



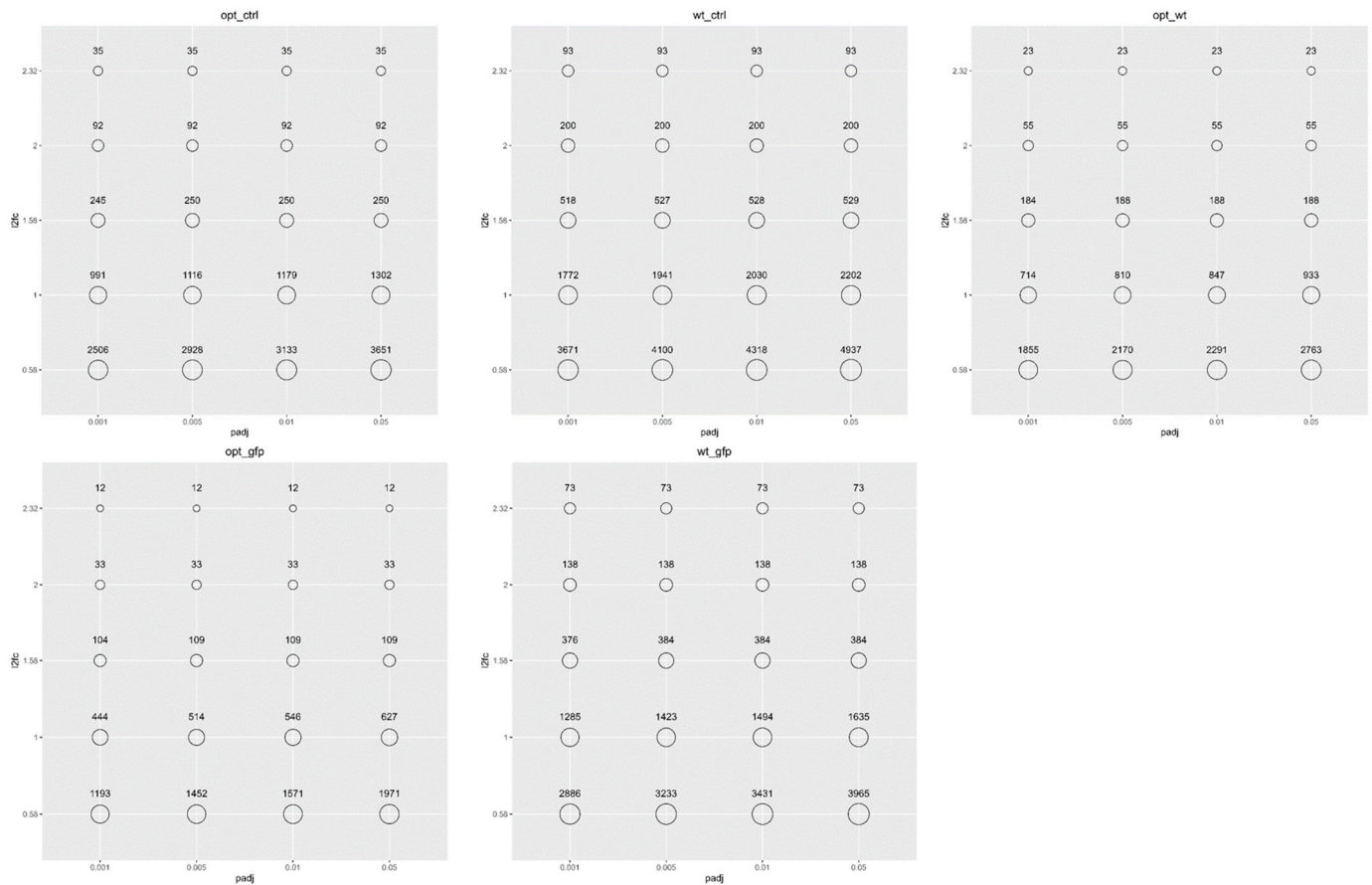
Supplementary materials

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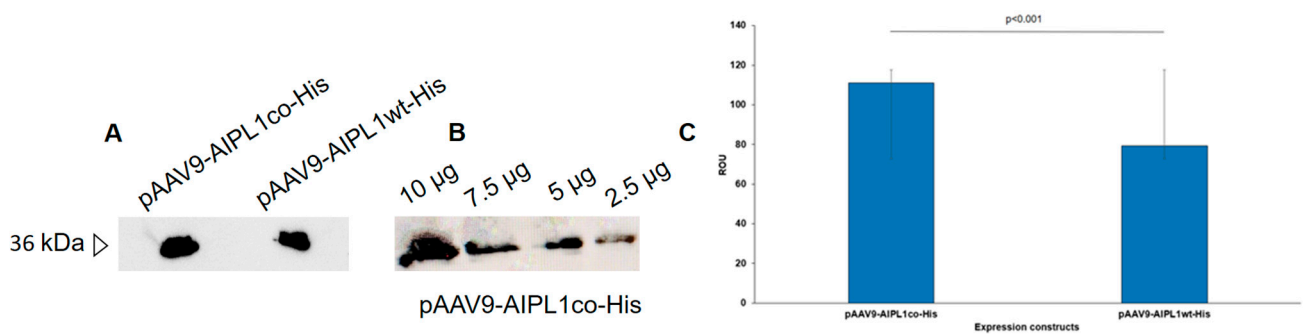
Supplementary Figure S1. AIPL1 codon-optimized sequence

Supplementary Table S1. List of marker genes and qPCR primers.

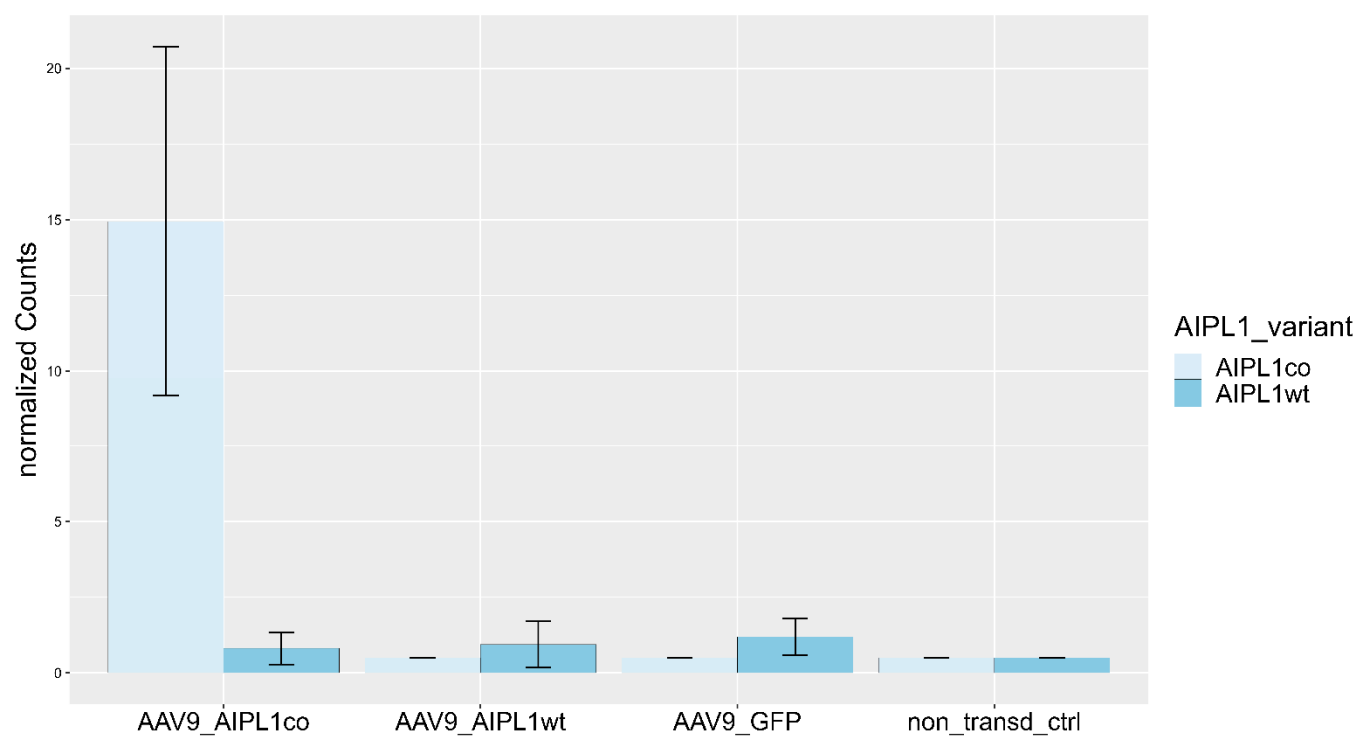
Gene	Forward primer	Reverse primer	Fluorescence Probe
PPIA	5'-ATGCTGGACCCAACACAAAT -3'	5'-TCTTTCACCTTTGCCAAACACC -3'	5'-HEX-CATCTGCACTGCCAAGAC -BHQ1-3'
GAPDH	5'- AGCCACATCGCTCAGACAC -3'	5'- GCCCAATACGACCAATCC -3'	5'- HEX -GGAAGGTGAAGGTCGGAG -BHQ1-3'
TBP	5'-TTGGGTTTTCAGCTAAGTTCT-3'	5'-CCAGGAAATAACTCTGGCTCA -3'	5'- HEX -AGCTGTGATGTGAAGTTCC -BHQ1-3'
Retinal markers			
RPE65	5'- ACTTCTCCTTTCAACCTCTTCC-3'	5'- TTTTCACCTCTCCAGTTCTC-3'	5'- FAM - AATGGGTTTCTGATTGTGGATCTCTGCT- BHQ1-3'
RDH12	5'-GCCTATTGCCACAGCAAGC-3'	5'-GCAGAGCAGGGAGGAGTG-3'	5'- FAM - GTCACCACCTACGCAGTGCACCCAG- BHQ1-3'
Photoreceptor markers			
ARR3	5'- GAAACGGGACTTCGTGGACCATG-3'	5'- CGGCCATAGCGAAAGGCAC-3'	5'- FAM - CCAGGACAACACCGTCAATGGGTCC-BHQ1-3'
CRX	5'- TGTTGCCAAGACCCAGTAC-3'	5'- ATTTAGCCCTCCGGTTCTTG-3'	5'- FAM - TCAGGCAGATTGATCTTCAGAGCCAC- BHQ1-3'
CRB1	5'- TGTGCCAGGACTTACTCAAC-3'	5'- AGCAAGAGGATCAGTAACAAGG- 3'	5'- FAM - CAGCAAAGGCAACATCACAGAGGC-BHQ1- 3'
PDE6B	5'- ACTCCGAGATCGTCTTCCAC-3'	5'- CCACGACGTCTTGCCATTC-3'	5'- FAM - CTCATTGCTGACGAGCTCACTGACTAC- BHQ1-3'
TULP1	5'- GCCAATTACCTCATCTCCATCG-3'	5'- ACATTAGTGCTGTACCCACG-3'	5'- FAM- TTCTGCCCGTTGTCAAAGACCGT-BHQ1-3'
GUCY2D	5'- CCTGCTCAACGATCTCTACAC-3'	5'- TGACATGTTGGCGATCTCTG-3'	5'- FAM- AGGCGTCCCCTATTGTCTCCACT-BHQ1-3'
Neuronal markers			
OPN3	5'- GCTTACTCACTGGCGTGG-3'	5'- AGGAGGAATCGTTGGCATC-3'	5'- FAM- CTGGACGTACACGGACTAGGCTGC-BHQ1- 3'
TUBB3	5'- GGGCCAAGTTCTGGGAAGTC-3'	5'- CGAGTCGCCCACGTAGTTG	5'- FAM- ATGAGCATGGCATCGACCCAGC-BHQ1-3'
Genes of AIPL1-interacting proteins according to STRING			
AIPL1	5'- GTGGCTGAAGCTGGAGAAG-3'	5'- CTCCAGCTCCAGCACTTTC -3'	WT: 5'-FAM- AGTGCCTGCTGAAGAAGGAG-BHQ1-3' OPT: 5'-FAM- CAACACCCTGATCCTGAAC BHQ1-3'
NUB1	5'- TCAGAGACTGGTCCACATAAAAG-3'	5'- AGCTGACGTGCCTTGTTAAG-3'	5'- FAM- TCCACTGTGATAGTTTCGGATCCCTTGA- BHQ1-3'
AHR	5'- CCAACATCACCTACGCCAG-3'	5'- CCAAACGGTCCAACCTCTGTAT-3'	5'- FAM- CGGTGCAGAAAACGTAAAGCCAATCC- BHQ1-3'
LCA5	5'- TCTAATCGTCTGCCAAAGTCC-3'	5'- TCTGGCTGAAGTCTTCCATG-3'	5'- FAM- TGTACACAGGTCTGCAAAATCACTCTGG- BHQ1-3'
Transcription factors			
KLF4	5'- ACCAGGCACTACCGTAAACACA-3'	5'- GGTCCGACCTGGAAAATGCT-3'	5'- FAM- CCAGTGCCAAAAATGCGACCG -BHQ1-3'



Supplementary Figure S2. Numbers of differentially expressed genes with various thresholds (p-value adjusted and fold change).



Supplementary Figure S3. Analysis of AIPL1 expression. AIPL1 gene product was detected by western blot using HEK293T cells transfected with pAAV-AIPL1co-His and pAAV-AIPL1wt-His plasmids. AIPL1 protein specific band at 36 kDa was detected in cell lysates with anti-His antibodies (A). Various amount of HEK293T cell lysate was loaded in SDS-PAGE (B). Relative optical density units (RDU) of protein specific bands were calculated and plotted in a graph to visualize the difference between pAAV-AIPL1co-His and pAAV-AIPL1wt-His transfected cells (C). AAV-AIPL1co-His showed 1.39 time increase of overall protein product compared to pAAV-AIPL1wt-His transfected HEK-293T cells.



Supplementary Figure S4. RNA-sequencing normalized *AIPL1* gene variants counts. Error bars represent standard deviation between replicates within sample groups.