Supplementary Table 1

	Identifier	Age/ Sex	ARMS2		CFH	EFEMP1	HTRA1	TIMP3		
			A69S (G>T)	indel (polyA tail)	Y402H (T>C)	R345W (C>T)	G>A	S204C (A>T)	T191C (A)	S179C (C)
CONTROL	nRD1	77/M	Hetero	indel	Homo	Normal	Hetero	Normal	Normal	Normal
	nRD5	69/M	Hetero	indel	Homo	Normal	Hetero	Normal	Normal	Normal
	nRD6	66/M	Normal	Normal	Normal	Normal	Normal	Normal	Normal	Normal
SFD	RD1	66/F	Homo	indel	Hetero	Normal	Homo	Hetero	Normal	Normal
	RD9	58/F	Hetero	indel	Homo	Normal	Hetero	Hetero	Normal	Normal

Supplementary Table 2

RPE Cell Lines	iPSC Clone/ RPE #	Figures
nRD1 (Control)	#2	2D- F, 6G
	#3	5D
	#4	2B, 3C&D, 6C
	#5	2B&C;3A,3C&D,5A,5D
	#6	2B, 6F
nRD5 (Control)	#5	2B- F, 5B-D, 6B&C, 6G, Sup Fig 3B&D, 3F, 3I
	#8	2D, 3C&D, 5C, 6G
	#9	2D-F, 5A, 5C, 6G
nRD6 (Control)	#1	2A, 2C-F, 5B, 6G
RD1 (SFD, V-2)	#21	2B-F, 3C&D, 5A,5C&D,6C, E&G
	#22	2B-F, 3C&D, 5B-D, 6E&G
	#24	2B-F, 3C&D, 5A-D, 6E&G
RD9 (SFD, V-7)	#4	2B-F, 3C&D, 5B-D, 6E&G, Sup Fig 3I
	#6	2B-F, 3B, 3C&D, 3E-E", 4B, 4D, 4F, Sup3H&I, 5A, 5C-D, 6B&C, 6E&G
	#7	2A, 2B-F, 3C&D, 5A&B, 5D,6E&G, Sup Fig 3I
ncRD9 (CRISPR, uncorrected, V-7)	#1	6F&G
cRD9 (CRISPR, corrected, V-7)	#6.1	6B,C,F,G
	#6.2	6B,C,D,E,G

Supplementary Table 3

Primers sequences used in sequencing			
Gene	***Mutation***	***Forward (5'-3')***	***Reverse (5' – 3')***
ARMS2	A69S	*GTTCCTGTGTCCTTCATTTCCACTC*	*GGTAAGGCCTGATCATCTGCATT*
ARMS2	Insertion-deletion	*GCCACACTGTGCAACCTGGAATTTC*	*AGGTTGTCCTCTAGATCCAGGGTG*
CFH	Y402H	*GTGCAAACCTTTGTTAGTAACTTTAGT TCG*	*CAAGGTGACATAAACATTTTGCCAC*
EFEMP1	R345W	*GTGTTGGCATAAATAGTTGTGGCCTGT A*	*AGGCAGAGTCAGTGGTTAACATTGGG*
HTRA1	Promoter G>A	*CATCTGAGACCGCTCCACCCTCGCCA GTTA*	*CGCTTTCCGCAGGTTCTCTCGCTGAG ATTC*
TIMP3	S179C / T191C / S204C	*GTAGCCTCAGGCCTGGGCATA*	*TGTCATCATCTGGGAAGAGTTAGTGT C*
TIMP3	Off-Target 1	*AGTAGACCCTGACAATGCCACG*	*TCAAAACCCTAACATAACTTTGGCC*
TIMP3	Off-Target 2	*CCATTCTTTCAAGGATCGTTTATCTTTC TC*	*AACTTTGTCTTGGCTTCAGGGTTCAG AGA*
Primers sequences used in qPCR			
Gene		***Forward (5'-3')***	***Reverse (5' – 3')***
ApoE		*CTGGCACTGGGTCGCTTTT*	*AGTTGTTCCTCCAGTTCCGATTT*
Bestrophin		AACCATTGGAAACATTTAACTCAGAC	AGTGCCGTTGTTCAGTTCTAATC
COL6A1		AGCAAGTGTGCTGCTCCTTC	CTTCCAGGATCTCCGGCTTC
CRALBP		CACGCTGCCCAAGTATGATG	CCAGGACAGTTGAGGAGAGG
GAPDH		TGAAGGTCGGAGTCAACGGA	CCATTGATGACAAGCTTCCCG
RPE65		TACAGAAAGCACTGAGTTGAGC	CCATTTAGTAAGTCCACATTCATTTCC
TIMP3		GCAGATAGACTCAAGGTGTGTGAAA	TCCCTCACTCTTACATGCAGACA
Vitronectin		GAAGCCGTCAGAGATATTTCG	CCTTCACCGACCTCAAGAAC

Supplementary Table 4

METABOLITE	CAS	PLATFORM	POLARITY	PRECURSOR (Da)	PRODUCT (Da)
3-hydroxybutyric acid	300-85-6	LC MS/MS	Positive	105	23
3-hydroxykynurenine	484-78-6	LC MS/MS	Negative	223	75
a-ketoglutarate	328-50-7	LC MS/MS	Negative	145	101
Alanine	02-72-7	LC MS/MS	Negative	134	107
AMP	61-19-8	LC MS/MS	Negative	346	134
Ascorbic Acid	50-81-7	LC MS/MS	Negative	175	87
Asparagine	70-47-3	LC MS/MS	Positive	133	70
Aspartate	56-84-8	LC MS/MS	Positive	134	74
ATP	56-65-5	LC MS/MS	Positive	508	136
Carnitine	541-15-1	LC MS/MS	Positive	163	85
cGMP	7665-99-8	LC MS/MS	Negative	344	150
Choline	62-49-7	LC MS/MS	Positive	104	60
Citrate	126-44-3	LC MS/MS	Negative	191	87
Creatinine	60-27-5	LC MS/MS	Negative	112	41
FAD	146-14-5	LC MS/MS	Positive	786	136
Fumarate	142-42-7	LC MS/MS	Positive	117	59
Glutamate	11070-68-1	LC MS/MS	Positive	148	84
Glutamine	56-85-9	LC MS/MS	Positive	147	84
Glycine	56-40-6	LC MS/MS	Positive	76	30
GSH (glutathione)	70-18-8	LC MS/MS	Negative	306	143
GSSG (oxidized glutathione)	121-24-4	LC MS/MS	Negative	611	306
GTP	86-01-1	LC MS/MS	Negative	522	159
Hydroxyproline	51-35-4	LC MS/MS	Positive	132	86
Isoleucine	443-79-8	LC MS/MS	Positive	132	69
Lactate	50-21-5	LC MS/MS	Negative	89	43
Leucine	61-90-5	LC MS/MS	Positive	132	86
Lysine	56-87-1	LC MS/MS	Positive	147	84
Methionine	63-68-3	LC MS/MS	Positive	150	61
N1-Methylnicotinamide	3106-60-3	LC MS/MS	Positive	137	78
NAD	53-84-9	LC MS/MS	Positive	664	136
NADH	58-68-4	LC MS/MS	Negative	664	397
NADP	53-59-8	LC MS/MS	Positive	744	136
Nicotinamide	98-92-0	LC MS/MS	Positive	123	80
Nicotinic acid	59-67-6	LC MS/MS	Negative	122	78
Ophthalmic acid	495-27-2	LC MS/MS	Positive	290	58
Phenylalanine	63-91-2	LC MS/MS	Positive	166	120
Proline	147-85-3	LC MS/MS	Positive	116	70
Pyroglutamic acid	98-79-3	LC MS/MS	Positive	130	84
Pyruvate	57-60-3	LC MS/MS	Negative	87	43
Serine	56-45-1	LC MS/MS	Positive	106	60
Succinate	56-14-4	LC MS/MS	Negative	117	73
Taurine	107-35-7	LC MS/MS	Positive	126	108
Threonine	72-19-5	LC MS/MS	Positive	120	102
Trigonelline	535-83-1	LC MS/MS	Positive	138	92
Tyrosine	60-18-4	LC MS/MS	Positive	182	136
Valine	72-18-4	LC MS/MS	Positive	118	72