**Supplemental Table 5.** List of genes associated with eyeAgeAccel and function

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| --- | --- | --- | --- |
| **Gene** | **P value** | **Function/disorder association** | **Reference** |
| SH3YL1 | 6.40E-50 | Phosphatidylcholine binding; type 2 diabetes | 1 |
| OCA2 | 1.90E-12 | Eye pigmentation | 2 |
| POC5 | 6.90E-10 | Centrosome interactions; macular degeneration | 3 |
| GJA3 | 1.60E-09 | Gap junction protein; cataracts | 4 |
| MEF2C | 1.70E-09 | Myocyte enhancement; Alzheimer's disease, muscle wasting | 5,6 |
| TSPAN11 | 2.20E-09 | Cell migration; cancer prognosis | 7 |
| NKX6-1 | 5.80E-09 | Beta cell development; cancer prognosis | 8 |
| GRM5 | 1.30E-08 | Metabatropic glutamate receptor; hearing loss | 9 |
| SLC16A1 | 2.20E-08 | Monocarboxylic acid transporter; cancer prognosis | 10 |
| GPR139 | 3.30E-08 | Rhodopsin family GPCR; brain metabolism with age | 11 |
| ARMS2 | 4.00E-08 | Eye extracellular matrix activity; macular degeneration | 12 |
| RAET1G | 7.70E-08 | Retinoic acid activity; cancer prognosis | 13 |
| ACP1 | 1.20E-07 | Phosphotyrosine protein phosphatase activity; retinopathy, diabetes, lifespan | 14,15 |
| ALKAL2 | 2.80E-07 | Tyrosine kinase activity; lifespan | 16 |
| SNTG1 | 3.00E-07 | Gamma enolase trafficking activity; Alzheimer's disease, stroke, cancer prognosis | 17-19 |
| BAZ2B | 3.30E-07 | Chromatin remodeling; Alzheimer's disease | 20 |
| GJD2 | 3.40E-07 | Gap junction activity; myopia | 21 |
| JAG1 | 3.70E-07 | Notch ligand activity; retinopathy, coronary artery disease | 22,23 |
| MYT1 | 5.20E-07 | Myelin transcription factor; age-related neuron demyelination | 24 |
| RASGRF1 | 5.70E-07 | Guanosine nucleotide exchange factor; myopia, neurogenesis | 25,26 |
| ARRDC3 | 6.20E-07 | Arrestin-related GCPR activity; Alzheimer's disease, glioma, breast cancer | 27-29 |
| RASSF3 | 6.60E-07 | GTP binding activity; glaucoma | 30 |
| COL4A3 | 7.10E-07 | Collagen activity; Alport syndrome, macular degeneration | 31,32 |
| DIRC3 | 8.50E-07 | Tumor suppressor activity; carcinoma prognosis | 33 |
| LZTFL1 | 8.80E-07 | Transcription factor activity; retinal degeneration | 34 |
| ATP6V0A2 | 9.30E-07 | ATPase activity; cutis laxa | 35 |
| GCNT3 | 9.80E-07 | Glycosyltransferase enzymatic activity; cancer prognosis | 36 |
| COL4A4 | 1.00E-06 | Collagen activity; Alport syndrome | 52 |

## Supplemental References

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