**S6 Table:** AD genes or AD/AR genes that are either dominant or recessive, with Tier-1 SNV variants for which there was No match with phenotype (n=55 examples)

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| --- | --- | --- |
| **Gene** | **HGMD and/or OMIM descriptions (some truncated)** | # times variants in this gene seen in Biobank 89 |
| *AADAC* | Tourette syndrome |Reduced enzyme activity | 1 |
| *ALK* | Neuroblastoma | 1 |
| *ANO7* | Glaucoma, primary congenital | 1 |
| *ASXL1* | Bohring-Opitz syndrome|Systemic mastocytosis with associated non-mast cell lineage disease | 2 |
| *BCMO1* | Hypercarotenemia and hypovitaminosis A|Altered beta-carotene metabolism, association with | 1 |
| *CARD14* | Psoriasis, association with|Psoriasis|Pityriasis rubra pilaris | 1 |
| *CATSPER2* | Asthenoteratozoospermia & deafness, non-syndromic | 1 |
| *COL8A2* | Glaucoma, primary open angle|Fuchs corneal dystrophy  | 1 |
| *COMP* | Pseudoachondroplasia|Multiple epiphyseal dysplasia|Early-onset osteoarthritis | 1 |
| *CRYBA4* | Cataract and microcornea|Cataract, lamellar|Microphthalmia | 1 |
| *DPP6* | Autism spectrum disorder |Ventricular fibrillation, idiopathic  | 1 |
| *EFHC1* | Myoclonic epilepsy, juvenile|Intractable epilepsy of infancy|Idiopathic epilepsy, generalised | 1 |
| *FAM83H* | Amelogenesis imperfecta, hypocalcified|Amelogenesis imperfecta, hypoplastic local | 1 |
| *FREM1* | Bifid nose, renal agenesis & anorectal malformations syndrome|Craniosynostosis, isolated metopic|Manitoba-oculo-tricho-anal syndrome  | 1 |
| *GON4L* | Intellectual disability  | 1 |
| *HBM* | Thalassaemia alpha | 1 |
| *KRT83* | Monilethrix | 12 |
| *MSR1* | Atherosclerosis, increased risk, association with|Barrett oesophagus/oesophageal adenocarcinoma|Chronic obstructive pulmonary disease, in smokers, association with|Prostate cancer|Prostate cancer, association with | 4 |
| *MYBPC3* | Hypertrophic cardiomyopathy with inclusion body myositis|Increased left ventricular wall thickness|Left ventricle dysfunction in CAD, association with|Skeletal myopathy, association with|Sudden infant death syndrome |Dilated cardiomyopathy|Cardiomyopathy, left-ventricular noncompaction|Cardiomyopathy, left ventricular noncompaction|Cardiomyopathy, hypertrophic/dilated|Cardiomyopathy, hypertrophic|Cardiomyopathy, dilated|Cardiomyopathy, association with|Cadiomyopathy, dilated | 4 |
| *MYO1A* | Sensorineural deafness, nonsyndromic | 1 |
| *NBAS* | Short stature, optic atrophy & Pelger-Huet  | 1 |
| *NOL3* | Cortical myoclonus | 1 |
| *OBSCN* | Cardiomyopathy, hypertrophic|Glioblastoma|Potential protein deficiency | 1 |
| *PITPNM3* | Cone dystrophy, autosomal dominant|Cone dystrophy  | 1 |
| *PLCB4* | Auriculocondylar syndrome | 1 |
| *POLR1C* | Treacher-Collins syndrome | 1 |
| *PRPH* | Amyotrophic lateral sclerosis|High myopia  | 1 |
| *RAD21* | Cornelia de Lange-like syndrome | 1 |
| *RASA1* | 5q14.3 neurocutaneous syndrome|Arteriovenous fistula|Arteriovenous malformation |Capillary malformation-arteriovenous malformation|Capillary malformations|Sturge-Weber syndrome | 1 |
| *RNASEL* | Ribonuclease L deficiency, association with|Ribonuclease L deficiency|Prostate, cancer, protection against, association with|Prostate cancer, association with |Prostate cancer  | 1 |
| *RP1L1* | Macular dystrophy, occult|Potential protein deficiency | 1 |
| *SLC6A2* | Reduced gene expression|Orthostatic intolerance and tachycardia|Major depression|Decreased transport activity|Attention-deficit hyperactivity disorder, association with | 1 |
| *TBC1D4* | Insulin resistance  | 1 |
| *TRPA1* | Episodic pain syndrome|Paradoxical heat sensation, association with  | 1 |
| *TRPM2* | Amyotrophic lateral sclerosis and parkinson disease | 1 |
| *TTF2* | Autism | 1 |
| *TTN* | Tibial muscular dystrophy|Potential protein deficiency|Myopathy with early respiratory failure|Myopathy with cellular aggregates|Myopathy|Muscular dystrophy |Cardiomyopathy, hypertrophic|Cardiomyopathy, dilated|Arrhythmogenic right ventricular cardiomyopathy | 1 |
| *AADAC* | Tourette syndrome |Reduced enzyme activity | 1 |
| *ALK* | Neuroblastoma | 1 |
| *FLG* | Eczema |Eczema, association with|Eczema, association with and Asthma, association with|Fissured skin on hands of patients without dermatitis|Genetic modifier in pachyonychia congenita|Hand eczema, association|Ichthyosis vulgaris|Peanut allergy, association with|Psoriasis|Psoriasis vulgaris|Psoriasis, increased risk, association … | 4 |
| *SH3TC2* | Charcot-Marie-Tooth disease 1|Charcot-Marie-Tooth disease 4C|Hereditary motor & sensory neuropathy | 1 |
| *VWF* | Von Willebrand disease 2n/1|Von Willebrand disease 2n|Von Willebrand disease 2m |Von Willebrand disease 2c|Von Willebrand disease 2b-like|Von Willebrand disease 2b|Von Willebrand disease 2u|Von Willebrand disease 3 |Von Willebrand disease, association with|Von Willebrand disease, quantitative type, association with|Von Willebrand, … | 1 |
| *SEMA3E* | CHARGE syndrome | 1 |
| *APOB* | Hypobetalipoproteinaemia|Hypobetalipoproteinemia-induced nonalcoholic steatohepatitis|Hypocholesterolaemia |Hypocholesterolaemia, association with|Increased apoB and cholesterol levels, association with|Increased cholesterol levels|Ischaemic stroke, association with |Oligoasthenoteratozoospermia, association with|Hypertriglyceridaemia |Hypercholesterolaemia |Altered APOB levels |Aortic stenosis, association with|Apolipoprotein B deficiency|Coronary artery disease, association with|Coronary heart disease|Coronary heart disease, association with|HDL cholesterol, association with |Hepatitis C virus infection, association with | 1 |
| *DOCK8* | Mental retardation|Immunodeficiency, combined|Hyper-IgE syndrome, autosomal recessive | 1 |
| *BRCA2* | Ovarian / peritoneal carcinoma|Oesophageal squamous cell carcinoma|Oesophageal carcinoma |Oesophageal cancer, association with|Ocular melanoma|Medulloblastoma |Male BC risk|Lung cancer |Lunc cancer|Liver cancer|Ovarian cancer|Ovarian carcinoma|Ovarian insufficiency, primary |Reactive lymphoid hyperplasia |Prostate cancer, high-grade|Prostate cancer |Promyelocytic leukemia |Potential protein deficiency|Poorer survival in prostate cancer patients|Peritoneal carcinoma|Pancreatic cancer |… | 1 |
| *LDLR* | Stroke, increased risk, association with|Reduced plasma LDL cholesterol, association with|Increased plasma LDL cholesterol|Hypercholesterolaemia|Coronary artery disease, increased risk in low BMI individuals|Coronary artery disease, association with|Altered transcription | 1 |
| *EDN3* | Waardenburg-Hirschsprung disease|Waardenburg syndrome 4B|Waardenburg syndrome 4|Shah-Waardenburg syndrome|Phenotype modification in HSCR|Hirschsprung disease|Central hypoventilation syndrome | 1 |