Appendix 1. Loci or genes tested in associated with complex myopia

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| **CHR** | **Loci/Location** | **Gene/Tested SNP** | **Method** | **Phenotype** | **Population** | **Best SNP** | **Best p value** | **First author, year** |
| 1 | 1q32.2 | CD55 | A | Myopia | Japanese | rs1652333 | 3.10E-02 | Yoshikawa, 2014 |
| 1 | 1q32.2 | CD55 | GWAS-Meta | Myopia | European/Asian | rs1652333 | 6.29E-11 | Verhoeven, 2013 |
| 1 | 1q32.2 | CD55 | Meta | Refractive error | European/Asian | rs891378 | 3.17E-12 | Fan, 2016 |
| 1 | 1p13.3 | GSTM1 | A | Myopia | Indian | NO | p>0.05 | S. Vishnupriya, 2012 |
| 1 | 1p36.22 | PTCHD2 | A | SPE | Multi-Ethnic | PTCHD2 | 3.60E-07 | Gong, 2016 |
| 2 | 2q37.1 | CHRNG | GWAS-Meta | Myopia | European/Asian | rs1881492 | 1.28E-10 | Verhoeven, 2013 |
| 2 | 2q37.1/2q37.1 | CHRNG/ALPPL2 | Meta | Refractive error | European/Asian | rs2573210 | 2.79E-10 | Fan, 2016 |
| 2 | 2q31.1 | DLX1 | GWAS | Myopia | European | rs17428076 | 2.80E-09 | Kiefer, 2013 |
| 2 | 2p25.3/2p25.3 | FAM150B-ACP1 | Meta | Refractive error | European/Asian | rs60843830 | 3.71E-08 | Fan, 2016 |
| 2 | 2p16.3 | NRXN1 | GWAS-Meta | refractive error | Asian and Europeans | rs1401327 | 3.92E-08 | Li, 2015 |
| 2 | 2q22.3 | PABPCP2 | GWAS | Myopia | European | rs17412774 | 1.10E-12 | Kiefer, 2013 |
| 2 | 2q31.2 | PDE11A | GWAS | Myopia | European | rs17400325 | 1.90E-09 | Kiefer, 2013 |
| 2 | 2q37.1 | PRSS56 | A | Myopia | Japanese | NO | p>0.05 | Yoshikawa, 2014 |
| 2 | 2q37.1 | PRSS56 | GWAS-Meta | Refractive errors | European | rs1656404 | 3.72E-05 | Simpson, 2014 |
| 2 | 2q37.1 | PRSS56 | GWAS | Myopia | European | rs1550094 | 1.30E-15 | Kiefer, 2013 |
| 2 | 2q37.1 | PRSS56 | GWAS-Meta | Myopia | European/Asian | rs1656404 | 2.38E-09 | Verhoeven, 2013 |
| 2 | 2q37.1 | PRSS56 | A | SPE | Multi-Ethnic | rs1550094 | 1.70E-03 | Gong, 2016 |
| 3 | 3p21.1 | CACNA1D | GWAS-Meta | Myopia | European/Asian | rs14165 | 4.36E-08 | Verhoeven, 2013 |
| 3 | 3q26.33 | MFN1 | A | Myopia | Chinese | rs13098637 | 3.00E-03 | Zou, 2015 |
| 3 | 3q26.1 | SERPINI2 | A | Refractive errors | European | rs10936538 | 3.00E-03 | Hysi, 2012 |
| 3 | 3q26.33 | SOX2 | A | Refractive errors | British | NO | p>0.05 | Simposn, 2007 |
| 3 | 3p26.1/3p26.1 | SUMF1/SETMAR | GWAS-Meta | Refractive errors | European | rs2587916 | 2.79E-05 | Simpson, 2014 |
| 3 | 3q23 | ZBTB38 | GWAS | Myopia | European | rs13091182 | 9.00E-10 | Kiefer, 2013 |
| 4 | 4q21.21 | BMP3 | GWAS-Meta | Refractive errors | European | rs1353387 | 6.16E-05 | Simpson, 2014 |
| 4 | 4q21.21 | BMP3 | GWAS | Myopia | European | rs5022942 | 1.40E-10 | Kiefer, 2013 |
| 4 | 4q21.21 | BMP3 | GWAS-Meta | Myopia | European/Asian | rs1960445 | 1.19E-08 | Verhoeven, 2013 |
| 4 | 4q28.1 | FGF2 | A | Myopia | Multi-Ethnic | NO | p>0.05 | Mutti, 2007 |
| 4 | 4q21.21 | LOC100506035 | GWAS-Meta | Myopia | European/Asian | rs9307551 | 1.09E-08 | Verhoeven, 2013 |
| 4 | 4q25 | rs2218817/rs10034228/rs1585471 | A | Myopia | Chinese | rs1585471 | 0.007 | Gao, 2012 |
| 5 | 5p15.2 | CTNND2 | Meta | Myopia | Multi-Ethnic | rs6885224/rs12716080 | p>0.05 | Liu, 2014 |
| 6 | 6p12.3 | CRISP3 | A | SPE | Multi-Ethnic | CRISP3 | 4.30E-06 | Gong, 2016 |
| 6 | 6q13 | KCNQ5 | A | Myopia | Japanese | rs7744813 | 2.60E-03 | Yoshikawa, 2014 |
| 6 | 6q13 | KCNQ5 | GWAS-Meta | Refractive errors | European | rs7744813 | 6.07E-06 | Simpson, 2014 |
| 6 | 6q13 | KCNQ5 | GWAS | Myopia | European | rs7744813 | 6.60E-22 | Kiefer, 2013 |
| 6 | 6q13 | KCNQ5 | GWAS-Meta | Myopia | European/Asian | rs7744813 | 4.18E-09 | Verhoeven, 2013 |
| 6 | 6q13 | KCNQ5 | Meta | Refractive error | European/Asian | rs7744813 | 3.50E-19 | Fan, 2016 |
| 6 | MYP2/6q22.33 | LAMA2 | A | Myopia | Japanese | NO | p>0.05 | Yoshikawa, 2014 |
| 6 | MYP2/6q22.33 | LAMA2 | GWAS-Meta | Refractive errors | European | rs12193446 | 8.74E-06 | Simpson, 2014 |
| 6 | MYP2/6q22.33 | LAMA2 | GWAS | Myopia | European | rs12193446 | 1.40E-45 | Kiefer, 2013 |
| 6 | MYP2/6q22.33 | LAMA2 | GWAS-Meta | Myopia | European/Asian | rs12205363 | 1.13E-11 | Verhoeven, 2013 |
| 6 | MYP2/6q22.33 | LAMA2 | Meta | Refractive error | European/Asian | rs12193446 | 1.20E-21 | Fan, 2016 |
| 6 | 6p22.3 | LINC00340 | Meta | Refractive error | European/Asian | rs10946507 | 3.07E-18 | Fan, 2016 |
| 6 | 6q26 | QKI | A | Myopia | Japanese | rs9365619 | 1.70E-03 | Yoshikawa, 2014 |
| 6 | 6p21.1 | TCTE1 | A | SPE | Multi-Ethnic | rs2297336 | 3.70E-06 | Gong, 2016 |
| 7 | 7q21.11 | HGF | A | Refractive errors | Australian | rs9642131 | 1.00E-03 | Veerappan, 2010 |
| 7 | 7q31.2 | MET | A | Refractive errors | Caucasian | NO | p>0.05 | Schache, 2009 |
| 8 | 8q12.2 | CHD7 | GWAS-Meta | Myopia | European/Asian | rs4237036 | 1.52E-08 | Verhoeven, 2013 |
| 8 | 8p11.21 | SFRP1 | A | Myopia | Japanese | rs2137277 | 3.70E-06 | Yoshikawa, 2014 |
| 8 | 8p11.21 | SFRP1 | GWAS | Myopia | European | rs2137277 | 4.70E-06 | Kiefer, 2013 |
| 8 | 8q12.1 | TOX | A | Myopia | Japanese | NO | p>0.05 | Yoshikawa, 2014 |
| 8 | 8q12.1 | TOX | GWAS-Meta | Refractive errors | European | rs10113215 | 1.25E-08 | Simpson, 2014 |
| 8 | 8q12.1 | TOX | GWAS-Meta | Myopia | European/Asian | rs7837791 | 9.22E-10 | Verhoeven, 2013 |
| 8 | 8q12.1 | TOX | Meta | Refractive error | European/Asian | rs10089517 | 8.48E-18 | Fan, 2016 |
| 8 | 8q12.1/8q12.1 | TOX/CA8 | GWAS | Myopia | European | Chr8:60178580 | 3.50E-19 | Kiefer, 2013 |
| 8 | 8p11.21 | ZMAT4 | GWAS-Meta | Refractive errors | European | rs4736884 | 1.78E-05 | Simpson, 2014 |
| 8 | 8p11.21 | ZMAT4 | GWAS-Meta | Myopia | European/Asian | rs7829127 | 3.04E-09 | Verhoeven, 2013 |
| 8 | 8p11.21 | ZMAT4 | Meta | Refractive error | European/Asian | rs2137277 | 3.99E-09 | Fan, 2016 |
| 9 | 9q21.13 | RORB | GWAS-Meta | Myopia | European/Asian | rs7042950 | 1.02E-08 | Verhoeven, 2013 |
| 9 | 9p22.2 | SH3GL2/ADAMTSL1 | A | Myopia | Japanese | rs10963578 | 3.70E-06 | Yoshikawa, 2014 |
| 9 | 9q21.11 | TJP2 | GWAS | Myopia | European | rs11145746 | 2.30E-11 | Kiefer, 2013 |
| 9 | 9q21.11 | TJP2 | GWAS-Meta | Myopia | European/Asian | rs11145465 | 7.26E-09 | Verhoeven, 2013 |
| 9 | 9q21.11 | TJP2 | Meta | Refractive error | European/Asian | rs11145488 | 1.56E-09 | Fan, 2016 |
| 10 | 10q21.1 | BICC1 | A | Myopia | Japanese | rs4245599 | 1.90E-03 | Yoshikawa, 2014 |
| 10 | 10q21.1 | BICC1 | GWAS-Meta | Refractive errors | European | rs12264028 | 2.57E-05 | Simpson, 2014 |
| 10 | 10q21.1 | BICC1 | GWAS-Meta | Myopia | European/Asian | rs7084402 | 7.23E-12 | Verhoeven, 2013 |
| 10 | 10q21.1 | BICC1 | Meta | Refractive error | European/Asian | rs1649081 | 2.66E-09 | Fan, 2016 |
| 10 | 10q23.33 | CYP26A1 | A | Myopia | Japanese | rs10882165 | 2.30E-02 | Yoshikawa, 2014 |
| 10 | 10q23.33 | CYP26A1 | GWAS-Meta | Myopia | European/Asian | rs10882165 | 1.25E-11 | Verhoeven, 2013 |
| 10 | 10q22.3 | KCNMA1 | GWAS | Myopia | European | rs6480859 | 1.20E-08 | Kiefer, 2013 |
| 10 | 10q23.1 | RGR | GWAS | Myopia | European | rs745480 | 2.50E-10 | Kiefer, 2013 |
| 11 | 11p14.1 | BDNF | A | Myopia | Multi-Ethnic | NO | p>0.05 | Mutti, 2007 |
| 11 | 11q14.1 | DLG2 | GWAS | Myopia | European | rs2155413 | 4.70E-10 | Kiefer, 2013 |
| 11 | 11q13.1 | EHBP1L1 | A | Myopia | Japanese | NO | 2.50E-02 | Yoshikawa, 2014 |
| 11 | 11q22.3 | GRIA4 | A | Myopia | Japanese | rs11601239 | 4.90E-02 | Yoshikawa, 2014 |
| 11 | 11q22.3 | GRIA4 | GWAS-Meta | Myopia | European/Asian | rs11601239 | 3.45E-08 | Verhoeven, 2013 |
| 11 | 11p12 | LRRC4C | A | Myopia | Japanese | rs1381566 | 4.00E-02 | Yoshikawa, 2014 |
| 11 | 11p12 | LRRC4C | GWAS | Myopia | European | rs1381566 | 3.00E-26 | Kiefer, 2013 |
| 11 | 11q23.3 | MFRP | A | Myopia | Indian | rs36015759 | 4.10E- 07 | Sharmila, 2014 |
| 11 | 11q22.2/11q22.2 | MMP1/MMP10 | A | Refractive errors | AREDS | rs1939008 | 1.60E-04 | Wojciechowski, 2013 |
| 11 | 11p15.5 | NAP1L4 | A | SPE | Multi-Ethnic | NAP1L4 | 3.60E-06 | Gong, 2016 |
| 11 | MYP7/11p13 | PAX6 | A | Refractive errors | British | NO | p>0.05 | Simposn, 2007 |
| 11 | MYP7/11p13 | PAX6 | A | Myopia | Multi-Ethnic | NO | p>0.05 | Mutti, 2007 |
| 11 | 11q13.2 | GSTP1 | A | Myopia | Indian | Val/Val genotype | p>0.05 | CH Bindu, 2011 |
| 11 | 11q24.1 | rs577948/rs11218544 | A | Myopia | Chinese | NO | p>0.05 | Wang, 2011 |
| 11 | 11q24.1 | NA | Meta | Myopia | Multi-Ethnic | rs11218544 | 1.30E-02 | Liu, 2014 |
| 12 | 12q12/12q13.11 | ARID2/SNAT1 | Meta | Refractive error | European/Asian | rs10880855 | 4.38E-18 | Fan, 2016 |
| 12 | 12q13.11 | COL2A1 | GWAS | Myopia | Caucasian | rs1635529 | 7.00E-03 | Metlapally, 2009 |
| 12 | 12q13.11 | COL2A1 | A | Myopia | Multi-Ethnic | rs1635529 | 7.00E-05 | Mutti, 2007 |
| 12 | 12q23.2 | IGF1 | A | Myopia/HM | Caucasian | rs6214 | 2.00E-03 | Metlapally, 2010 |
| 12 | 12q23.2 | IGF-1 | A | Myopia | Egyptian | rs6214 | 1.00E-03 | Zidan, 2016 |
| 12 | 12q21–23 | PTPRR | GWAS-Meta | Myopia | European/Asian | rs12229663 | 5.47E-09 | Verhoeven, 2013 |
| 12 | 12q13.2 | RDH5 | A | Myopia | Japanese | NO | p>0.05 | Yoshikawa, 2014 |
| 12 | 12q13.2 | RDH5 | GWAS | Myopia | European | rs3138142 | 1.80E-20 | Kiefer, 2013 |
| 12 | 12q13.2 | RDH5 | GWAS-Meta | Myopia | European/Asian | rs3138144 | 4.28E-10 | Verhoeven, 2013 |
| 12 | 12q13.2 | RDH5 | Meta | Refractive error | European/Asian | rs3138142 | 1.14E-08 | Fan, 2016 |
| 13 | 13q32.3 | PCCA | GWAS-Meta | Myopia | European/Asian | rs2184971 | 5.90E-09 | Verhoeven, 2013 |
| 13 | 13q32.3 | ZIC2 | GWAS | Myopia | European | rs4291789 | 2.10E-08 | Kiefer, 2013 |
| 13 | 13q32.3 | ZIC2 | GWAS-Meta | Myopia | European/Asian | rs8000973 | 4.24E-08 | Verhoeven, 2013 |
| 13 | 13q32.3/13q32.3 | ZIC2/ZIC5 | GWAS-Meta | Refractive errors | European | rs8000506 | 2.98E-05 | Simpson, 2014 |
| 14 | 14q22.2 | BMP4 | A | Myopia | Japanese | rs66913363 | 1.40E-02 | Yoshikawa, 2014 |
| 14 | 14q22.2 | BMP4 | GWAS | Myopia | European | Chr14:54413001 | 1.70E-08 | Kiefer, 2013 |
| 14 | 14q22.2 | BMP4 | Meta | Refractive error | European/Asian | 14:54579969:A\_AC | 9.62E-09 | Fan, 2016 |
| 14 | 14q21.2 | FSCB | A | SPE | Multi-Ethnic | FSCB | 1.50E-07 | Gong, 2016 |
| 14 | 14q23.1 | SIX6 | GWAS-Meta | Myopia | European/Asian | rs1254319 | 1.00E-08 | Verhoeven, 2013 |
| 14 | 14q23.1 | SIX6 | Meta | Refractive error | European/Asian | rs2753462 | 4.37E-09 | Fan, 2016 |
| 14 | 14q24.3 | VSX2 | A | Myopia | Indian | NO | p>0.05 | Sharmila, 2014 |
| 15 | 15q14 | ACTC1 | A | Myopia | Multi-Ethnic | rs1357179 | 1.69E-03 | Simpson, 2013 |
| 15 | 15q25.2 | AP3B2 | A | SPE | Multi-Ethnic | AP3B2 | 1.60E-07 | Gong, 2016 |
| 15 | 15q22.31/15q22.31 | DIS3L/MAP2K1 | Meta | Refractive error | European/Asian | rs16949788 | 1.34E-08 | Fan, 2016 |
| 15 | 15q21.1 | FBN1 | Meta | Refractive error | European/Asian | rs8023401 | 1.66E-09 | Fan, 2016 |
| 15 | 15q14 | GJD2 | A | Myopia | Japanese | rs524952 | 3.70E-06 | Yoshikawa, 2014 |
| 15 | 15q14 | GJD2 | GWAS-Meta | Refractive errors | European | rs1370156 | 2.29E-07 | Simpson, 2014 |
| 15 | 15q14 | GJD2 | A | Myopia | AREDS | rs1357179 | 1.69E-03 | Simpson, 2013 |
| 15 | 15q14 | GJD2 | GWAS-Meta | Myopia | European/Asian | rs524952 | 1.11E-13 | Verhoeven, 2013 |
| 15 | 15q14 | GJD2 | Meta | Refractive error | European/Asian | rs524952 | 1.01E-25 | Fan, 2016 |
| 15 | 15q14 | GJD2 | A | SPE | Multi-Ethnic | rs634990 | 1.80E-03 | Gong, 2016 |
| 15 | 15q14 | GJD2/ACTC1 | GWAS | Refractive errors | Dutch | rs634990 | 2.21E-14 | Solouki, 2010 |
| 15 | 15q14 | GOLGA88/GJD2 | GWAS | Myopia | European | rs524952 | 5.60E-19 | Kiefer, 2013 |
| 15 | 15q14 | GOLGA8B | A | Myopia | AREDS | rs1357179 | 1.69E-03 | Simpson, 2013 |
| 15 | 15q14 | NA | A | Refractive errors/AL/CC/ACD | Caucasian | rs560764 | 6.40E-04 | Schache, 2013 |
| 15 | 15q14 | NA | Meta | Myopia | Caucasian/Asian | rs634990 | 9.20E-23 | Verhoeven,2012 |
| 15 | 15q25 | NA | A | Refractive errors/AL/CC/ACD | Caucasian | NO | p>0.05 | Schache, 2013 |
| 15 | 15q25 | NA | Meta | Myopia | Caucasian/Asian | rs939661 | 5.81E-02 | Verhoeven,2012 |
| 15 | 15q25.1 | RASGRF1 | A | Myopia | Japanese | rs4778879 | 9.40E-04 | Yoshikawa, 2014 |
| 15 | 15q25.1 | RASGRF1 | A | Myopia | AREDS | rs7164400 | 8.39E-14 | Simpson, 2013 |
| 15 | 15q25.1 | RASGRF1 | GWAS | Myopia | European | rs28412916 | 3.50E-11 | Kiefer, 2013 |
| 15 | 15q25.1 | RASGRF1 | GWAS-Meta | Myopia | European/Asian | rs4778879 | 1.27E-09 | Verhoeven, 2013 |
| 15 | 15q25.1 | RASGRF1 | GWAS | Refractive errors | European | rs8027411 | 7.91E-08 | Hysi, 2010 |
| 15 | 15q25.1 | RASGRF1 | Meta | Refractive error | European/Asian | rs6495367 | 3.89E-08 | Fan, 2016 |
| 16 | 16p13.3 | A2BP1 | GWAS-Meta | Myopia | European/Asian | rs17648524 | 5.64E-10 | Verhoeven, 2013 |
| 16 | 16p13.3 | A2BP1 | Meta | Refractive error | European/Asian | rs6500957 | 2.86E-09 | Fan, 2016 |
| 16 | 16p13.3 | RBFOX1 | GWAS-Meta | Refractive errors | European | rs4581716 | 1.65E-06 | Simpson, 2014 |
| 16 | 16p13.3 | RBFOX1 | GWAS | Myopia | European | rs17648524 | 1.30E-22 | Kiefer, 2013 |
| 17 | 17q21.32 | B4GALNT2 | A | Myopia | Japanese | rs9902755 | 3.90E-02 | Yoshikawa, 2014 |
| 17 | 17q21.33 | COL1A1 | GWAS | Myopia | Caucasian | NO | p>0.05 | Metlapally, 2009 |
| 17 | 17p12 | DNAH9 | Meta | Refractive error | European/Asian | rs2908972 | 2.73E-12 | Fan, 2016 |
| 17 | 17q24.3 | KCNJ2 | GWAS-Meta | Myopia | European/Asian | rs4793501 | 3.21E-09 | Verhoeven, 2013 |
| 17 | 17q24.3 | KCNJ2 | Meta | Refractive error | European/Asian | rs929474 | 1.66E-09 | Fan, 2016 |
| 17 | 17q11.2 | MYO1D | GWAS-Meta | Myopia | European/Asian | rs17183295 | 3.04E-10 | Verhoeven, 2013 |
| 17 | 17q11.2/17q11.2 | MYO1D-TMEM98 | Meta | Refractive error | European/Asian | rs72483203 | 8.81E-09 | Fan, 2016 |
| 17 | 17q21.2 | RARA | A | Myopia | Anglo-Celtic | NO | p>0.05 | Veerappan, 2009 |
| 17 | 17p12 | SHISA6 | GWAS | Myopia | European | rs2908972 | 4.50E-13 | Kiefer, 2013 |
| 17 | 17p12 | SHISA6 | GWAS-Meta | Myopia | European/Asian | rs2969180 | 7.29E-11 | Verhoeven, 2013 |
| 18 | 18q12.3 | SLC14A2 | Meta | Refractive error | European/Asian | rs10853531 | 2.54E-08 | Fan, 2016 |
| 18 | 18q22.3 | CNDP2 | GWAS-Meta | Myopia | European/Asian | rs12971120 | 4.39E-08 | Verhoeven, 2013 |
| 18 | MYP2/18p11.31 | TGIF1 | A | Myopia/ALM/CC | Caucasian | NO | p>0.05 | Pertile, 2008 |
| 19 | 19q13.2 | TGFB1 | A | Myopia/HM | Chinese | rs4803455 | 1.00E-02 | Khor, 2010 |
| 19 | 19q13.2 | TGFB1 | A | Myopia/HM | Indian | NO | p>0.05 | Sandhya, 2011 |
| 20 | 20p12.3 | BMP2 | A | Myopia | Japanese | rs235770 | 2.10E-02 | Yoshikawa, 2014 |
| 20 | 20p12.3 | BMP2 | GWAS-Meta | Myopia | European/Asian | rs235770 | 1.57E-08 | Verhoeven, 2013 |
| 21 | 21q22.3 | COL18A1 | A | Myopia | Multi-Ethnic | NO | p>0.05 | Mutti, 2007 |
| 21 | 21q22.3 | rs2839471 | A | Myopia | Chinese | NO | p>0.05 | Wang, 2011 |
| 22 | 22q11.23 | GSTT1 | A | Myopia | Indian | NO | p>0.05 | S. Vishnupriya, 2012 |
| Various | Various | MMPs | A | Refractive errors | AMISH/ASHK | rs1939008 | 1.60E-04 | Wojciechowski, 2010 |
| Various | Various | MMPs | A | Myopia | Australian | NO | p>0.05 | Schache, 2012 |
| Various | Various | TIMPs | A | Refractive errors | AMISH, ASHK | NO | p>0.05 | Wojciechowski, 2010 |

AL, axial length; CC, corneal curvature, CHR, chromosome; A, association analysis; GWAS, genome-wide association study; SPE, spherical equivalent; NA, not available; GWAS-Meta: Genome-wide meta analysis