15      | ENST00000566586 | p.G615V  | RVRPRKLLCK     | RGRPRKLLCK     |
| 333    | MGA         | chr15      | ENST00000566586 | p.Q901E  | SRKAKSENK      | SRKAKSQNR      |
| 334    | MID1        | chrX       | ENST00000616003 | p.D300H  | RRERKLTLLH     | RRERKLTLD      |
| 335    | MIIP        | chr1       | ENST00000235332 | p.P384R  | SVPQVPRPHVRR   | SVPQVPRPHVPR   |
| 336    | MLANA       | chr9       | ENST00000381477 | p.H81D   | DRDSKVSLQ      | HRDSKVSLQ      |
| 337    | MMP1        | chr11      | ENST00000315274 | p.E135K  | RADVDHAIKK     | RADVDHAIK      |
| 338    | MOV10L1     | chr22      | ENST00000262794 | p.E523K  | LTFQPLAK       | LTFQPLAE       |
| 339    | MOV10L1     | chr22      | ENST00000262794 | p.D502H  | IPHLRKCVC      | IPDRLRKCVC     |
| 340    | MPEG1       | chr11      | ENST00000361050 | p.G647R  | RRAMNVIHR      | RRAMNVIHG      |
| 341    | MROH1       | chr8       | ENST00000528919 | p.E671Q  | VRKHLQQLL      | VRKHLQELL      |
| 342    | MROH2B      | chr5       | ENST00000399564 | p.E1109K | KTLWKAK        | KTLWKAE        |
| 343    | MROH8       | chr20      | ENST00000343811 | p.S149T  | KKGSSTIEL      | KKGSSSIEL      |
| 344    | MRTFB       | chr16      | ENST00000573051 | p.E105Q  | GPMELVQKNIL    | GPMELVEKNIL    |
| 345    | MT3         | chr16      | ENST00000200691 | p.E55Q   | GQAAEAEAEK     | GEAAEAEAEK     |
| 346    | MTERF1      | chr7       | ENST00000351870 | p.N16H   | QTSISKGLHY     | QTSISKQY       |
| 347    | MTRF1L      | chr6       | ENST00000367230 | p.E77K   | KLLNEKEREK     | KLLNEKERE      |
| 348    | MX2         | chr21      | ENST00000330714 | p.S611C  | MKLNCHFPS      | MKLNCHFPS      |
| 349    | MYH15       | chr3       | ENST00000273353 | p.D1044N | QVNELEGAL      | QVDELEGAL      |
| 350    | MYLPF       | chr16      | ENST00000322861 | p.E65K   | AAMGRLNVKKN    | AAMGRLNVKNE    |
| 351    | MYO18B      | chr22      | ENST00000335473 | p.E1528Q | AQMONEFLRK     | AQMONEFLRK     |
| 352    | MYO9A       | chr15      | ENST00000356056 | p.H526D  | LLNSKDLEDNTK   | LLNSKDLEHNTK   |
| 353    | NAB2        | chr12      | ENST00000300131 | p.G372D  | HPEELGDPPL     | HPEELGPPPL     |
| 354    | NAGA        | chr22      | ENST00000396398 | p.M302I  | ILQNPLIK       | ILQNPLMIK      |
| 355    | NAT10       | chr11      | ENST00000257829 | p.L13V   | IVIENGVAER     | ILIENGVAER     |
| 356    | NBEAL1      | chr2       | ENST00000434469 | p.E189K  | VGKPAKMRSGQL   | VGKPAEMRSGQL   |
| 357    | NDUFV3      | chr21      | ENST00000354250 | p.D109Y  | SVLFTYEGVPK    | SVLFTDEGVPK    |
| 358    | NDUFV3      | chr21      | ENST00000354250 | p.E257Q  | SQVDEQFLK      | SQVDEEFLK      |
| 359    | NDUFV3      | chr21      | ENST00000354250 | p.E195Q  | HSFQNRAPR      | HSFENRAPR      |
| 360    | NDUFV3      | chr21      | ENST00000354250 | p.E222Q  | ITDPQKPHQPK    | ITDPEKPHQPK    |
| 361    | NDUFV3      | chr21      | ENST00000354250 | p.Q374H  | EDHIPPSNL      | EDQIPPSNL      |
| 362    | NEDD4       | chr15      | ENST00000338963 | p.R673I  | RIGSLQAYTF     | RRGSLQAYTF     |
| 363    | NEK1        | chr4       | ENST00000439128 | p.K347N  | NRVNTGEER      | KRVNTGEER      |
| 364    | NEK8        | chr17      | ENST00000268766 | p.Q49H   | AAHNECQVLK     | AAQNECQVLK     |
| 365    | NR3C2       | chr4       | ENST00000358102 | p.K977T  | ATPLYFHRK      | AKPLYFHRK      |
| 366    | NRG2        | chr5       | ENST00000358522 | p.R836T  | STHSRGPPRAK    | SRHSRGPPRAK    |
| 367    | NRG2        | chr5       | ENST00000358522 | p.E529K  | HTWSLERSK      | HTWSLERSK      |
| 368    | NT5C2       | chr10      | ENST00000343289 | p.F157L  | FYILNTLLNL     | FYILNTLFLNL    |
| 369    | NT5DC4      | chr2       | ENST00000327581 | p.R360K  | ERLEELKKL      | ERLEELKRL      |

| Number | HUGO Symbol | Chromosome | Transcript ID   | HGVSp    | MT Epitope Seq | WT Epitope Seq |
|--------|-------------|------------|-----------------|----------|----------------|----------------|
| 370    | NUP214      | chr9       | ENST00000359428 | p.E32K   | RIFDSPKELPK    | RIFDSPEELPK    |
| 371    | NXF1        | chr11      | ENST00000530875 | p.E4K    | MADKKGKSYSV    | MADEGKSYSV     |
| 372    | NXF1        | chr11      | ENST00000294172 | p.E4K    | KGKSYSEHD      | EGKSYSEHD      |
| 373    | NYAP2       | chr2       | ENST00000272907 | p.A235V  | SPVGDPEEEEEPV  | SPAGDPEEEEEPV  |
| 374    | OMD         | chr9       | ENST00000375550 | p.H356D  | SYIFFCFPDI     | SYIFFCFPHI     |
| 375    | OOSP1       | chr11      | ENST00000644529 | p.S109C  | SRDSTVRCE      | SRDSTVRSE      |
| 376    | OR13C8      | chr9       | ENST00000335040 | p.M199I  | ISITGSNLI      | ISMTGSNLI      |
| 377    | OR2L13      | chr1       | ENST00000358120 | p.H127Y  | RYLAICL        | RYLAICHSL      |
| 378    | OR51B5      | chr11      | ENST00000300773 | p.L61V   | MYFFVAMLAA     | MYFFLAMLAA     |
| 379    | OR51E1      | chr11      | ENST00000396952 | p.K167T  | LPVFITQLPF     | LPVFIKQLPF     |
| 380    | OR51I2      | chr11      | ENST00000341449 | p.E139K  | RYATVLTTKVI    | RYATVLTTEVI    |
| 381    | OR6C68      | chr12      | ENST00000548615 | p.Q195H  | EHMVVASAVLTF   | EQMVVASAVLTF   |
| 382    | OSBPL1A     | chr18      | ENST00000319481 | p.S527C  | ALCNGIKK       | ALSNGIKK       |
| 383    | PAFAH1B2    | chr11      | ENST00000304808 | p.R88G   | LPGGEKPNPL     | LPRGEKPNPL     |
| 384    | PAM         | chr5       | ENST00000304400 | p.H459Y  | AILVRDRIYK     | AILVRDRIHK     |
| 385    | PAPOLG      | chr2       | ENST00000238714 | p.D207N  | VTNEILHLPNK    | VTDEILHLPNK    |
| 386    | PAQR6       | chr1       | ENST00000623241 | p.S14F   | ASFSPPTCLK     | ASSPPTCLK      |
| 387    | PARP1       | chr1       | ENST00000366794 | p.E619K  | AIEHFMKLYK     | AIEHFMKLYE     |
| 388    | PATZ1       | chr22      | ENST00000215919 | p.G298D  | GILPCGLCDK     | GILPCGLCGK     |
| 389    | PCDH10      | chr4       | ENST00000264360 | p.L268H  | SPPGTHVIQL     | SPPGTLVIQL     |
| 390    | PCDH18      | chr4       | ENST00000344876 | p.E678Q  | LKCMIFQYA      | LKCMIFEYA      |
| 391    | PCDHGA5     | chr5       | ENST00000518069 | p.D510N  | SINSNTGVLY     | SINSDTGVLY     |
| 392    | PCDHGA5     | chr5       | ENST00000518069 | p.T628I  | RIARALLDR      | RTARALLDR      |
| 393    | PCDHGC4     | chr5       | ENST00000306593 | p.E534K  | QTQTLQFK       | QTQTLQFE       |
| 394    | PDE4C       | chr19      | ENST00000594465 | p.R20C   | RLSRSCGRHSMT   | RLSRSRGRHSMT   |
| 395    | PER3        | chr1       | ENST00000361923 | p.E256Q  | TVVQKIHSY      | TVVEKIHSY      |
| 396    | PEX1        | chr7       | ENST00000248633 | p.E484Q  | LVISQEEFIK     | LVISEEEFIK     |
| 397    | PEX11A      | chr15      | ENST00000300056 | p.L80V   | SIHATDVVPR     | SIHATDLVPR     |
| 398    | FX          | chrX       | ENST00000379374 | p.D424H  | LPYVVGKMFVHV   | LPYVVGKMFVDV   |
| 399    | PHLDB1      | chr11      | ENST00000361417 | p.R1020C | LPCNLAATL      | LPRNLAATL      |
| 400    | PICALM      | chr11      | ENST00000393346 | p.Q413E  | HPMSTASEVA     | HPMSTASQVA     |
| 401    | PIEZO2      | chr18      | ENST00000503781 | p.D1104H | TRLHLHDGL      | TRLHLDDGL      |
| 402    | PIGG        | chr4       | ENST00000453061 | p.S146N  | SPALLEDNV      | SPALLEDV       |
| 403    | PIK3CA      | chr3       | ENST00000643187 | p.C420R  | RPLAWGNINL     | CPLAWGNINL     |
| 404    | PKD1L1      | chr7       | ENST00000289672 | p.V1481L | LHYNLQSSL      | LHYNLQSSV      |
| 405    | PLCB1       | chr20      | ENST00000338037 | p.Q627H  | NFHTMDLAM      | NFQTMDLAM      |
| 406    | PLEKHH2     | chr2       | ENST00000282406 | p.S307C  | SRCTSTLCS      | SRCTSTLSS      |
| 407    | PLEKHJ1     | chr19      | ENST00000326631 | p.R49W   | YFWTDEAEPVGA   | YFRTDEAEPVGA   |
| 408    | PLEKHS1     | chr10      | ENST00000369310 | p.D431H  | MESHWCRRDSKTA  | MESDWCRDSKTA   |
| 409    | PLSCR4      | chr3       | ENST00000354952 | p.E224K  | GVTIGFVAK      | GVTIGFVAE      |
| 410    | PM20D2      | chr6       | ENST00000275072 | p.E36Q   | AAQRLGALSRAI   | AAERLGALSRAI   |
| 411    | PMFBP1      | chr16      | ENST00000237353 | p.R881Q  | LYQGNDQIM      | LYRGNDQIM      |
| 412    | PMS1        | chr2       | ENST00000409593 | p.L477V  | IVNAILNRNAK    | ILNAILNRNAK    |
| 413    | PODXL2      | chr3       | ENST00000342480 | p.E166Q  | PREEEEEQEE     | PREEEEEEE      |
| 414    | POLA1       | chrX       | ENST00000379059 | p.A1192G | RGYAPEQLQK     | RAYAPEQLQK     |
| 415    | POLD2       | chr7       | ENST00000452185 | p.F403L  | VYLCGNTPSF     | VYFCGNTPSF     |
| 416    | POLR3A      | chr10      | ENST00000372371 | p.E513Q  | LPQTQEAKA      | LPQTEEAKA      |
| 417    | POU2F2      | chr19      | ENST00000389341 | p.D183H  | HPEEPSHL       | HPEEPSDL       |
| 418    | PPP1R12B    | chr1       | ENST00000290419 | p.E169Q  | ERRALQRKM      | ERRALERKM      |
| 419    | PPP1R9B     | chr17      | ENST00000612501 | p.E216K  | TVSQLSAVFK     | TVSQLSAVFE     |
| 420    | PRAMEF1     | chr1       | ENST00000332296 | p.E252Q  | YTSDNELQGR     | YTSDNELEGR     |
| 421    | PRDM15      | chr21      | ENST00000269844 | p.E519K  | TTSRDIPPGTK    | TTSRDIPPGTE    |
| 422    | PRKCE       | chr2       | ENST00000306156 | p.D672H  | FFKEIHWVL      | FFKEIDWVL      |



| Number | HUGO Symbol | Chromosome | Transcript ID   | HGVSp    | MT Epitope Seq | WT Epitope Seq |
|--------|-------------|------------|-----------------|----------|----------------|----------------|
| 423    | PX1         | chr1       | ENST00000261454 | p.D265N  | FYQIYDSTN      | FYQIYDSTD      |
| 424    | PZ          | chr13      | ENST00000342783 | p.W60C   | VLVRCKRAGSYL   | VLVRWKRAGSYL   |
| 425    | PSD4        | chr2       | ENST00000245796 | p.E959Q  | RRGRGRELQ      | RRGRGRELE      |
| 426    | PSKH1       | chr16      | ENST00000291041 | p.E410Q  | VRERQLREL      | VRERELREL      |
| 427    | PSKH2       | chr8       | ENST00000276616 | p.L275V  | QTRLYRKIVK     | QTRLYRKILK     |
| 428    | PSMD6       | chr3       | ENST00000295901 | p.D85N   | KRLNEELED      | KRLDEELED      |
| 429    | PSMD8       | chr19      | ENST00000215071 | p.R38G   | STSGPHFRR      | STSRPHFRR      |
| 430    | PTBP3       | chr9       | ENST00000334318 | p.E190Q  | RIIQNLFY       | RIIENLFY       |
| 431    | PTGES2      | chr9       | ENST00000338961 | p.R52G   | AAAGKGSPP      | AAARKGSPP      |
| 432    | PTGS2       | chr1       | ENST00000367468 | p.S552C  | ASIQCLICNNVK   | ASIQSLICNNVK   |
| 433    | PTPN1       | chr20      | ENST00000371621 | p.F196L  | ASFLNFLK       | ASFLNFLFK      |
| 434    | PTPN13      | chr4       | ENST00000316707 | p.D360N  | NPIYHTREL      | DPIYHTREL      |
| 435    | PTPN18      | chr2       | ENST00000175756 | p.E456Q  | GPRDPPAQWTRV   | GPRDPPAEWTRV   |
| 436    | PTPN4       | chr2       | ENST00000263708 | p.E615Q  | EKLQNEPDF      | EKLENEPDF      |
| 437    | PTPRB       | chr12      | ENST00000261266 | p.S1601L | LYLDTFFSL      | KDTFFSL        |
| 438    | PTPRE       | chr10      | ENST00000254667 | p.H591Y  | FYFHGWPEI      | FHFHGWPEI      |
| 439    | PTPRR       | chr12      | ENST00000283228 | p.E409Q  | QIDIPRHGTK     | EIDIPRHGTK     |
| 440    | PTPRU       | chr1       | ENST00000345512 | p.R1328W | FRVQNISWL      | FRVQNISRL      |
| 441    | PTPRU       | chr1       | ENST00000460170 | p.R1324W | ISWEGHLLVR     | ISREGHLLVR     |
| 442    | PYGO1       | chr15      | ENST00000302000 | p.H368D  | ASCQKWFDR      | ASCQKWFHR      |
| 443    | RAB14       | chr9       | ENST00000373840 | p.R95G   | ALMVYDITGR     | ALMVYDITRR     |
| 444    | RABGAP1L    | chr1       | ENST00000325589 | p.E320K  | ALMNKIQAAK     | ALMNEIQAAK     |
| 445    | RABGAP1L    | chr1       | ENST00000357444 | p.L530V  | AMLDRYRIVTK    | AMLDRYRILTK    |
| 446    | RABGAP1L    | chr1       | ENST00000325589 | p.E274Q  | QTDDEKDSLKK    | ETDDEKDSLKK    |
| 447    | RAD50       | chr5       | ENST00000378823 | p.F669L  | VYSQLITQL      | VYSQFITQL      |
| 448    | RAG1        | chr11      | ENST00000299440 | p.E712K  | FIFRGTGYDK     | FIFRGTGYDE     |
| 449    | RANBP2      | chr2       | ENST00000283195 | p.S1819L | APLAFTLGSEM    | APSAFTLGSEM    |
| 450    | RAPGEF2     | chr4       | ENST00000264431 | p.S307C  | RTFLCSPMEVGK   | RTFLSSPMEVGK   |
| 451    | RBOFOX3     | chr17      | ENST00000648001 | p.E124K  | GTIVEGRKIK     | GTIVEGRKIE     |
| 452    | RBMX        | chrX       | ENST00000320676 | p.D230H  | YPSSRHTRDYA    | YPSSRDTRDYA    |
| 453    | RBP3        | chr10      | ENST00000584701 | p.L826V  | TVPQVAGQR      | TLPQVAGQR      |
| 454    | REV3L       | chr6       | ENST00000368802 | p.G257V  | IGVNPGLQA      | IGGNPGLQA      |
| 455    | RGL3        | chr19      | ENST00000380456 | p.L705V  | MLRRKEGTRNTV   | MLRRKEGTRNTL   |
| 456    | RHOBTB3     | chr5       | ENST00000379982 | p.R220T  | FHGITPPQL      | FHGIRPPQL      |
| 457    | RIF1        | chr2       | ENST00000243326 | p.E1447K | RRKEKEKPL      | RRKEEEKPL      |
| 458    | RIMS1       | chr6       | ENST00000521978 | p.E320Q  | ERRESRRLQ      | ERRESRRL       |
| 459    | RINT1       | chr7       | ENST00000257700 | p.H320Y  | YYFRGNRQTNVL   | YHFRGNRQTNVL   |
| 460    | RIPOR2      | chr6       | ENST00000259698 | p.S670F  | SFDFLNTSDF     | SFDFLNTSDF     |
| 461    | RMC1        | chr18      | ENST00000269221 | p.F116L  | TKNANILGL      | TKNANILGF      |
| 462    | RMDN1       | chr8       | ENST00000406452 | p.R226T  | MPWYQTRIA      | MPWYQRRIA      |
| 463    | RNF103      | chr2       | ENST00000237455 | p.E484K  | FPVESDWDKD     | FPVESDWD       |
| 464    | ROPN1       | chr3       | ENST00000184183 | p.S56C   | VRERCERVA      | VRERSVA        |
| 465    | RP1         | chr8       | ENST00000220676 | p.M712I  | IIVQSDSPLK     | MIVQSDSPLK     |
| 466    | RPAP2       | chr1       | ENST00000610020 | p.E612Q  | IFRTSCLPQ      | IFRTSCLPE      |
| 467    | RPL9        | chr4       | ENST00000295955 | p.D11H   | HIPENV DITLK   | DIPENV DITLK   |
| 468    | RPS19BP1    | chr22      | ENST00000334678 | p.E17Q   | SQAPRPPGQAK    | SEAPRPPGQAK    |
| 469    | RPS6KC1     | chr1       | ENST00000366960 | p.E686Q  | FDDVSGTDQGRP   | FDDVSGTDEGRP   |
| 470    | RRBP1       | chr20      | ENST00000246043 | p.K73N   | KTVEKKGKTNK    | KTVEKKGKTKK    |
| 471    | RTN2        | chr19      | ENST00000245923 | p.L483V  | IVGVIGLFTIPL   | ILGVIGLFTIPL   |
| 472    | RUFY2       | chr10      | ENST00000399200 | p.H105D  | LPQEFYDYDA     | LPQEFYDYHA     |
| 473    | RUFY2       | chr10      | ENST00000466493 | p.H153D  | FYEYDALMM      | FYEYHALMM      |
| 474    | RYR3        | chr15      | ENST00000634891 | p.E3699Q | SVLDLNAFQR     | SVLDLNAFER     |
| 475    | SAT1        | chrX       | ENST00000379270 | p.E48Q   | FGQHPFYHCLVA   | FGEHPFYHCLVA   |

| Number | HUGO Symbol | Chromosome | Transcript ID   | HGVSp    | MT Epitope Seq | WT Epitope Seq |
|--------|-------------|------------|-----------------|----------|----------------|----------------|
| 476    | SBF2        | chr11      | ENST00000256190 | p.E987Q  | QVSPEVVEIFK    | EVSPEVVEIFK    |
| 477    | SBNO1       | chr12      | ENST00000420886 | p.R952S  | SRAKNQRRR      | RRAKNQRRR      |
| 478    | SBSPO       | chr8       | ENST00000297354 | p.R39C   | ACFACGWRL      | ACFRWRL        |
| 479    | SCGB1A1     | chr11      | ENST00000278282 | p.Q28E   | SASAEICPSFER   | SASAEICPSFQR   |
| 480    | SCNN1G      | chr16      | ENST00000300061 | p.E348K  | FVEDVGTEIK     | FVEDVGTEIE     |
| 481    | SEC14L2     | chr22      | ENST00000405717 | p.R43Q   | LQARSFDLQK     | LRARSFDLQK     |
| 482    | SEC14L2     | chr22      | ENST00000405717 | p.F113L  | GPLDAKGLLL     | GPLDAKGLLF     |
| 483    | SEC23B      | chr20      | ENST00000336714 | p.L45F   | VVPLACLLTPFK   | VVPLACLLTPLK   |
| 484    | SEC24A      | chr5       | ENST00000322887 | p.A223G  | GGPPPVRGLTPL   | GGPPPVRALTPL   |
| 485    | SEMA4D      | chr9       | ENST00000420101 | p.R18C   | ADICFVWEK      | ADIRFVWEK      |
| 486    | SHL2        | chr22      | ENST00000327678 | p.S232F  | RELCAHFIRK     | RELCAHSIRK     |
| 487    | SF3B3       | chr16      | ENST00000302516 | p.K1191N | KQNNVSEELDR    | KQKNVSEELDR    |
| 488    | SGCE        | chr7       | ENST00000643193 | p.E435Q  | TTFQRFQASIMK   | TTFQRFQASIMK   |
| 489    | SGCE        | chr7       | ENST00000428696 | p.E428Q  | QVNGIPEERK     | EVNGIPEERK     |
| 490    | SH2D4A      | chr8       | ENST00000519207 | p.Q35E   | MREEEIRRW      | MREEQIRRW      |
| 491    | SH3BP4      | chr2       | ENST00000344528 | p.K700T  | TTEWYIGYY      | TKEWYIGYY      |
| 492    | SH3D19      | chr4       | ENST00000409598 | p.E223K  | PTPSGNLAEK     | PTPSGNLAE      |
| 493    | SHANK2      | chr11      | ENST00000645599 | p.E174K  | SLNRLGGAGK     | SLNRLGGAGE     |
| 494    | SHANK2      | chr11      | ENST00000409161 | p.G691C  | CRDRKGDDK      | GRDRKGDDK      |
| 495    | SHOC1       | chr9       | ENST00000318737 | p.S1105F | SLFKIGSFSITK   | SLFKIGSSSITK   |
| 496    | SHOX2       | chr3       | ENST00000389589 | p.H261Y  | SYCNVTPLSF     | SHCNVTPLSF     |
| 497    | SHPK        | chr17      | ENST00000225519 | p.Q80H   | LPRPHLRV       | LPRPQLRV       |
| 498    | SIN3A       | chr15      | ENST00000360439 | p.H87Y   | HYPTAVQPH      | HHPTAVQPH      |
| 499    | SIPA1L3     | chr19      | ENST00000222345 | p.S1144L | TPYTVLPAGA     | TPYTVSPAGA     |
| 500    | SIPA1L3     | chr19      | ENST00000222345 | p.S1269Y | QYSSHYSSNTL    | QYSSHSSSNTL    |
| 501    | SKOR1       | chr15      | ENST00000341418 | p.Q232K  | GGMEALTTK      | GGMEALTTQ      |
| 502    | SLC11A2     | chr12      | ENST00000262052 | p.E554K  | SISKGLLTEK     | SISKGLLTEE     |
| 503    | SLC26A10    | chr12      | ENST00000320442 | p.Q256H  | RYQVHIVGLL     | RYQVQIVGLL     |
| 504    | SLC30A8     | chr8       | ENST00000456015 | p.D248N  | KPEYKIANPI     | KPEYKIADPI     |
| 505    | SLC35G6     | chr17      | ENST00000412468 | p.S13C   | YLNPPDCTH      | YLNPPDSTH      |
| 506    | SLC45A3     | chr1       | ENST00000367145 | p.L92P   | RPFIWAPSL      | RPFIWALS       |
| 507    | SLC46A1     | chr17      | ENST00000618626 | p.F243L  | KSTRLLTFR      | KSTRLFTFR      |
| 508    | SLC8A2      | chr19      | ENST00000236877 | p.E273Q  | IIGAQGDPPK     | IIGAEGDPPK     |
| 509    | SLCO1B1     | chr12      | ENST00000256958 | p.S548F  | IQVLNLF        | IQVLNLF        |
| 510    | SLCO2A1     | chr3       | ENST00000310926 | p.F557L  | AIGVQLLLMR     | AIGVQFLLMR     |
| 511    | SLCO5A1     | chr8       | ENST00000260126 | p.A685V  | RPFVLGMQF      | RPFALGMQF      |
| 512    | SLFN11      | chr17      | ENST00000308377 | p.E583Q  | QIFSRSLRK      | EIFSRSLRK      |
| 513    | SLFN14      | chr17      | ENST00000415846 | p.E744Q  | KVMKQEMKR      | KVMKEEMKR      |
| 514    | SMARCAL1    | chr2       | ENST00000358207 | p.R668W  | PGWINARTRAL    | PGRINARTRAL    |
| 515    | SMARCAL1    | chr2       | ENST00000358207 | p.S905C  | ELLEAAECF      | ELLEAAESF      |
| 516    | SMC2        | chr9       | ENST00000286398 | p.R502T  | ATFPNLRFAK     | ARFPNLRFAK     |
| 517    | SMCO1       | chr3       | ENST00000397537 | p.E133Q  | LQQGDITL       | LQEGDITL       |
| 518    | SMG1        | chr16      | ENST00000446231 | p.A2786V | MMEGAVSSA      | MMEGAASSA      |
| 519    | SMG7        | chr1       | ENST00000347615 | p.M1107I | IMHPGPSAL      | MMHPGPSAL      |
| 520    | SNRNP200    | chr2       | ENST00000323853 | p.T759I  | GSASIEVLR      | GSASTEVLR      |
| 521    | SNX21       | chr20      | ENST00000342644 | p.E51K   | AKGLSSRLS      | AEGLSSRLS      |
| 522    | SNX32       | chr11      | ENST00000308342 | p.E379Q  | AQLELKHAK      | AELKHKAK       |
| 523    | SORD        | chr15      | ENST00000267814 | p.G173R  | LRHKVLVCGA     | LGHKVLVCGA     |
| 524    | SOS1        | chr2       | ENST00000402219 | p.E891Q  | HTFQQIPSRQK    | HTFEQIPSRQK    |
| 525    | SPATA2L     | chr16      | ENST00000289805 | p.G320R  | RPRDLATPESSA   | RPGDLATPESSA   |
| 526    | SPATA2L     | chr16      | ENST00000289805 | p.D234N  | YRDLQENEG      | YRDLQEDEG      |
| 527    | SPATA5      | chr4       | ENST00000274008 | p.R472T  | EVEKTVVASL     | EVEKRVVASL     |
| 528    | SPECC1L     | chr22      | ENST00000314328 | p.E434K  | QQITQELNSK     | QQITQELNSE     |

| Number | HUGO Symbol  | Chromosome | Transcript ID   | HGVSp    | MT Epitope Seq | WT Epitope Seq |
|--------|--------------|------------|-----------------|----------|----------------|----------------|
| 529    | SPG11        | chr15      | ENST00000261866 | p.Q2432E | LLKDPETGCCLK   | LLKDPQTGCCLK   |
| 530    | SPG7         | chr16      | ENST00000643370 | p.G116A  | SALPVCAASLRK   | SALPVCASLRK    |
| 531    | SPRYD3       | chr12      | ENST00000301463 | p.I161M  | QTAQMFFTK      | QTAQIFFTK      |
| 532    | SPTBN1       | chr2       | ENST00000333896 | p.E637Q  | FFWEMAEQE      | FFWEMAEEE      |
| 533    | SPTSSA       | chr14      | ENST00000298130 | p.W32S   | LYMLEPSTVF     | LYMLEPWERTVF   |
| 534    | SRA1         | chr5       | ENST00000336283 | p.S182Y  | HRYLMVDHV      | HRSLMVDHV      |
| 535    | SRPK1        | chr6       | ENST00000361690 | p.E655Q  | LPMELEIPQKRA   | LPMELEIPEKRA   |
| 536    | STAC2        | chr17      | ENST00000584501 | p.S106L  | ATLVPLSWCMSR   | ATSVPLSWCMSR   |
| 537    | STAT5A       | chr17      | ENST00000345506 | p.D662N  | RSLADRLGNLSY   | RSLADRLGDSL    |
| 538    | STOX1        | chr10      | ENST00000298596 | p.D576N  | KPINNDFRGHL    | KPINDDFRGHL    |
| 539    | STXBP5       | chr6       | ENST00000367481 | p.S177L  | FTLLGYVIMWNK   | FTLSGYVIMWNK   |
| 540    | SUCO         | chr1       | ENST00000263688 | p.E788D  | KSESFSSIDK     | KSESFSSIEK     |
| 541    | SULT6B1      | chr2       | ENST00000535679 | p.E284Q  | EKFKQCLAGTSL   | EKFKECLAGTSL   |
| 542    | SYT1         | chr12      | ENST00000261205 | p.K322N  | MQNGNRLKK      | MQNGKRLKK      |
| 543    | SYTL4        | chrX       | ENST00000276141 | p.P568A  | ASKRKTAVMKK    | ASKRKTAVMKK    |
| 544    | SYVN1        | chr11      | ENST00000307289 | p.F126S  | SYAILMTMVL     | FYAILMTMVL     |
| 545    | SYVN1        | chr11      | ENST00000294256 | p.F126S  | LAEDRVDSM      | LAEDRVDFM      |
| 546    | TAX1BP1      | chr7       | ENST00000265393 | p.P724A  | CPMCSEQFPA     | CPMCSEQFPP     |
| 547    | TBC1D17      | chr19      | ENST00000221543 | p.E76K   | SSGGDSCASK     | SSGGDSCASE     |
| 548    | TBC1D19      | chr4       | ENST00000264866 | p.E313Q  | YYFVFQDYL      | YYFVFEDYL      |
| 549    | TBXA2R       | chr19      | ENST00000375190 | p.L262V  | LPLVVFIAQT     | LPLLVFIAQT     |
| 550    | TBXA2R       | chr19      | ENST00000375190 | p.S207L  | FSMLGGLLV      | FSMLGGLSV      |
| 551    | TDRD7        | chr9       | ENST00000355295 | p.E1089K | MSKYLIELSK     | MSEYLIELSK     |
| 552    | TEDC1        | chr14      | ENST00000354560 | p.I23M   | LPEAMAAL       | LPEAIAAL       |
| 553    | TEP1         | chr14      | ENST00000262715 | p.I1824M | GSMSFFQVDGLK   | GSISFFQVDGLK   |
| 554    | TEX15        | chr8       | ENST00000256246 | p.D2423H | HHFSGQQEN      | DHFSGQQEN      |
| 555    | TEX15        | chr8       | ENST00000256246 | p.D2495N | CLSNINPET      | CLSDINPET      |
| 556    | TEX55        | chr3       | ENST00000295622 | p.D104N  | LRADNQVNQ      | LRADDQVNQ      |
| 557    | TFIP11       | chr22      | ENST00000407690 | p.F658L  | GLLEKHLFPK     | GLLEKHFFPK     |
| 558    | TFIP11       | chr22      | ENST00000407690 | p.S691L  | WYLGWKSML      | WYLGWKSMLS     |
| 559    | TGFBR3       | chr1       | ENST00000212355 | p.M741I  | SIWAIMQNK      | SIWAMMQNK      |
| 560    | THOP1        | chr19      | ENST00000307741 | p.D640H  | GVLNSKVGMYH    | GVLNSKVGMDYR   |
| 561    | TMC8         | chr17      | ENST00000318430 | p.E19K   | VPEPKELWEA     | VPEPEELWEA     |
| 562    | TMEM185B     | chr2       | ENST00000426077 | p.E106D  | DRVDRGTHF      | DRVERGTHF      |
| 563    | MEM189-UBE2V | chr20      | ENST00000341698 | p.F89L   | VAGALIADL      | VAGALIADF      |
| 564    | TMEM266      | chr15      | ENST00000561302 | p.A38S   | SPVQLVNFA      | APVQLVNFA      |
| 565    | TMEM39A      | chr3       | ENST00000319172 | p.H352Y  | AAYLKWKQK      | AAHLKWKQK      |
| 566    | TMPRSS15     | chr21      | ENST00000284885 | p.K199N  | SPCTDALTCINA   | SPCTDALTCIKA   |
| 567    | TMPRSS6      | chr22      | ENST00000442782 | p.S428F  | LPFSIVTPSLEA   | LPSSIVTPSLEA   |
| 568    | TNC          | chr9       | ENST00000350763 | p.R2029C | LRCNNGREN      | LRRNNGREN      |
| 569    | TNFRSF25     | chr1       | ENST00000348333 | p.K42N   | DFHKNIGLF      | DFHKKIGLF      |
| 570    | TNPO3        | chr7       | ENST00000265388 | p.L183V  | SVLMTCVEK      | SLLMTCVEK      |
| 571    | TP53         | chr17      | ENST00000269305 | p.I232T  | GSDCTTTHYNY    | GSDCTTIHNYNY   |
| 572    | TP53TG5      | chr20      | ENST00000372726 | p.R263K  | HPYKVDVTWTKA   | HPYKVDVTWTRA   |
| 573    | TRAF3IP2     | chr6       | ENST00000340026 | p.Q247K  | FPKFEPQRYPA    | FPQFEPQRYPA    |
| 574    | TRAF5        | chr1       | ENST00000261464 | p.D502H  | KPHPNSSF       | KPDPNSSF       |
| 575    | TRRAP        | chr7       | ENST00000355540 | p.E2787K | KAMDKAKKEHK    | KAMDKAKKEHE    |
| 576    | TSC2         | chr16      | ENST00000350773 | p.E1453D | APSRRGKRVDRD   | APSRRGKRVDRD   |
| 577    | TSC22D4      | chr7       | ENST00000300181 | p.R113P  | IPGASGGAG      | IRGASGGAG      |
| 578    | TSHZ2        | chr20      | ENST00000371497 | p.L290F  | SLQDFSVHMIK    | SLQDLSVHMIK    |
| 579    | TSNARE1      | chr8       | ENST00000520166 | p.R120G  | MAGPSTTGA      | MAGPSTTRA      |
| 580    | TSPOAP1      | chr17      | ENST00000268893 | p.G934W  | SPWILIISWL     | SPGILIISWL     |
| 581    | TTC21B       | chr2       | ENST00000243344 | p.Q516K  | DIEAAFNNLK     | DIEAAFNNLQ     |

| Number | HUGO Symbol | Chromosome | Transcript ID   | HGVSp    | MT Epitope Seq | WT Epitope Seq |
|--------|-------------|------------|-----------------|----------|----------------|----------------|
| 582    | TTC9        | chr14      | ENST00000256367 | p.E189Q  | YYLKQARTQ      | YYLKEARTQ      |
| 583    | TTL13P      | chr15      | ENST00000641754 | p.F636L  | RPKNLNWTGEPAA  | RPKNFNWTGEPAA  |
| 584    | TXNRD2      | chr22      | ENST00000334363 | p.R31Q   | GVRGAAQGAAAC   | GVRGARAAAAG    |
| 585    | TXNRD2      | chr22      | ENST00000400519 | p.R31Q   | VRGAAQGAA      | VRGAAA         |
| 586    | UBAP2L      | chr1       | ENST00000343815 | p.Q588E  | YTSQNNAEGPL    | YTSQNNAQGPL    |
| 587    | UBASH3A     | chr21      | ENST00000291535 | p.S398N  | FPCNLPRRS      | FPCSLPRRS      |
| 588    | UBR4        | chr1       | ENST00000375254 | p.L638V  | APGEKGNIV      | APGEKGNIL      |
| 589    | UGT2A2      | chr4       | ENST00000604021 | p.K11N   | SIRDFTMPNK     | SIRDFTMPKK     |
| 590    | UQCRFS1     | chr19      | ENST00000304863 | p.K155T  | ITLSDIPEGK     | IKLSDIPEGK     |
| 591    | UROC1       | chr3       | ENST00000290868 | p.F375L  | MNPAVLK        | MNPAVFK        |
| 592    | USH2A       | chr1       | ENST00000307340 | p.R837W  | FYLWQNSF       | FYLRQNSF       |
| 593    | USHBP1      | chr19      | ENST00000252597 | p.A630V  | SVELNRDLCK     | SAELNRDLCK     |
| 594    | USP19       | chr3       | ENST00000398888 | p.S377R  | LRKRQRQRWGGI   | LRKRQSQRWGGL   |
| 595    | USP28       | chr11      | ENST00000003302 | p.E417K  | IRKLLKEIK      | IRKLLKEIK      |
| 596    | USP31       | chr16      | ENST00000219689 | p.S377Y  | YYDGFHRYF      | YYDGFHRSF      |
| 597    | USP34       | chr2       | ENST00000453734 | p.E406D  | FLMGKSDRK      | FLMGKSK        |
| 598    | USP37       | chr2       | ENST00000258399 | p.M11I   | AVHQNRLPAAIK   | AVHQNRLPAAMK   |
| 599    | USP47       | chr11      | ENST00000527733 | p.D949N  | HSSNTLCNA      | HSSD TLCNA     |
| 600    | USP51       | chrX       | ENST00000500968 | p.S13C   | LPSGCGVRWI     | LPSGSGVRWI     |
| 601    | UTP20       | chr12      | ENST00000261637 | p.Q1948H | VKHILSKVM      | VKQILSKVM      |
| 602    | VCL         | chr10      | ENST00000211998 | p.S252C  | LTCWDEDAWASK   | LTSWDEDAWASK   |
| 603    | VEGFC       | chr4       | ENST00000618562 | p.Q327K  | FPSKCGANREF    | FPSQCGANREF    |
| 604    | VLDLR       | chr9       | ENST00000382099 | p.R823T  | LSIDIGTHSA     | LSIDIGRHS      |
| 605    | VPS13A      | chr9       | ENST00000360280 | p.P1612A | RACPFLAVK      | RACPFPLVK      |
| 606    | VPS13B      | chr8       | ENST00000357162 | p.S1014C | QACEYASSPVK    | QASEYASSPVK    |
| 607    | VPS13C      | chr15      | ENST00000249837 | p.D1555H | SQKDVFHLK      | SQKDVFDLK      |
| 608    | VPS13C      | chr15      | ENST00000249837 | p.D3529H | RPTGGIVHM      | RPTGGIVDM      |
| 609    | VPS37D      | chr7       | ENST00000324941 | p.R90C   | KYQELCEVA      | KYQELREVA      |
| 610    | VPS45       | chr1       | ENST00000643970 | p.G400V  | RVSDLFSPK      | RGSDLFSPK      |
| 611    | VRTN        | chr14      | ENST00000256362 | p.E600Q  | ASSEDVQGGPSR   | ASSEDVEGGPSR   |
| 612    | VSX2        | chr14      | ENST00000261980 | p.E284Q  | LPKLDKMQQ      | LPKLDKMEQ      |
| 613    | WDR4        | chr21      | ENST00000330317 | p.C412R  | RPGEATLSR      | RPGEATLSC      |
| 614    | WNK2        | chr9       | ENST00000297954 | p.E522D  | SGFFHSDSVK     | SGFFHESDVK     |
| 615    | WNK4        | chr17      | ENST00000246914 | p.P87A   | SPAPDPPDPA     | SPAPDPPDPP     |
| 616    | YES1        | chr18      | ENST00000314574 | p.K138N  | RSIATGNNGY     | RSIATGKNGY     |
| 617    | ZC3H10      | chr12      | ENST00000257940 | p.H221Y  | YFESYEYSL      | HFESYEYSL      |
| 618    | ZC3H4       | chr19      | ENST00000253048 | p.G57V   | LPDDREDVEL     | LPDDREDGEL     |
| 619    | ZFHX3       | chr16      | ENST00000268489 | p.S2067L | IPAPPI         | IPASAPPI       |
| 620    | ZFHX4       | chr8       | ENST00000651372 | p.E330Q  | QPLISFLEPK     | EPLISFLEPK     |
| 621    | ZFHX4       | chr8       | ENST00000651372 | p.R2609K | HRDKRLKTT      | HRDKRLRTT      |
| 622    | ZFP41       | chr8       | ENST00000520584 | p.R7K    | KPAGKKKKTPT    | KPAGRKKKTPT    |
| 623    | ZFPL1       | chr11      | ENST00000294258 | p.L136V  | NWARAGLGLPVI   | NWARAGLGLPLI   |
| 624    | ZFPM1       | chr16      | ENST00000319555 | p.Q958H  | SYSDKGVHTP     | SYSDKGVQTP     |
| 625    | ZIC4        | chr3       | ENST00000383075 | p.E127Q  | RYMRQPIKQQLI   | RYMRQPIKQELI   |
| 626    | ZIC4        | chr3       | ENST00000383075 | p.L221V  | KVFARSENVK     | KVFARSENK      |
| 627    | ZIM2        | chr19      | ENST00000593711 | p.E491Q  | YRHTQQRP       | YRHTQERP       |
| 628    | ZKSCAN5     | chr7       | ENST00000326775 | p.K528N  | SSNRMNYSEVPY   | SSKRMNYSEVPY   |
| 629    | ZMYND12     | chr1       | ENST00000372565 | p.E271Q  | FQNDTGLDEA     | FENDTGLDEA     |
| 630    | ZNF274      | chr19      | ENST00000326804 | p.D327H  | LSSTLEHTL      | LSSTLEDTL      |
| 631    | ZNF322      | chr6       | ENST00000415922 | p.E34K   | KIFIHMHK       | KIFIHMHE       |
| 632    | ZNF326      | chr1       | ENST00000340281 | p.S155F  | NYFSYSSF       | NYSSYSSF       |
| 633    | ZNF366      | chr5       | ENST00000318442 | p.K85N   | MPTNMPYNHPA    | MPTKMPYNHPA    |
| 634    | ZNF385B     | chr2       | ENST00000410066 | p.E329K  | GSKHKTMVK      | GSKHKTMVE      |

| Number | HUGO Symbol | Chromosome | Transcript ID   | HGVSp   | MT Epitope Seq | WT Epitope Seq |
|--------|-------------|------------|-----------------|---------|----------------|----------------|
| 635    | ZNF41       | chrX       | ENST00000313116 | p.E91K  | GPWMLEGKA      | GPWMLEGEA      |
| 636    | ZNF420      | chr19      | ENST00000337995 | p.R75I  | SQWEMSDIL      | SQWEMSDRL      |
| 637    | ZNF432      | chr19      | ENST00000221315 | p.E258K | RIHKRKKSF      | RIHKREKSF      |
| 638    | ZNF502      | chr3       | ENST00000296091 | p.R119S | LSVSTEEESL     | LRVSTEEESL     |
| 639    | ZNF521      | chr18      | ENST00000361524 | p.K983N | HKVTHSNL       | HKVTHSKSL      |
| 640    | ZNF541      | chr19      | ENST00000263351 | p.S48L  | GPGPSSGSPL     | GPGPSSGSPS     |
| 641    | ZNF550      | chr19      | ENST00000325134 | p.L182F | FHECDSQQP      | LHECDSQQP      |
| 642    | ZNF568      | chr19      | ENST00000444991 | p.G363A | SINTAEKPHK     | SINTGEKPHK     |
| 643    | ZNF644      | chr1       | ENST00000337393 | p.D624H | SFGSPLGLHK     | SFGSPLGLDK     |
| 644    | ZNF649      | chr19      | ENST00000354957 | p.E378Q | CPQCGQPC       | CPECQGPC       |
| 645    | ZNF827      | chr4       | ENST00000508784 | p.E233G | TRTEGTMRF      | TRTEETMRF      |
| 646    | ZSCAN18     | chr19      | ENST00000240727 | p.S259Y | YRLDTEELR      | SRLDTEELR      |

HUGO: Human Genome Organisation

HGVSp: Human Genome Variation Society (HGVS) nomenclature of protein