SKIN DISORDERS GENE PANEL DG 2.13 (610 genes)

Gene	*Median coverage*	*% covered > 10x*	*%covered > 20x*	*Associated Phenotype description and OMIM disease ID*
AAAS	106.4	100	99	Achalasia-addisonianism-alacrimia syndrome, 231550
AAGAB	151.8	100	98	Keratoderma, palmoplantar, punctate type IA, 148600
ABCA12	140	99	97	Ichthyosis, autosomal recessive 4B (harlequin), 242500 Ichthyosis, congenital, autosomal recessive 4A, 601277
ABCB6	127.2	100	99	Dyschromatosis universalis hereditaria 3, 615402 Microphthalmia, isolated, with coloboma 7, 614497 Pseudohyperkalemia, familial, 2, due to red cell leak, 609153 [Blood group, Langereis system], 111600
ABCC6	116.4	93	92	Arterial calcification, generalized, of infancy, 2, 614473 Pseudoxanthoma elasticum, 264800 Pseudoxanthoma elasticum, forme fruste, 177850
ABCC9	157.9	99	99	Atrial fibrillation, familial, 12, 614050 Cardiomyopathy, dilated, 1O, 608569 Hypertrichotic osteochondrodysplasia, 239850
ABHD5	209.6	100	99	Chanarin-Dorfman syndrome, 275630
ACD	135.2	100	98	?Dyskeratosis congenita, autosomal recessive 7, 616553 ?Dyskeratosis congenita, autosomal dominant 6, 616553
ACTA2	137.6	100	99	Aortic aneurysm, familial thoracic 6, 611788 Moyamoya disease 5, 614042 Multisystemic smooth muscle dysfunction syndrome, 613834
ACTB	129	99	94	Baraitser-Winter syndrome 1, 243310 ?Dystonia, juvenile-onset, 607371
ACVRL1	122.7	99	98	Telangiectasia, hereditary hemorrhagic, type 2, 600376
ADA2	101.4	99	99	Polyarteritis nodosa, childhood-onset, 615688 ?Sneddon syndrome, 182410
ADAM10	123.6	94	92	Reticulate acropigmentation of Kitamura, 615537 {Alzheimer disease 18, susceptibility to}, 615590
ADAM17	139.4	97	93	?Inflammatory skin and bowel disease, neonatal, 1, 614328

ADAMTS10	107.8	99	98	Weill-Marchesani syndrome 1, recessive, 277600
ADAMTS17	117.1	88	86	Weill-Marchesani-like syndrome, 613195
ADAMTS2	117.4	98	96	Ehlers-Danlos syndrome, type VIIC, 225410
ADAMTSL2	112.2	96	91	Geleophysic dysplasia 1, 231050
ADAR	125	100	99	Aicardi-Goutieres syndrome 6, 615010 Dyschromatosis symmetrica hereditaria, 127400
AGA	130.2	100	100	Aspartylglucosaminuria, 208400
AGPAT2	109.5	99	95	Lipodystrophy, congenital generalized, type 1, 608594
AIRE	68.2	98	92	Autoimmune polyendocrinopathy syndrome , type I, with or without reversible metaphyseal dysplasia, 240300
AKT1	156.5	99	99	Breast cancer, somatic, 114480 Colorectal cancer, somatic, 114500 Cowden syndrome 6, 615109 Ovarian cancer, somatic, 167000 Proteus syndrome, somatic, 176920 {Schizophrenia, susceptibility to}, 181500
AKT3	79.6	97	88	Megalencephaly-polymicrogyria-polydactyly-hydrocephalus syndrome 2, 615937
ALAD	100.6	99	97	Porphyria, acute hepatic, 612740 {Lead poisoning, susceptibility to}, 612740
ALAS2	89.7	99	97	Anemia, sideroblastic, 1, 300751 Protoporphyria, erythropoietic, X-linked, 300752
ALDH18A1	131.1	100	99	Cutis laxa, autosomal dominant 3, 616603 Cutis laxa, autosomal recessive, type IIIA, 219150 Spastic paraplegia 9A, autosomal dominant, 601162 Spastic paraplegia 9B, autosomal recessive, 616586
ALDH3A2	125.7	95	94	Sjogren-Larsson syndrome, 270200
ALDOB	165.7	100	99	Fructose intolerance, 229600
ALOX12B	130.6	100	99	Ichthyosis, congenital, autosomal recessive 2, 242100
ALOXE3	122.2	100	100	Ichthyosis, congenital, autosomal recessive 3, 606545
ALPL	156.4	100	100	Hypophosphatasia, adult, 146300 Hypophosphatasia, childhood, 241510 Hypophosphatasia, infantile, 241500 Odontohypophosphatasia, 146300

ALX4	132.7	98	92	Frontonasal dysplasia 2, 613451 Parietal foramina 2, 609597 {Craniosynostosis 5, susceptibility to}, 615529
AMELX	98.2	99	95	Amelogenesis imperfecta, type 1E, 301200
ANKRD11	96.3	97	94	KBG syndrome, 148050
ANOS1	90.3	89	87	Hypogonadotropic hypogonadism 1 with or without anosmia (Kallmann syndrome 1), 308700
ANTXR1	123	98	95	GAPO syndrome, 230740 {Hemangioma, capillary infantile, susceptibility to}, 602089
ANTXR2	100	98	94	Hyaline fibromatosis syndrome, 228600
AP1S3	114.2	90	90	{Psoriasis 15, pustular, susceptibility to}, 616106
AP3B1	95	97	90	Hermansky-Pudlak syndrome 2, 608233
APC	159	99	98	Adenoma, periampullary, somatic Adenomatous polyposis coli, 175100 Brain tumor-polyposis syndrome 2, 175100 Colorectal cancer, somatic, 114500 Desmoid disease, hereditary, 135290 Gardner syndrome, 175100 Gastric cancer, somatic, 613659 Hepatoblastoma, somatic, 114550
APCDD1	179.6	100	99	Hypotrichosis 1, 605389
AQP5	110.9	99	97	Palmoplantar keratoderma, Bothnian type, 600231
ARHGAP31	133.4	99	98	Adams-Oliver syndrome 1, 100300
ARID1A	150	92	89	Coffin-Siris syndrome 2, 614607
ARID1B	156.7	94	89	Coffin-Siris syndrome 1, 135900
ASIP	102.3	100	99	[Skin/hair/eye pigmentation 9, brown/nonbrown eyes], 611742 [Skin/hair/eye pigmentation 9, dark/light hair], 611742
ASL	114.4	99	98	Argininosuccinic aciduria, 207900
ASXL1	159.8	99	97	Bohring-Opitz syndrome, 605039 Myelodysplastic syndrome, somatic, 614286
ASXL3	162.9	99	98	Bainbridge-Ropers syndrome, 615485
ATIC	119.5	99	99	AICA-ribosiduria due to ATIC deficiency, 608688
ATP2A2	175.2	100	99	Acrokeratosis verruciformis, 101900 Darier disease, 124200

ATP2C1	118.6	99	99	Hailey-Hailey disease, 169600
ATP6V0A2	130	100	99	Cutis laxa, autosomal recessive, type IIA, 219200 Wrinkly skin syndrome, 278250
ATP7A	133.2	99	97	Menkes disease, 309400 Occipital horn syndrome, 304150 Spinal muscular atrophy, distal, X-linked 3, 300489
ATR	138.3	99	96	Seckel syndrome 1, 210600 ?Cutaneous telangiectasia and cancer syndrome, familial, 614564
AXIN2	114.5	99	98	Colorectal cancer, somatic, 114500 Oligodontia-colorectal cancer syndrome, 608615
B3GALT6	47.5	76	71	Ehlers-Danlos syndrome, progeroid type, 2, 615349 Spondyloepimetaphyseal dysplasia with joint laxity, type 1, with or without fractures, 271640
B4GALT7	104.3	96	95	Ehlers-Danlos syndrome with short stature and limb anomalies, 130070
BANF1	58.3	98	88	Nestor-Guillermo progeria syndrome, 614008
BAP1	111	85	82	Tumor predisposition syndrome, 614327
BCOR	109.7	99	96	Microphthalmia, syndromic 2, 300166
BCS1L	182.3	100	100	Bjornstad syndrome, 262000 GRACILE syndrome, 603358 Leigh syndrome, 256000 Mitochondrial complex III deficiency, nuclear type 1, 124000
BLM	116.3	99	96	Bloom syndrome, 210900
BLOC1S3	28.7	88	65	Hermansky-Pudlak syndrome 8, 614077
BLOC1S6	97.2	98	91	Hermansky-pudlak syndrome 9, 614171
BMS1	96.6	66	65	?Aplasia cutis congenita, nonsyndromic, 107600
BRAF	74.4	87	77	Adenocarcinoma of lung, somatic, 211980 Cardiofaciocutaneous syndrome, 115150 Colorectal cancer, somatic LEOPARD syndrome 3, 613707 Melanoma, malignant, somatic Nonsmall cell lung cancer, somatic Noonan syndrome 7, 613706
BRIP1	117.8	99	97	Breast cancer, early-onset, 114480 Fanconi anemia, complementation group J, 609054

BSCL2	113.5	100	100	Encephalopathy, progressive, with or without lipodystrophy, 615924 Lipodystrophy, congenital generalized, type 2, 269700 Neuropathy, distal hereditary motor, type VA, 600794 Silver spastic paraplegia syndrome, 270685
BTD	166.6	100	99	Biotinidase deficiency, 253260
C1QA	120.4	100	99	C1q deficiency, 613652
C1QB	183.4	100	99	C1q deficiency, 613652
C1QC	198.1	100	98	C1q deficiency, 613652
C2CD3	143.1	95	95	?Orofaciodigital syndrome XIV, 615948
C4orf26	197.6	100	100	Amelogenesis imperfecta, type IIA4, 614832
CA2	140.7	100	99	Osteopetrosis, autosomal recessive 3, with renal tubular acidosis, 259730
CAPN12	86.9	95	86	No OMIM phenotype Modifying factor in ichthyosis
CARD14	116.2	99	97	Pityriasis rubra pilaris, 173200 Psoriasis 2, 602723
CARD9	119.7	98	96	Candidiasis, familial, 2, autosomal recessive, 212050
CASP14	85.5	100	100	Ichthyosis, congenital, autosomal recessive 12, 617320
CAST	110.2	96	92	Peeling skin with leukonychia, acral punctate keratoses, cheilitis, and knuckle pads, 616295
CAV1	265.4	100	100	Pulmonary hypertension, primary, 3, 615343 ?Lipodystrophy, congenital generalized, type 3, 612526 ?Partial lipodystrophy, congenital cataracts, and neurodegeneration syndrome, 606721
CAVIN1	137	99	99	Lipodystrophy, congenital generalized, type 4, 613327
CBL	129.8	96	95	Noonan syndrome-like disorder with or without juvenile myelomonocytic leukemia, 613563 ?Juvenile myelomonocytic leukemia,607785
CBS	116.2	97	91	Homocystinuria, B6-responsive and nonresponsive types, 236200 Thrombosis, hyperhomocysteinemic, 236200
CCBE1	75.9	98	95	Hennekam lymphangiectasia-lymphedema syndrome 1, 235510
CD151	132.3	100	100	Nephropathy with pretibial epidermolysis bullosa and deafness, 609057 [Blood group, Raph], 179620

CDAN1	97.6	97	95	Dyserythropoietic anemia, congenital, type Ia, 224120
CDH3	159.3	99	97	Ectodermal dysplasia, ectrodactyly, and macular dystrophy, 225280 Hypotrichosis, congenital, with juvenile macular dystrophy, 601553
CDK4	128	100	99	{Melanoma, cutaneous malignant, 3}, 609048
CDKN2A	79.6	92	91	Melanoma and neural system tumor syndrome, 155755 Orolaryngeal cancer, multiple, Pancreatic cancer/melanoma syndrome, 606719 {Melanoma, cutaneous malignant, 2}, 155601
CDSN	119.3	100	99	Hypotrichosis 2, 146520 Peeling skin syndrome 1, 270300
CELSR1	183.8	93	92	No OMIM phenotype Congenital heart defects (Qiao (2016) Clin Sci (Lond)) Craniorachischisis (Robinson (2012) Hum Mutat 33,440) Neural tube defects (Qiao (2016) Clin Sci (Lond)) Spina bifida (Lei (2014) PLoS One 9,e92207) Lymphoedema (Gonzalez-Garay (2016) Vasc Cell 8,1)
CERS3	106.8	100	98	Ichthyosis, congenital, autosomal recessive 9, 615023
CHKB	98.5	100	99	Muscular dystrophy, congenital, megaconial type, 602541
CHST14	165.6	95	93	Ehlers-Danlos syndrome, musculocontractural type 1, 601776
CHSY1	138.4	95	93	Temtamy preaxial brachydactyly syndrome, 605282
CHUK	131.6	100	98	Cocoon syndrome, 613630
CKAP2L	161.3	98	96	Filippi syndrome, 272440
CLDN1	137.6	100	100	Ichthyosis, leukocyte vacuoles, alopecia, and sclerosing cholangitis, 607626
CLDN10	148.9	100	100	HELIX syndrome, 617671
CNNM4	190.5	98	97	Jalili syndrome, 217080
COL14A1	131	98	96	No OMIM phenotype Keratoderma, palmoplantar, punctate (Guo (2012) J Med Genet 49,563)
COL17A1	107.9	99	96	Epidermolysis bullosa, junctional, localisata variant, 226650 Epidermolysis bullosa, junctional, non-Herlitz type, 226650 Epithelial recurrent erosion dystrophy, 122400

COL1A2	101.8	96	93	Ehlers-Danlos syndrome, cardiac valvular form, 225320 Ehlers-Danlos syndrome, type VIIB, 130060 Osteogenesis imperfecta, type II, 166210 Osteogenesis imperfecta, type III, 259420 Osteogenesis imperfecta, type IV, 166220 {Osteoporosis, postmenopausal}, 166710
COL3A1	104.3	97	92	Ehlers-Danlos syndrome, type IV, 130050
COL5A1	114.3	97	95	Ehlers-Danlos syndrome, classic type, 130000
COL5A2	89.1	99	97	Ehlers-Danlos syndrome, classic type, 130000
COL7A1	129.5	99	97	EBD inversa, 226600 EBD, Bart type, 132000 EBD, localisata variant Epidermolysis bullosa dystrophica, AD, 131750 Epidermolysis bullosa dystrophica, AR, 226600 Epidermolysis bullosa pruriginosa, 604129 Epidermolysis bullosa, pretibial, 131850 Toenail dystrophy, isolated, 607523 Transient bullous of the newborn, 131705
COX4I2	120.1	100	100	Exocrine pancreatic insufficiency, dyserythropoietic anemia, and calvarial hyperostosis, 612714
COX7B	47.9	73	42	Linear skin defects with multiple congenital anomalies, 300887
CPOX	116.8	95	88	Coproporphyria, 121300 Harderoporphyria, 121300
CST6	112.7	99	93	No OMIM phenotype Epilepsy, progressive myoclonus (Lalioti (1997) Am J Hum Genet 60,342) Unverricht-Lundborg disease (Canafoglia (2012) Epilepsia 53,2120)
CSTA	119	99	99	Peeling skin syndrome 4, 607936
CTC1	119	100	99	Cerebroretinal microangiopathy with calcifications and cysts, 612199
CTSA	134.1	100	99	Galactosialidosis, 256540

CTSB	137.3	100	100	No OMIM phenotype Asparaginase sensitivity (van der Meer (2014) Blood 124,3027) {Tropical calcific pancreatitits, association with} (Mahurkar (2006) Gut 55,1270)
CTSC	127.5	100	100	Haim-Munk syndrome, 245010 Papillon-Lefevre syndrome, 245000 Periodontitis 1, juvenile, 170650
CXCR4	202.7	100	99	Myelokathexis, isolated WHIM syndrome, 193670
CYLD	119.9	98	93	Brooke-Spiegler syndrome, 605041 Cylindromatosis, familial, 132700 Trichoepithelioma, multiple familial, 1, 601606
CYP26C1	87.2	99	95	Focal facial dermal dysplasia 4, 614974
CYP4F22	127.7	100	99	Ichthyosis, congenital, autosomal recessive 5, 604777
DCAF17	91.9	95	89	Woodhouse-Sakati syndrome, 241080
DCLRE1C	128.8	98	94	Omenn syndrome, 603554 Severe combined immunodeficiency, Athabascan type, 602450
DDB2	162.4	100	99	Xeroderma pigmentosum, group E, DDB-negative subtype, 278740
DHCR7	158.3	100	100	Smith-Lemli-Opitz syndrome, 270400
DKC1	111.9	99	98	Dyskeratosis congenita, X-linked, 305000
DLX3	109.8	100	99	Amelogenesis imperfecta, type IV, 104510 Trichodontoosseous syndrome, 190320
DLX5	123.6	99	97	?Split-hand/foot malformation 1 with sensorineural hearing loss, 220600
DOCK6	119.9	98	96	Adams-Oliver syndrome 2, 614219
DOCK8	129.1	100	99	Hyper-IgE recurrent infection syndrome, autosomal recessive, 243700
DOLK	202.9	100	99	Congenital disorder of glycosylation, type Im, 610768
DSC2	128.5	99	96	Arrhythmogenic right ventricular dysplasia 11 with mild palmoplantar keratoderma and woolly hair, 610476 Arrhythmogenic right ventricular dysplasia 11, 610476
DSC3	87.1	97	89	?Hypotrichosis and recurrent skin vesicles, 613102

DSE	124.3	99	98	?Ehlers-Danlos syndrome, musculocontractural type 2, 615539
DSG1	175	98	96	Erythroderma, congenital, with palmoplantar keratoderma, hypotrichosis, and hyper IgE, 615508 Keratosis palmoplantaris striata I, AD, 148700
DSG3	148.9	99	98	No OMIM phenotype
DSG4	198.4	98	95	Hypotrichosis 6, 607903
DSP	154	100	99	Arrhythmogenic right ventricular dysplasia 8, 607450 Cardiomyopathy, dilated, with woolly hair and keratoderma, 605676 Dilated cardiomyopathy with woolly hair, keratoderma, and tooth agenesis, 615821 Epidermolysis bullosa, lethal acantholytic, 609638 Keratosis palmoplantaris striata II, 612908 Skin fragility-woolly hair syndrome, 607655
DSPP	155.7	99	99	Deafness, autosomal dominant 39, with dentinogenesis, 605594 Dentin dysplasia, type II, 125420 Dentinogenesis imperfecta, Shields type II, 125490 Dentinogenesis imperfecta, Shields type III, 125500
DST	154.1	99	98	Epidermolysis bullosa simplex, autosomal recessive 2, 615425 ?Neuropathy, hereditary sensory and autonomic, type VI, 614653
DTNBP1	115.2	99	95	Hermansky-Pudlak syndrome 7, 614076
DUSP6	175.9	100	99	Hypogonadotropic hypogonadism 19 with or without anosmia, 615269
EBP	83.3	100	98	Chondrodysplasia punctata, X-linked dominant, 302960 MEND syndrome, 300960
ECM1	170.8	100	99	Urbach-Wiethe disease, 247100
EDA	88.5	85	77	Ectodermal dysplasia 1, hypohidrotic, X-linked, 305100 Tooth agenesis, selective, X-linked 1, 313500
EDAR	138.6	100	99	Ectodermal dysplasia 10A, hypohidrotic/hair/nail type, autosomal dominant, 129490 Ectodermal dysplasia 10B, hypohidrotic/hair/tooth type, autosomal recessive, 224900 [Hair morphology 1, hair thickness], 612630

EDARADD	99.1	99	93	Ectodermal dysplasia 11A, hypohidrotic/hair/tooth type, autosomal dominant, 614940 Ectodermal dysplasia 11B, hypohidrotic/hair/tooth type, autosomal recessive, 614941
EDN3	134.4	100	99	Central hypoventilation syndrome, congenital, 209880 Waardenburg syndrome, type 4B, 613265 {Hirschsprung disease, susceptibility to, 4}, 613712
EDNRA	218.9	100	99	Mandibulofacial dysostosis with alopecia, 616367 {Migraine, resistance to}, 157300
EDNRB	131	95	90	ABCD syndrome, 600501 Waardenburg syndrome, type 4A, 277580 {Hirschsprung disease, susceptibility to, 2}, 600155
EFEMP2	120.9	100	99	Cutis laxa, autosomal recessive, type IB, 614437
EFNB1	118.5	100	99	Craniofrontonasal dysplasia, 304110
EIF2AK3	147.1	95	91	Wolcott-Rallison syndrome, 226980
ELN	91.1	99	97	Cutis laxa, AD, 123700 Supravalvar aortic stenosis, 185500
ELOVL1	117	100	99	No OMIM phenotype
ELOVL4	91.9	99	98	Ichthyosis, spastic quadriplegia, and mental retardation, 614457 Stargardt disease 3, 600110 ?Spinocerebellar ataxia 34, 133190
ENAM	148.9	100	99	Amelogenesis imperfecta, type IB, 104500 Amelogenesis imperfecta, type IC, 204650
ENG	128.8	97	93	Telangiectasia, hereditary hemorrhagic, type 1, 187300
ENPP1	134.8	92	83	Arterial calcification, generalized, of infancy, 1, 208000 Cole disease, 615522 Hypophosphatemic rickets, autosomal recessive, 2, 613312 {Diabetes mellitus, non-insulin-dependent, susceptibility to}, 125853 {Obesity, susceptibility to}, 601665
EPG5	126	99	97	Vici syndrome, 242840
EPS8L3	112.5	99	97	No OMIM phenotype Marie Unna hereditary hypotrichosis (Zhang (2012) J Med Genet 49,727)

ERCC2	123.7	100	99	Cerebrooculofacioskeletal syndrome 2, 610756 Trichothiodystrophy 1, photosensitive, 601675 Xeroderma pigmentosum, group D, 278730
ERCC3	113.2	99	98	Trichothiodystrophy 2, photosensitive, 616390 Xeroderma pigmentosum, group B, 610651
ERCC4	139.2	100	99	Fanconi anemia, complementation group Q, 615272 Xeroderma pigmentosum, group F, 278760 Xeroderma pigmentosum, type F/Cockayne syndrome, 278760 ?XFE progeroid syndrome, 610965
ERCC5	139.8	100	99	Cerebrooculofacioskeletal syndrome 3, 616570 Xeroderma pigmentosum, group G, 278780 Xeroderma pigmentosum, group G/Cockayne syndrome, 278780
ERCC6	191.3	100	99	Cerebrooculofacioskeletal syndrome 1, 214150 Cockayne syndrome, type B, 133540 De Sanctis-Cacchione syndrome, 278800 Premature ovarian failure 11,616946 UV-sensitive syndrome 1, 600630 {Lung cancer, susceptibility to}, 211980 {Macular degeneration, age-related, susceptibility to 5}, 613761
ERCC8	89.5	92	78	Cockayne syndrome, type A, 216400 UV-sensitive syndrome 2, 614621
EVC	110.4	93	89	Ellis-van Creveld syndrome, 225500 Weyers acrodental dysostosis, 193530
EVC2	119.3	96	94	Ellis-van Creveld syndrome, 225500 Weyers acrofacial dysostosis, 193530
EXPH5	183.3	100	99	Epidermolysis bullosa, nonspecific, autosomal recessive, 615028
FAM111B	152.9	100	99	Poikiloderma, hereditary fibrosing, with tendon contractures, myopathy, and pulmonary fibrosis, 615704
FAM20A	105.4	98	92	Amelogenesis imperfecta, type IG (enamel-renal syndrome), 204690
FAM20C	101.3	100	98	Raine syndrome, 259775
FAM83G	116.3	100	100	No OMIM phenotype Palmoplantar keratoderma with leukonychia and abundant curly hair (Maruthappu et al. (2016) ESDR)

FAM83H	76.7	94	87	Amelogenesis imperfecta, type III, 130900
FANCA	123.3	99	98	Fanconi anemia, complementation group A, 227650
FANCB	68.4	96	87	Fanconi anemia, complementation group B, 300514
FANCC	121.6	99	97	Fanconi anemia, complementation group C, 227645
FANCD2	127.6	98	95	Fanconi anemia, complementation group D2, 227646
FANCE	108	85	84	Fanconi anemia, complementation group E, 600901
FANCF	166.8	100	100	Fanconi anemia, complementation group F, 603467
FANCG	147.7	100	100	Fanconi anemia, complementation group G, 614082
FANCI	152.1	99	97	Fanconi anemia, complementation group I, 609053
FANCL	87.8	99	94	Fanconi anemia, complementation group L, 614083
FANCM	96.8	99	94	No OMIM phenotype Fanconi anemia, complementation group M, 614087
FAT4	224.5	100	99	Hennekam lymphangiectasia-lymphedema syndrome 2, 616006 Van Maldergem syndrome 2, 615546
FBLN5	119.6	91	91	Cutis laxa, autosomal dominant 2, 614434 Cutis laxa, autosomal recessive, type IA, 219100 Macular degeneration, age-related, 3, 608895 Neuropathy, hereditary, with or without age-related macular degeneration, 608895
FDPS	72.8	99	95	Porokeratosis 9, multiple types, 616631
FECH	121.9	99	99	Protoporphyria, erythropoietic, autosomal recessive, 177000
FERMT1	104.9	98	96	Kindler syndrome,173650
FGF10	142.2	100	100	Aplasia of lacrimal and salivary glands, 180920 LADD syndrome, 149730
FGF23	106	99	97	Hypophosphatemic rickets, autosomal dominant, 193100 Osteomalacia, tumor-induced Tumoral calcinosis, hyperphosphatemic, familial, 211900
FGF3	73.9	92	75	Deafness, congenital with inner ear agenesis, microtia, and microdontia, 610706
FGF5	109.2	99	97	Trichomegaly, 190330
FGF8	111.4	90	79	Hypogonadotropic hypogonadism 6 with or without anosmia, 612702

FGFR1	148	99	98	Encephalocraniocutaneous lipomatosis,613001 Hartsfield syndrome, 615465 Hypogonadotropic hypogonadism 2 with or without anosmia, 147950 Jackson-Weiss syndrome, 123150 Osteoglophonic dysplasia, 166250 Pfeiffer syndrome, 101600 Trigonocephaly 1, 190440
FGFR2	140.1	97	96	Antley-Bixler syndrome without genital anomalies or disordered steroidogenesis, 207410 Apert syndrome, 101200 Beare-Stevenson cutis gyrata syndrome, 123790 Bent bone dysplasia syndrome, 614592 Craniofacial-skeletal-dermatologic dysplasia, 101600 Craniosynostosis, nonspecific Crouzon syndrome, 123500 Gastric cancer, somatic, 613659 Jackson-Weiss syndrome, 123150 LADD syndrome, 149730 Pfeiffer syndrome, 101600 Saethre-Chotzen syndrome, 101400 Scaphocephaly and Axenfeld-Rieger anomaly Scaphocephaly, maxillary retrusion, and mental retardation, 609579
FGFR3	110.2	99	97	Achondroplasia, 100800 Bladder cancer, somatic, 109800 CATSHL syndrome, 610474 Cervical cancer, somatic, 603956 Colorectal cancer, somatic, 114500 Crouzon syndrome with acanthosis nigricans, 612247 Hypochondroplasia, 146000 LADD syndrome, 149730 Muenke syndrome, 602849 Nevus, epidermal, somatic, 162900 SADDAN, 616482 Spermatocytic seminoma, somatic, 273300 Thanatophoric dysplasia, type I, 187600 Thanatophoric dysplasia, type II, 187601

FH	146.4	91	87	Fumarase deficiency, 606812 Leiomyomatosis and renal cell cancer, 150800
FKBP10	158.6	96	92	Bruck syndrome 1, 259450 Osteogenesis imperfecta, type XI, 610968
FKBP14	74.3	100	99	Ehlers-Danlos syndrome with progressive kyphoscoliosis, myopathy, and hearing loss, 614557
FLCN	160.5	100	99	Birt-Hogg-Dube syndrome, 135150 Colorectal cancer, somatic, 114500 Pneumothorax, primary spontaneous, 173600 Renal carcinoma, chromophobe, somatic, 144700
FLG	234.1	100	99	Ichthyosis vulgaris, 146700 {Dermatitis, atopic, susceptibility to, 2}, 605803
FLG2	691.5	100	100	No OMIM phenotype ?Atopic dermatitis (Margolis (2014) J Invest Dermatol 134,2272)
FLT4	155.9	98	97	Hemangioma, capillary infantile, somatic, 602089 Lymphedema, hereditary, IA, 153100
FNIP1	153.4	99	98	No OMIM phenotype Multiple discoid fibromas (Claessens (2013) J Invest Dermatol 133 S136)
FOXC2	44.3	95	78	Lymphedema-distichiasis syndrome with renal disease and diabetes mellitus, 153400 Lymphedema-distichiasis syndrome, 153400
FOXE1	29.3	72	56	Bamforth-Lazarus syndrome, 241850 {Thyroid cancer, nonmedullary, 4}, 616534
FOXN1	112.5	100	99	T-cell immunodeficiency, congenital alopecia, and nail dystrophy, 601705
FOXP3	124.6	98	91	Immunodysregulation, polyendocrinopathy, and enteropathy, X-linked, 304790 {Diabetes mellitus, type I, susceptibility to}, 222100
FREM1	138.4	99	99	Bifid nose with or without anorectal and renal anomalies, 608980 Manitoba oculotrichoanal syndrome, 248450 Trigonocephaly 2, 614485
FUCA1	135	100	99	Fucosidosis, 230000
FZD6	208.6	100	100	Nail disorder, nonsyndromic congenital, 10, (claw-shaped nails), 614157

GALNS	93.2	99	95	Mucopolysaccharidosis IVA, 253000
GALNT3	128.2	99	96	Tumoral calcinosis, hyperphosphatemic, familial, 211900
GAN	190	100	99	Giant axonal neuropathy-1, 256850
GATA2	119.6	99	98	Emberger syndrome, 614038 Immunodeficiency 21, 614172 {Leukemia, acute myeloid, susceptibility to}, 601626 {Myelodysplastic syndrome, susceptibility to}, 614286
GDF2	163.2	100	100	Telangiectasia, hereditary hemorrhagic, type 5, 615506
GDF5	141.8	100	100	Brachydactyly, type A1, C, 615072 Brachydactyly, type A2, 112600 Brachydactyly, type C, 113100 Chondrodysplasia, Grebe type, 200700 Du Pan syndrome, 228900 Multiple synostoses syndrome 2, 610017 Symphalangism, proximal, 1B, 615298 ?Acromesomelic dysplasia, Hunter-Thompson type, 201250 {Osteoarthritis-5}, 612400
GGCX	115.3	100	99	Pseudoxanthoma elasticum-like disorder with multiple coagulation factor deficiency, 610842 Vitamin K-dependent clotting factors, combined deficiency of, 1, 277450
GJA1	246.4	100	100	Atrioventricular septal defect 3, 600309 Craniometaphyseal dysplasia, autosomal recessive, 218400 Erythrokeratodermia variabilis et progressiva, 133200 Hypoplastic left heart syndrome 1, 241550 Oculodentodigital dysplasia, 164200 Oculodentodigital dysplasia, autosomal recessive, 257850 Palmoplantar keratoderma with congenital alopecia, 104100 Syndactyly, type III, 186100
GJB2	205.1	100	100	Bart-Pumphrey syndrome, 149200 Deafness, autosomal dominant 3A, 601544 Deafness, autosomal recessive 1A, 220290 Hystrix-like ichthyosis with deafness, 602540 Keratitis-ichthyosis-deafness syndrome, 148210 Keratoderma, palmoplantar, with deafness, 148350

				Vohwinkel syndrome, 124500
GJB3	308.9	100	100	Deafness, autosomal dominant 2B, 612644 Deafness, autosomal dominant, with peripheral neuropathy Deafness, autosomal recessive Deafness, digenic, GJB2/GJB3, 220290 Erythrokeratodermia variabilis et progressiva, 133200
GJB4	369.9	100	100	Erythrokeratodermia variabilis with erythema gyratum repens, 133200
GJB6	185.4	100	100	Deafness, autosomal dominant 3B, 612643 Deafness, autosomal recessive 1B, 612645 Deafness, digenic GJB2/GJB6, 220290 Ectodermal dysplasia 2, Clouston type, 129500
GJC2	41.9	68	58	Leukodystrophy, hypomyelinating, 2, 608804 Lymphedema, hereditary, IC, 613480 Spastic paraplegia 44, autosomal recessive, 613206
GLA	81.3	99	97	Fabry disease, 301500 Fabry disease, cardiac variant, 301500
GLB1	94.3	99	97	GM1-gangliosidosis, type I, 230500 GM1-gangliosidosis, type II, 230600 GM1-gangliosidosis, type III, 230650 Mucopolysaccharidosis type IVB (Morquio), 253010
GLMN	66.8	97	86	Glomuvenous malformations,138000
GMPPA	136.8	100	99	Alacrima, achalasia, and mental retardation syndrome, 615510
GNA11	149.5	99	96	Hypocalcemia, autosomal dominant 2, 615361 Hypocalciuric hypercalcemia, type II, 145981
GNA14	158.1	100	100	No OMIM phenotype
GNAQ	82.6	81	69	Capillary malformations, congenital, 1, somatic, mosaic, 163000 Sturge-Weber syndrome, somatic, mosaic, 185300

GNAS	141	98	95	Acromegaly, somatic, 102200 ACTH-independent macronodular adrenal hyperplasia, 219080 McCune-Albright syndrome, somatic, mosaic 174800 Osseous heteroplasia, progressive, 166350 Pseudohypoparathyroidism Ia, 103580 Pseudohypoparathyroidism Ib, 603233 Pseudohypoparathyroidism Ic, 612462 Pseudopseudohypoparathyroidism, 612463
GORAB	176.3	99	97	Geroderma osteodysplasticum, 231070
GPR143	61.5	85	75	Nystagmus 6, congenital, X-linked, 300814 Ocular albinism, type I, Nettleship-Falls type, 300500
GRHL2	134.6	100	100	Deafness, autosomal dominant 28, 608641 Ectodermal dysplasia/short stature syndrome, 616029
GRHL3	140.7	100	99	Van der Woude syndrome 2, 606713
GSN	119.2	94	89	Amyloidosis, Finnish type, 105120
GTF2E2	83.5	96	91	Trichothiodystrophy 6,nonphotosensitive,616943
GTF2H5	113.6	100	99	Trichothiodystrophy 3, photosensitive, 616395
HCCS	106.6	99	99	Linear skin defects with multiple congenital anomalies 1, 309801
HDAC8	131.9	100	99	Cornelia de Lange syndrome 5, 300882
HERC2	114.4	80	77	Mental retardation, autosomal recessive 38, 615516 [Skin/hair/eye pigmentation 1, blond/brown hair], 227220 [Skin/hair/eye pigmentation 1, blue/nonblue eyes], 227220
HLCS	172.8	100	100	Holocarboxylase synthetase deficiency, 253270
HMBS	109	100	99	Porphyria, acute intermittent, 176000 Porphyria, acute intermittent, nonerythroid variant, 176000
HMGB3	38	88	68	?Microphthalmia, syndromic 13, 300915
HOXC13	104.9	97	91	Ectodermal dysplasia 9, hair/nail type, 614931
HPS1	117.8	100	99	Hermansky-Pudlak syndrome 1, 203300
HPS3	135.2	99	96	Hermansky-Pudlak syndrome 3, 614072
HPS4	141.9	100	100	Hermansky-Pudlak syndrome 4, 614073
HPS5	133	99	98	Hermansky-Pudlak syndrome 5, 614074
HPS6	139.1	91	84	Hermansky-Pudlak syndrome 6, 614075

HR	94.9	97	94	Alopecia universalis, 203655 Atrichia with papular lesions, 209500 Hypotrichosis 4, 146550
HRAS	164.7	99	98	Congenital myopathy with excess of muscle spindles, 218040 Costello syndrome, 218040 Schimmelpenning-Feuerstein-Mims syndrome, somatic mosaic, 163200 {Bladder cancer, somatic}, 109800 {Nevus sebaceous or woolly hair nevus, somatic}, 162900 {Spitz nevus or nevus spilus, somatic}, 137550 {Thyroid carcinoma, follicular, somatic}, 188470
HTRA1	98.2	84	81	CARASIL syndrome, 600142 Cerebral arteriopathy, autosomal dominant, with subcortical infarcts and leukoencephalopathy, type 2, 616779 {Macular degeneration, age-related, 7}, 610149 {Macular degeneration, age-related, neovascular type}, 610149
HYAL1	115.3	100	100	?Mucopolysaccharidosis type IX, 601492
IDUA	123	88	80	Mucopolysaccharidosis Ih, 607014 Mucopolysaccharidosis Ih/s, 607015 Mucopolysaccharidosis Is, 607016
IFT122	152	100	99	Cranioectodermal dysplasia 1, 218330
IFT43	114.8	100	100	Cranioectodermal dysplasia 3, 614099
IKBKG	52.5	84	73	Ectodermal dysplasia, hypohidrotic, with immune deficiency, 300291 Ectodermal, dysplasia, anhidrotic, lymphedema and immunodeficiency, 300301 Immunodeficiency 33, 300636 Immunodeficiency, isolated, 300584 Incontinentia pigmenti, 308300 Invasive pneumococcal disease, recurrent isolated, 2, 300640
IL17RA	140.5	99	96	Immunodeficiency 51, 613953
IL17RD	135.6	99	97	Hypogonadotropic hypogonadism 18 with or without anosmia, 615267

IL1RN	162.8	100	100	Interleukin 1 receptor antagonist deficiency, 612852 {Gastric cancer risk after H. pylori infection}, 137215 {Microvascular complications of diabetes 4}, 612628
IL31RA	124.2	99	99	Amyloidosis, primary localized cutaneous, 2, 613955
IL36RN	99	100	100	Psoriasis 14, pustular, 614204
INSR	141.1	97	94	Diabetes mellitus, insulin-resistant, with acanthosis nigricans, 610549 Hyperinsulinemic hypoglycemia, familial, 5, 609968 Leprechaunism, 246200 Rabson-Mendenhall syndrome, 262190
IRF4	182.4	100	99	[Skin/hair/eye pigmentation, variation in, 8], 611724
IRF6	113.7	99	97	Popliteal pterygium syndrome 1, 119500 van der Woude syndrome, 119300 {Orofacial cleft 6}, 608864
ITGA3	141.5	99	98	Interstitial lung disease, nephrotic syndrome, and epidermolysis bullosa, congenital, 614748
ITGA6	146.5	99	99	Epidermolysis bullosa, junctional, with pyloric stenosis, 226730
ITGB4	150.1	97	94	Epidermolysis bullosa of hands and feet, 131800 Epidermolysis bullosa, junctional, non-Herlitz type, 226650 Epidermolysis bullosa, junctional, with pyloric atresia, 226730
ITGB6	137	96	95	Amelogenesis imperfecta, type IH, 616221
JUP	145.1	100	99	Arrhythmogenic right ventricular dysplasia 12, 611528 Naxos disease, 601214
KANK2	151.4	99	99	Palmoplantar keratoderma and woolly hair, 616099
KAT6B	192.3	99	98	Genitopatellar syndrome, 606170 SBBYSS syndrome, 603736
KCNH1	185.8	98	98	Temple-Baraitser syndrome, 611816 Zimmermann-Laband syndrome 1, 135500
KCNK9	193.7	100	100	Birk-Barel mental retardation dysmorphism syndrome, 612292
KDF1	103.9	100	99	?Ectodermal dysplasia 12,hypohidrotic/hair/tooth/nail type, 617337
KDSR	173.7	100	100	Lymphoma/leukemia, B-cell, variant
KIF11	83.8	97	94	Microcephaly with or without chorioretinopathy, lymphedema, or mental retardation, 152950

KIT	153	100	99	Gastrointestinal stromal tumor, familial, 606764 Germ cell tumors, 273300 Leukemia, acute myeloid, 601626 Mast cell disease, 154800 Piebaldism, 172800
KITLG	81.8	97	91	Deafness, congenital, unilateral or asymmetric, 616697 Hyperpigmentation with or without hypopigmentation, 145250 [Skin/hair/eye pigmentation 7, blond/brown hair], 611664
KLHL24	192.9	100	100	Epidermolysis bullosa simplex, generalized, with scarring and hair loss ,617294
KLK4	185.1	100	98	Amelogenesis imperfecta, type IIA1, 204700
KLLN	117.1	100	100	Cowden syndrome 4, 615107
KMT2D	142.1	99	99	Kabuki syndrome 1, 147920
KRAS	64.7	99	98	Bladder cancer, somatic, 109800 Breast cancer, somatic, 114480 Cardiofaciocutaneous syndrome 2, 615278 Gastric cancer, somatic, 137215 Leukemia, acute myeloid, 601626 Lung cancer, somatic, 211980 Noonan syndrome 3, 609942 Pancreatic carcinoma, somatic, 260350 RAS-associated autoimmune leukoproliferative disorder, 614470 Schimmelpenning-Feuerstein-Mims syndrome, somatic mosaic, 163200
KRT1	120.1	99	96	Epidermolytic hyperkeratosis, 113800 Ichthyosis histrix, Curth-Macklin type, 146590 Ichthyosis, cyclic, with epidermolytic hyperkeratosis, 607602 Keratosis palmoplantaris striata III, 607654 Palmoplantar keratoderma, epidermolytic, 144200 Palmoplantar keratoderma, nonepidermolytic, 600962
KRT10	103	98	93	Epidermolytic hyperkeratosis, 113800 Ichthyosis with confetti, 609165 Ichthyosis, cyclic, with epidermolytic hyperkeratosis, 607602
KRT13	140.4	99	98	White sponge nevus 2, 615785

KRT14	59.3	89	82	Dermatopathia pigmentosa reticularis, 125595 Epidermolysis bullosa simplex, Dowling-Meara type, 131760 Epidermolysis bullosa simplex, Koebner type, 131900 Epidermolysis bullosa simplex, recessive 1, 601001 Epidermolysis bullosa simplex, Weber-Cockayne type, 131800 Naegeli-Franceschetti-Jadassohn syndrome, 161000
KRT16	38.5	72	53	Pachyonychia congenita 1, 167200 Palmoplantar keratoderma, nonepidermolytic, focal, 613000
KRT17	21.5	47	31	Pachyonychia congenita 2, 167210 Steatocystoma multiplex, 184500
KRT2	140.9	100	99	Ichthyosis bullosa of Siemens, 146800
KRT4	130.7	100	99	White sponge nevus 1, 193900
KRT5	133.5	100	100	Dowling-Degos disease 1, 179850 Epidermolysis bullosa simplex, Dowling-Meara type, 131760 Epidermolysis bullosa simplex, Koebner type, 131900 Epidermolysis bullosa simplex, recessive 1, 601001 Epidermolysis bullosa simplex, Weber-Cockayne type, 131800 Epidermolysis bullosa simplex-MP, 131960 Epidermylysis bullosa simplex-MCR, 609352
KRT6A	197.8	94	87	Pachyonychia congenita 3, 615726
KRT6B	194.4	95	89	Pachyonychia congenita 4, 615728
KRT6C	174.5	87	79	Palmoplantar keratoderma, nonepidermolytic, focal or diffuse, 615735
KRT71	139.8	100	100	?Hypotrichosis 13, 615896
KRT74	150.2	99	98	?Ectodermal dysplasia 7, hair/nail type, 614929 ?Hypotrichosis 3, 613981 Woolly hair, autosomal dominant, 194300
KRT75	135.3	100	100	{Pseudofolliculitis barbae, susceptibility to}, 612318
KRT81	93.4	99	96	Monilethrix, 158000
KRT83	81.3	98	89	?Monilethrix, 158000
KRT85	108.3	98	95	Ectodermal dysplasia 4, hair/nail type, 602032
KRT86	101.4	100	98	Monilethrix, 158000
KRT9	84.8	98	96	Palmoplantar keratoderma, epidermolytic, 144200

LAMA3	147.6	99	99	Epidermolysis bullosa, generalized atrophic benign, 226650 Epidermolysis bullosa, junctional, Herlitz type, 226700 Laryngoonychocutaneous syndrome, 245660
LAMB3	123.4	100	99	Amelogenesis imperfecta, type IA, 104530 Epidermolysis bullosa, junctional, Herlitz type, 226700 Epidermolysis bullosa, junctional, non-Herlitz type, 226650
LAMC2	117.6	99	98	Epidermolysis bullosa, junctional, Herlitz type, 226700 Epidermolysis bullosa, junctional, non-Herlitz type, 226650
LAMTOR2	167	100	99	Immunodeficiency due to defect in MAPBP-interacting protein, 610798
LDHA	59.8	94	87	Glycogen storage disease XI, 612933
LDLRAP1	156.1	95	91	Hypercholesterolemia, familial, autosomal recessive, 603813
LEMD3	96.7	95	88	Buschke-Ollendorff syndrome, 166700 Melorheostosis with osteopoikilosis, 155950 Osteopoikilosis, 166700
LIPH	140.6	100	100	Hypotrichosis 7, 604379 Woolly hair, autosomal recessive 2 with or without hypotrichosis, 604379
LIPN	125.2	99	95	Ichthyosis, congenital, autosomal recessive 8, 613943
LMBRD1	80.2	91	83	Methylmalonic aciduria and homocystinuria, cblF type, 277380
LMNA	89.2	97	91	Cardiomyopathy, dilated, 1A, 115200 Charcot-Marie-Tooth disease, type 2B1, 605588 Emery-Dreifuss muscular dystrophy 2, AD, 181350 Emery-Dreifuss muscular dystrophy 3, AR, 616516 Heart-hand syndrome, Slovenian type, 610140 Hutchinson-Gilford progeria, 176670 Lipodystrophy, familial partial, 2, 151660 Malouf syndrome, 212112 Mandibuloacral dysplasia, 248370 Muscular dystrophy, congenital, 613205 Muscular dystrophy, limb-girdle, type 1B, 159001 Restrictive dermopathy, lethal, 275210
LMX1B	111.4	97	92	Nail-patella syndrome, 161200
LONP1	141.5	97	96	CODAS syndrome, 600373

LOR	13.5	62	33	Vohwinkel syndrome with ichthyosis, 604117
LPAR6	104.2	99	98	Hypotrichosis 8, 278150 Woolly hair, autosomal recessive 1, with or without hypotrichosis, 278150
LPIN2	111.5	100	99	Majeed syndrome, 609628
LRMDA	142.1	97	95	Albinism, oculocutaneous, type VII, 615179
LTBP3	113.5	98	94	Dental anomalies and short stature, 601216
LTBP4	117.1	98	95	Cutis laxa, autosomal recessive, type IC, 613177
LYST	134.6	97	93	Chediak-Higashi syndrome, 214500
LYZ	165.3	100	100	Amyloidosis, renal, 105200
MAP2K1	92.3	99	95	Cardiofaciocutaneous syndrome 3, 615279
MAP2K2	107.9	97	89	Cardiofaciocutaneous syndrome 4, 615280
MBTPS2	113.4	99	97	IFAP syndrome with or without BRESHECK syndrome, 308205 Keratosis follicularis spinulosa decalvans, X-linked, 308800 ?Olmsted syndrome, X-linked, 300918
MED12	105.7	98	94	Lujan-Fryns syndrome, 309520 Ohdo syndrome, X-linked, 300895 Opitz-Kaveggia syndrome, 305450
MEFV	108.8	94	91	Familial Mediterranean fever, AD, 134610 Familial Mediterranean fever, AR, 249100
MGP	132	92	91	Keutel syndrome, 245150
MITF	155.5	100	99	Tietz albinism-deafness syndrome, 103500 Waardenburg syndrome, type 2A, 193510 Waardenburg syndrome/ocular albinism, digenic, 103470 {Melanoma, cutaneous malignant, susceptibility to, 8}, 614456
MLH1	162	100	99	Colorectal cancer, hereditary nonpolyposis, type 2, 609310 Mismatch repair cancer syndrome, 276300 Muir-Torre syndrome, 158320
MLPH	99.1	99	95	Griscelli syndrome, type 3, 609227
MMACHC	205.8	100	100	Methylmalonic aciduria and homocystinuria, cblC type, 277400
MMP2	164.4	100	100	Multicentric osteolysis, nodulosis, and arthropathy, 259600
MMP20	100.5	100	98	Amelogenesis imperfecta, type IIA2, 612529
MPLKIP	72.5	97	79	Trichothiodystrophy 4, nonphotosensitive, 234050

MRE11	51.2	95	82	Ataxia-telangiectasia-like disorder, 604391
MSH2	113.4	98	93	Colorectal cancer, hereditary nonpolyposis, type 1, 120435 Mismatch repair cancer syndrome, 276300 Muir-Torre syndrome, 158320
MSX1	75.2	95	87	Ectodermal dysplasia 3, Witkop type, 189500 Orofacial cleft 5, 608874 Tooth agenesis, selective, 1, with or without orofacial cleft, 106600
MTOR	140	100	99	Smith-Kingsmore syndrome, 616638
MUTYH	165	100	99	Adenomas, multiple colorectal, 608456 Colorectal adenomatous polyposis, autosomal recessive, with pilomatricomas, 132600 Gastric cancer, somatic, 613659
MVD	101.2	100	99	Porokeratosis 7, multiple types, 614714
MVK	124.3	92	90	Hyper-IgD syndrome, 260920 Mevalonic aciduria, 610377 Porokeratosis 3, multiple types, 175900
MYH8	134.9	100	99	Carney complex variant, 608837 Trismus-pseudocamptodactyly syndrome, 158300
MYO5A	125.3	99	97	Griscelli syndrome, type 1, 214450
NAA10	102.4	98	96	Ogden syndrome, 300855 ?Microphthalmia, syndromic 1, 309800
NAGA	139.4	100	100	Kanzaki disease, 609242 Schindler disease, type I, 609241 Schindler disease, type III, 609241
NBAS	145.3	99	97	Infantile liver failure syndrome 2, 616483 Short stature, optic nerve atrophy, and Pelger-Huet anomaly, 614800
NCSTN	111.9	100	99	Acne inversa, familial, 1, 142690
NDUFB11	109.6	94	88	Linear skin defects with multiple congenital anomalies 3, 300952
NECTIN1	145.4	100	100	Cleft lip/palate-ectodermal dysplasia syndrome, 225060 Orofacial cleft 7, 225060
NECTIN4	135.8	100	100	Ectodermal dysplasia-syndactyly syndrome 1, 613573
NEK11	122.7	99	95	No OMIM phenotype Pancreatic cancer (Smith (2016) Cancer Lett 370,302)

NEK9	136.8	99	98	Lethal congenital contracture syndrome 10, 617022 Nevus comedonicus, somatic, 617025 ?Arthrogryposis, Perthes disease, and upward gaze palsy, 614262
NF1	125.9	92	89	Leukemia, juvenile myelomonocytic, 607785 Neurofibromatosis, familial spinal, 162210 Neurofibromatosis, type 1, 162200 Neurofibromatosis-Noonan syndrome, 601321 Watson syndrome, 193520
NFKBIA	116.3	98	93	Ectodermal dysplasia, anhidrotic, with T-cell immunodeficiency, 612132
NHP2	111	100	100	Dyskeratosis congenita, autosomal recessive 2, 613987
NIPAL4	157.8	99	93	Ichthyosis, congenital, autosomal recessive 6, 612281
NIPBL	116.1	96	94	Cornelia de Lange syndrome 1, 122470
NLRP1	126.1	99	96	?Corneal intraepithelial dyskeratosis and ectodermal dysplasia, 615225 {Vitiligo-associated multiple autoimmune disease susceptibility 1}, 606579
NLRP3	150.4	100	100	CINCA syndrome, 607115 Familial cold-induced inflammatory syndrome 1, 120100 Muckle-Wells syndrome, 191900
NME1	104.2	99	99	Neuroblastoma, 256700
NOD2	135.8	100	99	Blau syndrome, 186580 Yao syndrome, 617321 {Inflammatory bowel disease 1}, 266600 {Psoriatic arthritis, susceptibility to}, 607507
NOP10	160.5	100	100	Dyskeratosis congenita, autosomal recessive 1, 224230
NOTCH1	137.5	99	98	Adams-Oliver syndrome 5, 616028 Aortic valve disease 1, 109730

NRAS	188.4	100	100	Colorectal cancer, somatic, 114500 Epidermal nevus, somatic, 162900 Melanocytic nevus syndrome, congenital, somatic, 137550 Neurocutaneous melanosis, somatic, 249400 Noonan syndrome 6, 613224 Schimmelpenning-Feuerstein-Mims syndrome, somatic mosaic, 163200 Thyroid carcinoma, follicular, somatic, 188470 ?RAS-associated autoimmune lymphoproliferative syndrome type IV, somatic, 614470
NSD1	155.2	100	99	Beckwith-Wiedemann syndrome, 130650 Leukemia, acute myeloid, 601626 Sotos syndrome 1, 117550
NSDHL	169.2	99	98	CHILD syndrome, 308050 CK syndrome, 300831
OCA2	139.9	99	97	Albinism, brown oculocutaneous, 203200 Albinism, oculocutaneous, type II, 203200 [Skin/hair/eye pigmentation 1, blond/brown hair], 227220 [Skin/hair/eye pigmentation 1, blue/nonblue eyes], 227220
ODAM	130.5	97	90	No OMIM phenotype
OFD1	51.5	84	67	Joubert syndrome 10, 300804 Orofaciodigital syndrome I, 311200 Simpson-Golabi-Behmel syndrome, type 2, 300209 ?Retinitis pigmentosa 23, 300424
OSMR	145.9	100	99	Amyloidosis, primary localized cutaneous, 1, 105250
PADI3	148.5	100	100	Uncombable hair syndrome, 191480
PAH	151.7	100	100	Phenylketonuria, 261600 [Hyperphenylalaninemia, non-PKU mild], 261600
PALB2	152.6	100	99	Fanconi anemia, complementation group N, 610832 {Breast cancer, susceptibility to}, 114480 {Pancreatic cancer, susceptibility to, 3}, 613348
PAX3	118.5	100	100	Craniofacial-deafness-hand syndrome, 122880 Rhabdomyosarcoma 2, alveolar, 268220 Waardenburg syndrome, type 1, 193500 Waardenburg syndrome, type 3, 148820
PAX9	238.8	99	99	Tooth agenesis, selective, 3, 604625

PCNA	92.1	100	98	?Ataxia-telangiectasia-like disorder, 615919
PDGFB	95.1	100	100	Basal ganglia calcification, idiopathic, 5, 615483 Dermatofibrosarcoma protuberans, 607907 Meningioma, SIS-related, 607174
PDGFRB	147.1	99	96	Basal ganglia calcification, idiopathic, 4, 615007 Kosaki overgrowth syndrome, 616592 Myeloproliferative disorder with eosinophilia, 131440 Myofibromatosis, infantile, 1, 228550 Premature aging syndrome, Penttinen type, 601812
PEPD	116	99	98	Prolidase deficiency, 170100
PEX7	113.5	89	82	Peroxisome biogenesis disorder 9B, 614879 Rhizomelic chondrodysplasia punctata, type 1, 215100
PHEX	125	99	98	Hypophosphatemic rickets, X-linked dominant, 307800
PHGDH	115.6	100	99	Neu-Laxova syndrome 1, 256520 Phosphoglycerate dehydrogenase deficiency, 601815
PHYH	74.6	97	90	Refsum disease, 266500
PIEZO1	140.2	99	97	Dehydrated hereditary stomatocytosis with or without pseudohyperkalemia and/or perinatal edema, 194380 Lymphedema, hereditary, III, 616843
PIGA	90.5	90	81	Multiple congenital anomalies-hypotonia-seizures syndrome 2, 300868 Paroxysmal nocturnal hemoglobinuria, somatic, 300818
PIGN	111.3	92	87	Multiple congenital anomalies-hypotonia-seizures syndrome 1, 614080
PIGV	145.5	100	100	Hyperphosphatasia with mental retardation syndrome 1, 239300

PIK3CA	120.7	99	99	Breast cancer, somatic, 114480 CLOVE syndrome, somatic, 612918 Colorectal cancer, somatic, 114500 Cowden syndrome 5, 615108 Gastric cancer, somatic, 613659 Hepatocellular carcinoma, somatic, 114550 Keratosis, seborrheic, somatic, 182000 Megalencephaly-capillary malformation-polymicrogyria syndrome, somatic, 602501 Nevus, epidermal, somatic, 162900 Nonsmall cell lung cancer, somatic, 211980 Ovarian cancer, somatic, 167000
PITX2	147.8	99	97	Axenfeld-Rieger syndrome, type 1, 180500 Iridogoniodysgenesis, type 2, 137600 Peters anomaly, 604229 Ring dermoid of cornea, 180550
PKP1	122	99	98	Ectodermal dysplasia/skin fragility syndrome, 604536
PLCD1	116.9	99	97	Nail disorder, nonsyndromic congenital, 3, (leukonychia), 151600
PLCG2	118.9	100	99	Autoinflammation, antibody deficiency, and immune dysregulation syndrome, 614878 Familial cold autoinflammatory syndrome 3, 614468
PLEC	114.1	99	98	Epidermolysis bullosa simplex with muscular dystrophy, 226670 Epidermolysis bullosa simplex with pyloric atresia, 612138 Epidermolysis bullosa simplex, Ogna type, 131950 Muscular dystrophy, limb-girdle, type 2Q, 613723 ?Epidermolysis bullosa simplex with nail dystrophy, 616487
PLG	115.4	87	87	Dysplasminogenemia, 217090 Plasminogen deficiency, type I, 217090
PLIN1	81	96	88	Lipodystrophy, familial partial, type 4, 613877
PLOD1	137.9	99	97	Ehlers-Danlos syndrome, type VI, 225400
PMS2	95.1	83	80	Colorectal cancer, hereditary nonpolyposis, type 4, 614337 Mismatch repair cancer syndrome, 276300
PMVK	125.3	100	99	Porokeratosis 1, multiple types, 175800
PNPLA1	192.6	100	100	Ichthyosis, congenital, autosomal recessive 10, 615024
PNPLA2	113.2	99	97	Neutral lipid storage disease with myopathy, 610717

POC1A	133.8	100	100	Short stature, onychodysplasia, facial dysmorphism, and hypotrichosis, 614813
POFUT1	139.4	99	97	Dowling-Degos disease 2, 615327
POGLUT1	117.4	98	93	Dowling-Degos disease 4, 615696
POLD1	101.2	93	90	Mandibular hypoplasia, deafness, progeroid features, and lipodystrophy syndrome, 615381 {Colorectal cancer, susceptibility to, 10}, 612591
POLH	140.7	100	99	Xeroderma pigmentosum, variant type, 278750
POLR1C	117	99	96	Leukodystrophy, hypomyelinating, 11, 616494 Treacher Collins syndrome 3, 248390
POLR1D	176.2	91	91	Treacher Collins syndrome 2, 613717
POLR3A	137.4	100	99	Leukodystrophy, hypomyelinating, 7, with or without oligodontia and/or hypogonadotropic hypogonadism, 607694
POLR3B	146.4	99	98	Leukodystrophy, hypomyelinating, 8, with or without oligodontia and/or hypogonadotropic hypogonadism, 614381
POMC	116.2	100	100	Obesity, adrenal insufficiency, and red hair due to POMC deficiency, 609734 {Obesity, early-onset, susceptibility to}, 601665
POMP	114.4	95	87	Keratosis linearis with ichthyosis congenita and sclerosing keratoderma, 601952
PORCN	117.7	100	99	Focal dermal hypoplasia, 305600
POT1	90.7	99	96	{Glioma susceptibility 9}, 616568 {Melanoma, cutaneous malignant, susceptibility to, 10}, 615848
PPOX	96.1	99	98	Porphyria variegata, 176200
PQBP1	186.1	100	100	Renpenning syndrome, 309500
PRKAR1A	90.7	99	93	Acrodysostosis 1, with or without hormone resistance, 101800 Adrenocortical tumor, somatic, Carney complex, type 1, 160980 Myxoma, intracardiac, 255960 Pigmented nodular adrenocortical disease, primary, 1, 610489

PSEN1	160.7	100	99	Acne inversa, familial, 3, 613737 Alzheimer disease, type 3, 607822 Alzheimer disease, type 3, with spastic paraparesis and apraxia, 607822 Alzheimer disease, type 3, with spastic paraparesis and unusual plaques, 607822 Cardiomyopathy, dilated, 1U, 613694 Dementia, frontotemporal, 600274 Pick disease, 172700
PSENEN	67.6	100	98	Acne inversa, familial, 2, 613736
PSMB8	118.7	100	99	Autoinflammation, lipodystrophy, and dermatosis syndrome, 256040
PSTPIP1	88.2	99	97	Pyogenic sterile arthritis, pyoderma gangrenosum, and acne, 604416
PTCH1	114.6	98	95	Basal cell carcinoma, somatic, 605462 Basal cell nevus syndrome, 109400 Holoprosencephaly-7, 610828
PTCH2	120.1	99	97	Basal cell carcinoma, somatic, 605462 Basal cell nevus syndrome, 109400 Medulloblastoma, 155255
PTDSS1	127.2	100	100	Lenz-Majewski hyperostotic dwarfism, 151050
PTEN	143.2	99	96	Bannayan-Riley-Ruvalcaba syndrome, 153480 Cowden syndrome 1, 158350 Endometrial carcinoma, somatic, 608089 Lhermitte-Duclos syndrome, 158350 Macrocephaly/autism syndrome, 605309 Malignant melanoma, somatic, 155600 PTEN hamartoma tumor syndrome Squamous cell carcinoma, head and neck, somatic, 275355 VATER association with macrocephaly and ventriculomegaly, 276950 {Glioma susceptibility 2}, 613028 {Meningioma}, 607174 {Prostate cancer, somatic}, 176807
PTHLH	120.5	99	93	Brachydactyly, type E2, 613382 Humoral hypercalcemia of malignancy

PTPN11	103.1	97	92	LEOPARD syndrome 1, 151100 Leukemia, juvenile myelomonocytic, somatic, 607785 Metachondromatosis, 156250 Noonan syndrome 1, 163950
PTPN14	175.7	99	96	Choanal atresia and lymphedema, 613611
PTPRF	170.9	100	99	?Breasts and/or nipples, aplasia or hypoplasia of, 2, 616001
PYCR1	86.3	99	94	Cutis laxa, autosomal recessive, type IIB, 612940 Cutis laxa, autosomal recessive, type IIIB, 614438
RAB23	110.3	99	98	Carpenter syndrome, 201000
RAB27A	143.9	100	99	Griscelli syndrome, type 2, 607624
RAD21	78.5	98	94	Cornelia de Lange syndrome 4, 614701
RAD50	99	92	86	Nijmegen breakage syndrome-like disorder, 613078
RAF1	127.3	100	99	Cardiomyopathy, dilated, 1NN, 615916 LEOPARD syndrome 2, 611554 Noonan syndrome 5, 611553
RAG1	206.9	100	100	Alpha/beta T-cell lymphopenia with gamma/delta T-cell expansion, severe cytomegalovirus infection, and autoimmunity, 609889 Combined cellular and humoral immune defects with granulomas, 233650 Omenn syndrome, 603554 Severe combined immunodeficiency, B cell-negative, 601457
RAG2	221	100	100	Combined cellular and humoral immune defects with granulomas, 233650 Omenn syndrome, 603554 Severe combined immunodeficiency, B cell-negative, 601457
RAI1	146.3	100	99	Smith-Magenis syndrome, 182290
RBBP8	110.7	99	96	Jawad syndrome, 251255 Pancreatic carcinoma, somatic Seckel syndrome 2, 606744
RBM28	138.7	100	100	?Alopecia, neurologic defects, and endocrinopathy syndrome, 612079
RBP4	99.6	99	96	Microphthalmia, isolated, with coloboma 10, 616428 Retinal dystrophy, iris coloboma, and comedogenic acne syndrome, 615147
RBPJ	89.2	94	86	Adams-Oliver syndrome 3, 614814

RECQL4	149.6	99	96	Baller-Gerold syndrome, 218600 RAPADILINO syndrome, 266280 Rothmund-Thomson syndrome, 268400
RHBDF2	97.7	99	97	Tylosis with esophageal cancer, 148500
RHOA	101.4	81	80	No OMIM phenotype
RIN2	113.4	100	99	Macrocephaly, alopecia, cutis laxa, and scoliosis, 613075
RIPK4	163.3	100	99	Popliteal pterygium syndrome, Bartsocas-Papas type, 263650
RMRP				Anauxetic dysplasia, 607095 Cartilage-hair hypoplasia, 250250 Metaphyseal dysplasia without hypotrichosis, 250460
RNASEH2A	142.1	100	99	Aicardi-Goutieres syndrome 4, 610333
RNASEH2B	103.8	93	87	Aicardi-Goutieres syndrome 2, 610181
RNASEH2C	209.2	100	99	Aicardi-Goutieres syndrome 3, 610329
RNU4ATAC				Microcephalic osteodysplastic primordial dwarfism, type I, 210710 Roifman syndrome, 616651
ROGDI	112.2	97	95	Kohlschutter-Tonz syndrome, 226750
RPL21	64.7	79	57	Hypotrichosis 12, 615885
RSPO1	109.7	100	100	Palmoplantar hyperkeratosis and true hermaphroditism, 610644 Palmoplantar hyperkeratosis with squamous cell carcinoma of skin and sex reversal, 610644
RSPO4	107.2	100	100	Anonychia congenita, 206800
RTEL1	110.9	99	95	Dyskeratosis congenita, autosomal dominant 4, 615190 Dyskeratosis congenita, autosomal recessive 5, 615190 Pulmonary fibrosis and/or bone marrow failure, telomere-related, 3, 616373
RUNX2	106.4	72	72	Cleidocranial dysplasia, 119600 Cleidocranial dysplasia, forme fruste, dental anomalies only, 119600 Cleidocranial dysplasia, forme fruste, with brachydactyly, 119600 Metaphyseal dysplasia with maxillary hypoplasia with or without brachydactyly, 156510
SAMD9	159.1	99	99	MIRAGE syndrome, 617053 Tumoral calcinosis, familial, normophosphatemic, 610455

SAMHD1	127.9	99	96	Aicardi-Goutieres syndrome 5, 612952 ?Chilblain lupus 2, 614415
SART3	122.3	99	98	No OMIM phenotype Disseminated superficial actinic porokeratosis (Zhang (2005) Br J Dermatol 152,658)
SASH1	143.1	98	96	No OMIM phenotype Lentiginosis, autosomal dominant (Shellman (2015) J Invest Dermatol 135,3192) Pigmentation defects, palmoplantar keratoderma and skin carcinoma (Courcet (2015) Eur J Hum Genet 23,957)
SAT1	141.1	100	99	No OMIM phenotype Keratosis follicularis spinulosa decalvans (Gimelli (2002) Hum Genet 111,235)
SATB2	110.5	98	93	Glass syndrome, 612313
SCN10A	165.3	100	99	Episodic pain syndrome, familial, 2, 615551
SCN11A	138.1	99	97	Episodic pain syndrome, familial, 3, 615552 Neuropathy, hereditary sensory and autonomic, type VII, 615548
SCN9A	146.5	98	97	Epilepsy, generalized, with febrile seizures plus, type 7, 613863 Erythermalgia, primary, 133020 Febrile seizures, familial, 3B, 613863 HSAN2D, autosomal recessive, 243000 Insensitivity to pain, congenital, 243000 Paroxysmal extreme pain disorder, 167400, Small fiber neuropathy, 133020 {Dravet syndrome, modifier of}, 607208
SDR9C7	198.3	100	100	Ichthyosis, congenital, autosomal recessive 13,617574
SEC23B	161.1	97	96	Cowden syndrome 7, 616858 Dyserythropoietic anemia, congenital, type II, 224100
SERPINB7	127.4	100	99	Palmoplantar keratoderma, Nagashima type, 615598
SERPINB8	151.6	95	95	Peeling skin syndrome 5,617115
SERPINH1	183.7	100	99	?Osteogenesis imperfecta, type X, 613848 {Preterm premature rupture of the membranes, susceptibility to}, 610504
SGPL1	164.1	100	100	Nephrotic syndrome 14,617575
SHOC2	140.4	100	99	Noonan-like syndrome with loose anagen hair, 607721
SKI	85.3	96	90	Shprintzen-Goldberg syndrome, 182212

SKIV2L	149.1	100	99	Trichohepatoenteric syndrome 2, 614602
SLC17A9	111.5	95	95	Porokeratosis 8, disseminated superficial actinic type, 616063
SLC24A4	126.8	99	97	Amelogenesis imperfecta, type IIA5, 615887 [Skin/hair/eye pigmentation 6, blond/brown hair], 210750 [Skin/hair/eye pigmentation 6, blue/green eyes], 210750
SLC24A5	114.5	99	97	Albinism, oculocutaneous, type VI, 113750 [Skin/hair/eye pigmentation 4, fair/dark skin], 113750
SLC26A2	233.2	100	100	Achondrogenesis Ib, 600972 Atelosteogenesis II, 256050 De la Chapelle dysplasia, 256050 Diastrophic dysplasia, 222600 Diastrophic dysplasia, broad bone-platyspondylic variant, 222600 Epiphyseal dysplasia, multiple, 4, 226900
SLC27A4	155.8	99	97	Ichthyosis prematurity syndrome, 608649
SLC29A3	203.6	99	99	Histiocytosis-lymphadenopathy plus syndrome, 602782
SLC2A10	166.4	97	97	Arterial tortuosity syndrome, 208050
SLC39A13	114.8	99	98	Spondylocheirodysplasia, Ehlers-Danlos syndrome-like, 612350
SLC39A4	81.8	99	96	Acrodermatitis enteropathica, 201100
SLC45A2	148.1	100	99	Albinism, oculocutaneous, type IV, 606574 [Skin/hair/eye pigmentation 5, black/nonblack hair], 227240 [Skin/hair/eye pigmentation 5, dark/fair skin], 227240 [Skin/hair/eye pigmentation 5, dark/light eyes], 227240
SLC4A4	122.3	99	97	Renal tubular acidosis, proximal, with ocular abnormalities, 604278
SLC6A19	149.1	100	99	Hartnup disorder, 234500 Hyperglycinuria, 138500 Iminoglycinuria, digenic, 242600
SLC7A7	123.9	100	99	Lysinuric protein intolerance, 222700
SLCO2A1	110.5	100	99	Hypertrophic osteoarthropathy, primary, autosomal recessive 2, 614441
SLURP1	97.1	99	96	Meleda disease, 248300
SLX4	114.2	100	99	Fanconi anemia, complementation group P, 613951
SMAD3	131.7	99	99	Loeys-Dietz syndrome 3, 613795

SMARCA2	113.8	95	93	Nicolaides-Baraitser syndrome, 601358
SMARCA4	143.8	100	99	Coffin-Siris syndrome 4, 614609 {Rhabdoid tumor predisposition syndrome 2}, 613325
SMARCAD1	85.5	99	96	Adermatoglyphia, 136000
SMARCAL1	134.6	100	99	Schimke immunoosseous dysplasia, 242900
SMARCB1	214.3	100	100	Coffin-Siris syndrome 3, 614608 Rhabdoid tumors, somatic, 609322 {Rhabdoid predisposition syndrome 1}, 609322 {Schwannomatosis-1, susceptibility to}, 162091
SMO	149.2	96	93	Basal cell carcinoma, somatic, 605462 Curry-Jones syndrome,somatic mosaic, 601707
SMOC2	91.5	75	72	Dentin dysplasia, type I, with microdontia and misshapen teeth, 125400
SNAI2	129.8	100	99	Piebaldism, 172800 Waardenburg syndrome, type 2D, 608890
SNAP29	153.5	100	100	Cerebral dysgenesis, neuropathy, ichthyosis, and palmoplantar keratoderma syndrome, 609528
SNRPE	79	98	89	Hypotrichosis 11, 615059
SNX10	118.9	96	96	Osteopetrosis, autosomal recessive 8, 615085
SOS1	94.3	96	90	Noonan syndrome 4, 610733 ?Fibromatosis, gingival, 1, 135300
SOX10	65.8	98	91	PCWH syndrome, 609136 Waardenburg syndrome, type 2E, with or without neurologic involvement, 611584 Waardenburg syndrome, type 4C, 613266
SOX18	21.2	62	48	Hypotrichosis-lymphedema-telangiectasia syndrome, 607823 Hypotrichosis-lymphedema-telangiectasia-renal defect syndrome, 137940
SOX2	128.8	98	93	Microphthalmia, syndromic 3, 206900 Optic nerve hypoplasia and abnormalities of the central nervous system, 206900
SP7	159.1	99	99	?Osteogenesis imperfecta, type XII, 613849
SPINK5	145	99	96	Atopy, 147050 Netherton syndrome, 256500
SPINT2	71.5	97	84	Diarrhea 3, secretory sodium, congenital, syndromic, 270420

SPRED1	164.3	98	96	Legius syndrome, 611431
SPRY4	138.7	100	100	Hypogonadotropic hypogonadism 17 with or without anosmia, 615266
SRD5A3	135.9	100	99	Congenital disorder of glycosylation, type Iq, 612379 Kahrizi syndrome, 612713
ST14	154	98	97	Ichthyosis, congenital, autosomal recessive 11, 602400
ST3GAL5	121.9	84	84	Amish infantile epilepsy syndrome, 609056
STAMBP	112.3	99	96	Microcephaly-capillary malformation syndrome, 614261
STAT3	119.5	99	99	Autoimmune disease, multisystem, infantile-onset, 615952 Hyper-IgE recurrent infection syndrome, 147060
STAT5B	130.6	99	97	Growth hormone insensitivity with immunodeficiency, 245590 Leukemia, acute promyelocytic, somatic, 102578
STIM1	145.3	100	99	Immunodeficiency 10, 612783 Myopathy, tubular aggregate, 1 160565 Stormorken syndrome, 185070
STK11	111.9	99	95	Melanoma, malignant, somatic Pancreatic cancer, 260350 Peutz-Jeghers syndrome, 175200 Testicular tumor, somatic, 273300
STS	91.6	99	97	Ichthyosis, X-linked, 308100
SUFU	122.6	99	99	Basal cell nevus syndrome, 109400 Medulloblastoma, desmoplastic, 155255 {Meningioma, familial, susceptibility to}, 607174
SULT2B1	111.4	100	100	Ichthyosis, congenital, autosomal recessive 14, 617571
SUMF1	103.3	98	91	Multiple sulfatase deficiency, 272200
TALDO1	130.5	100	99	Transaldolase deficiency, 606003
TAP1	103.3	100	99	Bare lymphocyte syndrome, type I, 604571
TAP2	95.2	99	98	Bare lymphocyte syndrome, type I, due to TAP2 deficiency, 604571 Wegener-like granulomatosis
TAPBP	100.7	96	94	Bare lymphocyte syndrome, type I, 604571
TAT	143.1	100	100	Tyrosinemia, type II, 276600

TBC1D24	179.2	100	100	Deafness , autosomal recessive 86, 614617 Deafness, autosomal dominant 65, 616044 DOOR syndrome, 220500 Epileptic encephalopathy, early infantile, 16, 615338 Myoclonic epilepsy, infantile, familial, 605021
TBX3	80.5	99	95	Ulnar-mammary syndrome, 181450
TCHH	148.1	100	100	?Uncombable hair syndrome 3, 617252
TCIRG1	113.5	95	89	Osteopetrosis, autosomal recessive 1, 259700
TEK	184.1	100	100	Glaucoma 3,primary congenital, E, 617272 Venous malformations, multiple cutaneous and mucosal, 600195
TERC				Dyskeratosis congenita, autosomal dominant 1, 127550 {Aplastic anemia}, 614743 {Pulmonary fibrosis, idiopathic, susceptibility to}, 614743
TERF2IP	116.7	100	97	No OMIM phenotype Melanoma (Aoude (2015) J Natl Cancer Inst 107) Chronic lymphocytic leukaemia (Speedy (2016) Blood 128,2319)
TERT	138.3	95	92	{Dyskeratosis congenita, autosomal dominant 2}, 613989 {Dyskeratosis congenita, autosomal recessive 4}, 613989 {Leukemia, acute myeloid}, 601626 {Melanoma, cutaneous malignant, 9}, 615134 {Pulmonary fibrosis and/or bone marrow failure, telomere-related, 1}, 614742
TFAP2A	109.3	100	99	Branchiooculofacial syndrome, 113620
TGFB2	176.9	100	99	Loeys-Dietz syndrome 4, 614816
TGFBR1	173.4	93	93	Loeys-Dietz syndrome 1, 609192 {Multiple self-healing squamous epithelioma, susceptibility to}, 132800
TGFBR2	193.5	100	99	Colorectal cancer, hereditary nonpolyposis, type 6, 614331 Esophageal cancer, somatic, 133239 Loeys-Dietz syndrome 2, 610168
TGM1	158.8	100	100	Ichthyosis, congenital, autosomal recessive 1, 242300
TGM3	187.1	100	99	?Uncombable hair syndrome 2, 617251
TGM5	173.9	100	100	Peeling skin syndrome 2, 609796
TINF2	184	100	100	Dyskeratosis congenita, autosomal dominant 3, 613990 Revesz syndrome, 268130

TMC6	83.7	99	99	Epidermodysplasia verruciformis, 226400
TMC8	108.1	97	91	Epidermodysplasia verruciformis, 226400
TMEM165	113.9	99	98	Congenital disorder of glycosylation, type IIk, 614727
TMEM173	100.8	98	93	STING-associated vasculopathy, infantile-onset, 615934
TNFRSF11A	146.3	93	91	Osteolysis, familial expansile, 174810 Osteopetrosis, autosomal recessive 7, 612301 {Paget disease of bone 2, early-onset}, 602080
TNFRSF11B	224.8	100	100	Paget disease of bone 5, juvenile-onset, 239000
TNFRSF1A	93.2	90	87	Periodic fever, familial, 142680 {Multiple sclerosis, susceptibility to, 5}, 614810
TNFSF11	150.4	99	93	Osteopetrosis, autosomal recessive 2, 259710
TNXB	96.4	98	91	Ehlers-Danlos syndrome due to tenascin X deficiency, 606408 Vesicoureteral reflux 8, 615963
TP63	206.3	100	100	ADULT syndrome, 103285 Ectrodactyly, ectodermal dysplasia, and cleft lip/palate syndrome 3, 604292 Hay-Wells syndrome, 106260 Limb-mammary syndrome, 603543 Orofacial cleft 8, 129400 Rapp-Hodgkin syndrome, 129400 Split-hand/foot malformation 4, 605289
TPCN2	144.2	94	89	[Skin/hair/eye pigmentation 10, blond/brown hair], 612267
TREX1	242.4	100	100	Aicardi-Goutieres syndrome 1, dominant and recessive, 225750 Chilblain lupus, 610448 Vasculopathy, retinal, with cerebral leukodystrophy, 192315 {Systemic lupus erythematosus, susceptibility to}, 152700
TRIM32	141.2	100	100	Muscular dystrophy, limb-girdle, type 2H, 254110 ?Bardet-Biedl syndrome 11, 615988
TRIM37	110.2	98	97	Mulibrey nanism, 253250
TRPS1	175	100	99	Trichorhinophalangeal syndrome, type I, 190350 Trichorhinophalangeal syndrome, type III, 190351
TRPV3	144.9	100	99	Olmsted syndrome, 614594 ?Palmoplantar keratoderma, nonepidermolytic, focal 2, 616400

TSC1	128.8	99	98	Lymphangioleiomyomatosis, 606690 Tuberous sclerosis-1, 191100
TSC2	131.2	100	99	Lymphangioleiomyomatosis, somatic, 606690 Tuberous sclerosis-2, 613254
TSPEAR	141.5	100	99	Deafness, autosomal recessive 98, 614861 Ectodermal dysplasia (Peled et al. (2016) PLOS Genetics online)
TTC37	124	99	98	Trichohepatoenteric syndrome 1, 222470
TTI2	104.5	100	99	Mental retardation, autosomal recessive 39, 615541
TWIST2	131.3	100	99	Ablepharon-macrostomia syndrome, 200110 Barber-Say syndrome, 209885 Focal facial dermal dysplasia 3, Setleis type, 227260
TYR	185.3	100	100	Albinism, oculocutaneous, type IA, 203100 Albinism, oculocutaneous, type IB, 606952 Waardenburg syndrome/albinism, digenic, 103470 [Skin/hair/eye pigmentation 3, blue/green eyes], 601800 [Skin/hair/eye pigmentation 3, light/dark/freckling skin], 601800 {Melanoma, cutaneous malignant, susceptibility to, 8}, 601800
TYRP1	176.9	100	99	Albinism, oculocutaneous, type III, 203290 [Skin/hair/eye pigmentation, variation in, 11 (Melanesian blond hair)], 612271
UBE2A	100.5	99	96	Mental retardation, X-linked syndromic, Nascimento-type, 300860
UBR1	128.2	99	96	Johanson-Blizzard syndrome, 243800
UROD	163.1	99	97	Porphyria cutanea tarda, 176100 Porphyria, hepatoerythropoietic, 176100
UROS	108.3	100	99	Porphyria, congenital erythropoietic, 263700
USB1	125	99	98	Poikiloderma with neutropenia,604173
UVSSA	149.4	99	98	UV-sensitive syndrome 3, 614640
VDR	123.3	98	95	Rickets, vitamin D-resistant, type IIA, 277440 ?Osteoporosis, involutional, 166710
VEGFC	164.5	100	99	Lymphedema, hereditary, ID, 615907

VHL	119.7	92	85	Erythrocytosis, familial, 2, 263400 Hemangioblastoma, cerebellar, somatic Pheochromocytoma, 171300 Renal cell carcinoma, somatic, 144700 von Hippel-Lindau syndrome, 193300
VPS13B	143.8	98	96	Cohen syndrome, 216550
VPS33B	138.3	100	100	Arthrogryposis, renal dysfunction, and cholestasis 1, 208085
WAS	66.1	88	78	Neutropenia, severe congenital, X-linked, 300299 Thrombocytopenia, X-linked, 313900 Thrombocytopenia, X-linked, intermittent, 313900 Wiskott-Aldrich syndrome, 301000
WDR19	132.1	99	98	Nephronophthisis 13, 614377 Senior-Loken syndrome 8, 616307 ?Cranioectodermal dysplasia 4, 614378 ?Short-rib thoracic dysplasia 5 with or without polydactyly, 614376
WDR35	145.1	99	97	Cranioectodermal dysplasia 2, 613610 Short-rib thoracic dysplasia 7 with or without polydactyly, 614091
WDR72	132.2	96	95	Amelogenesis imperfecta, type IIA3, 613211
WIPF1	77.5	100	99	?Wiskott-Aldrich syndrome 2, 614493
WNT10A	114	100	99	Odontoonychodermal dysplasia, 257980 Schopf-Schulz-Passarge syndrome, 224750 Tooth agenesis, selective, 4, 150400
WNT10B	144.7	100	99	Split-hand/foot malformation 6, 225300
WNT5A	155.7	100	100	Robinow syndrome, autosomal dominant 1, 180700
WNT7A	216.8	100	100	Fuhrmann syndrome, 228930 Ulna and fibula, absence of, with severe limb deficiency, 276820
WRAP53	154.4	100	100	Dyskeratosis congenita, autosomal recessive 3, 613988
WRN	123.6	98	94	Werner syndrome, 277700
XPA	52.9	98	88	Xeroderma pigmentosum, group A, 278700
XPC	140.7	100	99	Xeroderma pigmentosum, group C, 278720
XYLT1	132.5	90	87	Desbuquois dysplasia 2, 615777 {Pseudoxanthoma elasticum, modifier of severity of}, 264800

XYLT2	136.3	98	94	Spondyloocular syndrome, 605822 {Pseudoxanthoma elasticum, modifier of severity of}, 264800
ZBTB20	216.9	100	100	Primrose syndrome, 259050
ZMPSTE24	113.3	100	99	Mandibuloacral dysplasia with type B lipodystrophy, 608612 Restrictive dermopathy, lethal, 275210
ZNF469	93.1	98	96	Brittle cornea syndrome 1, 229200
ZNF592	150.1	100	99	Spinocerebellar ataxia, autosomal recessive 5, 251300
ZNF750	150.3	100	99	Seborrhea-like dermatitis with psoriasiform elements, 610227

Gene symbols used follow HGCN guidelines: Gray KA, Yates B, Seal RL, Wright MW, Bruford EA. Nucleic Acids Res. 2015 Jan;43(Database issue):D1079-85.
Median Coverage describes the average number of reads seen across 50 exomes.
% Covered 10x describes the percentage of a gene's coding sequence that is covered at least 10x.
% Covered 20x describes the percentage of a gene's coding sequence that is covered at least 20x.
Genes with Median Coverage and % Covered 10x/20x denoting NC are non-coding genes for which coverage statistics could not be generated.
OMIM release used for OMIM disease identifiers and descriptions : April 18th, 2018.
This list is accurate for panel version DG 2.13
Ad 1. "No OMIM phenotype" signifies a gene without a current OMIM association Ad 2. OMIM phenotype descriptions between {} signify risk factors