

**Supplementary table I: The expression of genes mutated in retinitis pigmentosa, Bardet-Biedl syndrome, Leber congenital amaurosis and Usher syndrome.**

N	Disease and Inheritance	Gene	<i>rd1</i> [1]	RD [2]	Mouse Tissue	RPE/PR [3]	Freq.	Other Ret. Dis.	Other OMIM	Mouse Models	Other Models.
1	Autosomal dominant retinitis pigmentosa	<i>ARL3</i>	Rod-like	PR-death	Neurons	NF	Rare [4]	No	No	[5]	No
2		<i>ADIPOR1</i>	Rod-like	PR-death	Bone mar.	Ret./RPE	Rare [6]	One	No	[7]	No
3		<i>BEST1</i>	Hom	Infl.	Testis	NF	Rare [8]	Four	No	[9]	Dog [10, 11]
4		<i>CA4</i>	NE	NOp	Intestine	NF	Rare [12]	No	No	No	No
5		<i>CRX</i>	Rod-like	PR-death	Ret./RPE	Ret./RPE	1% [13]	Four	No	[14]	Cat [15]
6		<i>FSCN2</i>	Rod-like	NOp	Ret./RPE	Retina	3% [16]	One	No	[17]	No
7		<i>GUCA1B</i>	Rod-like	PR-death	Ret./RPE	Ret./RPE	0-5% [16]	One	No	[18]	No
8		<i>HK1</i>	Rod-like	Hom	Testis	Retina	Rare [19]	No	142600	No	No
9		<i>IMPDH1</i>	Rod-like	PR-death	Ret./RPE	Retina	2-3% [16]	One	No	[20]	No
10		<i>IMPG1</i>	Rod-like	PR-death	Ret./RPE	Retina	Rare [21]	Two	No	No	No
11		<i>KLHL7</i>	Hom	Hom	Ub	Ret./RPE	1-2% [22]	No	611119	No	No
12		<i>NR2E3</i>	Rod-like	PR-death	Ret./RPE	Retina	3.5% [23]	Four	No	[24]	No
13		<i>NRL</i>	Rod-like	PR-death	Ret./RPE	Retina	2% [16]	One	No	[25]	No

14		<i>PRPF3</i>	Hom	PR-death	Ub	Ret./RPE	1% [16]	No	No	[26]	No
15		<i>PRPF4</i>	Hom	Hom	Ub	RPE	Rare [27]	No	No	No	ZebF [28]
16		<i>PRPF6</i>	Hom	Hom	Ub	Ret./RPE	Rare [27]	No	No	No	No
17		<i>PRPF8</i>	Hom	PR-death	Ub	Ret./RPE	2% [16]	No	No	[26]	No
18		<i>PRPF31</i>	Rod-like	Hom	Ub	NF	2-4% [16]	No	No	[29]	No
19		<i>PRPH2</i>	Rod-like	PR-death	Ret./RPE	Ret./RPE	1-8% [16]	Six	No	[30, 31]	No
20		<i>RDH12</i>	Rod-like	PR-death	Ret./RPE	Ret./RPE	Rare [32]	One	No	[33]	No
21		<i>RHO</i>	Rod-like	PR-death	Ret./RPE	Ret./RPE	2-26%[16]	Two	No	[34-36]	[37, 38]
22		<i>ROM1</i>	Rod-like	PR-death	Ret./RPE	Ret./RPE	1% [16]	One	No	[39]	No
23		<i>RP1</i>	Rod-like	PR-death	Ret./RPE	RPE	4-8% [16]	No	No	[40] [41]	No
24		<i>RP9</i>	Cone-L.	PR-death	Ub	Retina	Rare [16]	No	No	No	No
25		<i>RPE65</i>	Hom	NE	RPE	NF	Rare	Two	No	[27]	Dog [42]
26		<i>SEMA4A</i>	Cone-L.	NOp	Ub	Ret./RPE	Rare [43]	One	No	[44]	No
27		<i>SNRNP200</i>	Hom	Hom	Ub	NF	<2% [45]	No	No	No	No
28		<i>SPP2</i>	NE	NOp	Kidn. Liv.	NF	Rare [46]	No	No	No	No
29		<i>TOPORS</i>	Hom	Hom	Ub	RPE	Rare [47]	No	No	[48]	No

30		<i>ABCA4</i>	Rod-like	PR-death	Ret./RPE	Ret./RPE	5-6% [13]	Four	No	[49]	Dog [50]
31		<i>ADIPOR1</i>	Rod-like	PR-death	Bone Mar.	Ret./RPE	Rare	One	No	[7]	No
32		<i>AGBL5</i>	Hom	Hom	Testis	Retina	Rare [51]	No	No	No	No
33		<i>AHR</i>	Rod-like	Hom	Mast cells / Ret.	NF	Rare [52]	No	No	[53]	No
34		<i>ARHGEF18</i>	Hom	Hom	White cells / RPE	Ret./RPE	Rare [54]	No	No	No	No
35		<i>ARL6</i>	Rod-like	PR-death	Ub	Retina	1% [13]	One	No	[55]	No
36		<i>ARL2BP</i>	Hom	Hom	Testis	Ret./RPE	Rare [56]	No	No	No	No
37	<b>Autosomal recessive retinitis pigmentosa</b>	<i>BBS1</i>	Rod-like	Hom	Ret./RPE	RPE	2-3% [13]	One	No	[57]	Zeb [58]
38		<i>BBS2</i>	Rod-like	Hom	Ub	Ret./RPE	0.8% [13]	One	No	[59]	No
39		<i>BEST1</i>	Hom	Infl.	Testis	NF	Rare [8]	Four	No	[9]	Dog [10, 11]
40		<i>C2orf71</i>	NF	PR-death	NF	NF	1% [60]	No	No	[61]	No
41		<i>C8ORF37</i>	No ortho	NOp	No ortho	No ortho	Rare [62]	Two	No	[63]	Zeb [64]
42		<i>CERKL</i>	Rod-like	NF	Ub	NF	1% [13]	One	No	[65]	No
43		<i>CLCC1</i>	Hom	Hom	Ub	Retina	Rare [66]	No	No	[66]	No
44		<i>CLRN1</i>	NOp	Infl.	NOp	NF	1% [13]	One	No	[67]	ZebF [68]
45		<i>CNGA1</i>	Rod-like	PR-death	Ret./RPE	Retina	1% [13]	No	No	No	Xen [69]

46	<i>CNGB1</i>	NF	PR-death	NF	Ret./RPE	4% [13]	No	No	[70]	Dog [71]
47	<i>CRB1</i>	Rod-like	Hom	Ret./RPE	NF	1% [13]	Three	No	[72]	Rat [73]
48	<i>CYP4V2</i>	Cone-L.	Hom	Liver	NF	Rare [74]	One	No	[75]	No
49	<i>DHDDS</i>	Hom	PR-death	Ub	Ret./RPE	1-8% [76]	No	No	No	ZebF [77]
50	<i>DHX38</i>	Hom	Hom	Ub	Retina	Rare [78]	One	No	No	No
51	<i>EMC1</i>	NF	Hom	NF	NF	Rare [79]	No	616846	No	No
52	<i>EYS</i>	No orth.	NOp	No ortho	No ortho	[80, 81]	No	No	No ortho	ZebF [82]
53	<i>FAM161A</i>	Rod-like	PR-death	Ret./RPE	NF	2% [83]	No	No	[84]	Dog [85]
54	<i>GPR125</i>	Hom	Hom	Epidermis	NF	Rare [79]	No	No	No	No
55	<i>HGSNAT</i>	Cone-L.	Hom	Microglia	Retina	Rare [86]	No	610453	No	No
56	<i>IDH3B</i>	Hom	Hom	Adipo.	Ret./RPE	Rare [87]	No	No	No	No
57	<i>IFT140</i>	Hom	Hom	Testis, Bone mar.	NF	Rare [88]	Two	614620	[89]	No
58	<i>IFT172</i>	Hom	PR-death	Testis	NF	Rare [90]	One	607386	[91]	No
59	<i>IMPG2</i>	NF	Hom	NF	RPE	Rare [92]	One	No	No	No
60	<i>KIAA1549</i>	No orth.	PR-death	No ortho	NF	Rare [79]	No	No	No	No
61	<i>KIZ</i>	Rod-like	NF	Testis	NF	Rare [93]	No	No	No	No

62	<i>LRAT</i>	Infl.	NOp	RPE	RPE	1% [13, 94]	One	No	[95]	No
63	<i>MAK</i>	Rod-like	PR-death	Ret./RPE	RPE	[76, 96]	No	No	[97]	No
64	<i>MERTK</i>	Cone-L.	Hom	Ub	RPE	1% [13]	No	No	[98]	[99]
65	<i>MVK</i>	Hom	Hom	Ub	Retina	Rare [100]	No	251170	[101]	No
66	<i>NEK2</i>	Cone-L.	NOp	Ub	NF	Rare [102]	No	No	[103]	ZebF [102]
67	<i>NEUROD1</i>	Rod-like	Hom	Cerebel.	NF	Rare [104]	No	601724	[105]	No
68	<i>NRL</i>	Rod-like	PR-death	Ret./RPE	Retina	2% [16]	One	No	[25]	No
69	<i>PDE6A</i>	Rod-like	PR-death	Ret./RPE	Retina	3-4% [13]	No	No	[106]	Dog [107]
70	<i>PDE6B</i>	Rod-like	PR-death	Ret./RPE	RPE	4-5% [13]	One	No	<i>rd1, rd10</i>	Dog [108]
71	<i>PDE6G</i>	Rod-like	PR-death	Ret./RPE	NF	Rare [109]	No	No	[110]	No
72	<i>POMGNT1</i>	Hom	Hom	Saliv. gl.	RPE	Rare [111]	No	606822	[112]	No
73	<i>PRCD</i>	No orth.	PR-death	No ortho	No ortho	Rare [113]	No	No	No ortho	Dog [114]
74	<i>PROM1</i>	Rod-like	PR-death	Ub	Ret./RPE	Rare [115]	Four	No	[113]	No
75	<i>RBP3</i>	Rod-like	PR-death	Ret./RPE	Ret./RPE	Rare [116]	No	No	[117]	No
76	<i>REEP6</i>	Rod-like	PR-death	Liver/Ret./RPE/Testis	RPE	Rare [118]	No	No	[119]	No
77	<i>RGR</i>	Infl.	PR-death	RPE	RPE	0.5% [13]	One	No	[120]	No

78		<i>RHO</i>	Rod-like	PR-death	Ret./RPE	Ret./RPE	1% [13]	Two	No	<i>Rho</i> -/-	No
79		<i>RLBP1</i>	Cone-L.	PR-death	Ret./RPE	Ret./RPE	1% [13]	Three	No	[121]	No
80		<i>RP1L1</i>	Rod-like	PR-death	Ret./RPE	NF	0.5% [122]	One	No	[123]	No
81		<i>RPE65</i>	Hom	NE	RPE	NF	2% [13]	Two	No	[27]	Dog [42]
82		<i>SAG</i>	Rod-like	PR-death	Ret./RPE	Ret./RPE	>1% [13]	One	No	[124]	Dog [125]
83		<i>SAMD11</i>	Rod-like	Hom	Bone mar. Ret./RPE	RPE	Rare [126]	No	No	No	No
84		<i>SLC7A14</i>	Cone-L.	PR-death	Brain	NF	Rare [127]	No	No	[127]	No
85		<i>SPATA7</i>	Hom	Hom	Testis	RPE	Rare [128]	One	No	[129]	No
86		<i>TRNT1</i>	Hom	NOp	Ub	NF	Rare [130]	No	612907	No	ZebF [131]
87		<i>TTC8</i>	Rod-like	PR-death	Ub	NF	>1% [13]	One	No	[132]	Dog [133]
88		<i>TULP1</i>	Rod-like	PR-death	Ret./RPE	Retina	1% [13]	One	No	[134]	No
89		<i>USH2A</i>	Rod-like	PR-death	Ub	Retina	17% [13]	One	No	[135]	ZebF [136]
90		<i>ZNF408</i>	No orth.	Infl.	No ortho	No ortho	Rare [137]	One	No	No	ZebF [138]
91		<i>ZNF513</i>	No orth.	Hom	No ortho	No ortho	Rare [139]	No	No	No	ZebF [139]
92	<b>X-linked retinitis pigmentosa</b>	<i>OFD1</i>	Hom	PR-death	Ub	RPE	Rare [140]	Two	300170	[141]	ZebF [142]
93		<i>RP2</i>	Hom	NOp	Ub	NF	7-10% [12]	No	No	[143]	No

94		<i>RPGR</i>	NF	PR-death	NF	NF	80% [12]	Three	No	[144]	Dog [145]
95		<i>ADIPOR1</i>	Rod-like	PR-death	Bone Mar.	Ret./RPE	Rare [6]	One	No	[7]	No
96		<i>ARL6</i>	Rod-like	PR-death	Ub	Retina	Rare [146]	One	No	[55]	No
97		<i>BBIP1</i>	NF	NF	NF	NF	Rare [146]	No	No	No	ZebF [147]
98		<i>BBS1</i>	Rod-like	Hom	Ret./RPE	RPE	23.2% [148]	One	No	[57]	ZebF [58]
99		<i>BBS2</i>	Rod-like	Hom	Ub	Ret./RPE	8.1% [148]	No	No	[59]	No
100		<i>BBS4</i>	Rod-like	PR-death	Brain	RPE	2.3% [146]	No	No	[149]	Dog [150]
101		<i>BBS5</i>	Rod-like	PR-death	Testis	NF	Rare [146]	No	No	[151]	No
102	<b>Bardet-Biedl syndrome</b>	<i>BBS7</i>	Rod-like	PR-death	Testis, Ret./RPE	RPE	1.5% [146]	No	No	[152]	NHP [153]
103		<i>BBS9</i>	Rod-like	PR-death	Ub	Ret.	6% [154]	No	No	No	ZebF [155]
104		<i>BBS10</i>	Hom	Hom	Mast cells	Ret./RPE	20% [156]	No	No	[157]	ZebF [156]
105		<i>BBS12</i>	Rod-like	PR-death	Mast cells, Ret./RPE	NF	5% [158]	No	No	[159]	No
106		<i>C8ORF37</i>	No ortho	NOp	No ortho	No ortho	Rare [160]	Two	No	[63]	ZebF [64]
107		<i>CEP19</i>	NF	NF	NF	NF	Rare [161]	No	No	[162]	No
108		<i>CEP290</i>	Rod-like	PR-death	Ret./RPE	NF	Rare [163]	Four	No	<i>rd16</i> [164] [165]	Cat [166]
109		<i>IFT172</i>	Hom	PR-death	Testis	NF	Rare [167]	One	No	[168]	ZebF [167] [169]

110		<i>IFT27</i>	NF	NF	NF	NF	Rare [170]	No	No	[171]	ZebF [170]
111		<i>INPP5E</i>	Hom	Hom	Testis	NF	Rare [172]	One	No	[172]	No
112		<i>KCNJ13</i>	Infl.	PR-death	RPE, Iris	RPE	Rare [173]	Two	No	[174]	ZebF [175]
113		<i>LZTFL1</i>	Rod-like	Hom	Testis, Bone mar.	NF	Rare [176]	No	No	[177]	No
114		<i>MKKS</i>	Rod-like	Hom	Muscle	NF	5.8% [146]	No	604896	[151, 178]	No
115		<i>MKS1</i>	Rod-like	Hom	Ub	Ret./RPE	4.5% [179]	One	609883	[180]	No
116		<i>NPHP1</i>	Rod-like	PR-death	Testis	RPE	Rare [176]	One	607100	[181]	No
117		<i>SDCCAG8</i>	Hom	Hom	Ub	Retina	Rare [176]	One	613524	[182]	ZebF [183]
118		<i>TRIM32</i>	Infl.	Infl.	Ub	RPE	Rare [176]	No	602290	[184]	No
119		<i>TTC8</i>	Rod-like	PR-death	Ub	NF	1.2% [148]	One	No	[132]	Dog [133]
120	<b>Autosomal dominant Leber congenital amaurosis</b>	<i>CRX</i>	Rod-like	PR-death	Ret./RPE	Ret./RPE	Rare [185]	Four	No	[14]	Cat [15]
121		<i>IMPDH1</i>	Rod-like	PR-death	Ret./RPE	Retina	Rare [186]	One	No	[20]	No
122		<i>OTX2</i>	Hom	PR-death	Ret./RPE	Ret./RPE	Rare [187]	One	No	[188]	No
123	<b>Autosomal recessive</b>	<i>AIPL1</i>	Rod-like	PR-death	Ret./RPE	Retina	4%-8% [189]	Two	No	[190]	No
124		<i>CABP4</i>	Rod-like	PR-death	Ret./RPE	Ret./RPE	Rare [191]	Two	No	[192]	No



125	<b>Leber congenital amaurosis</b>	<i>CCT2</i>	Hom	Hom	Ub	Ret./RPE	Rare [193]	No	No	No	ZebF [194]
126		<i>CEP290</i>	Rod-like	PR-death	Ret./RPE	NF	15%-20% [189]	Four	No	<i>rd16</i> [164] [165]	Cat [166]
127		<i>CLUAP1</i>	Hom	Hom	Testis	NF	Rare [195]	No	No	[196]	ZebF [197]
128		<i>CRB1</i>	Rod-like	Hom	Ret./RPE	NF	10% [189]	Three	No	[72]	Rat [73]
129		<i>CRX</i>	Rod-like	PR-death	Ret./RPE	Ret./RPE	Rare [185]	Four	No	[14]	Cat [15]
130		<i>DTHD1</i>	NF	NF	NF	NF	Rare [198]	No	No	No	No
131		<i>GDF6</i>	NF	NF	NF	NF	Rare [199]	Two	601147	[199]	ZebF [200]
132		<i>GUCY2D</i>	NF	PR-death	NF	NF	10%-20% [189]	No	No	[201]	Chick [202]
133		<i>IFT140</i>	Hom	Hom	Testis, Bone mar.	NF	Rare [203]	Two	614620	[89]	No
134		<i>IQCB1</i>	Hom	Hom	Ub	RPE	Rare [204]	No	609237	[205]	ZebF [206] Dog [207]
135		<i>KCNJ13</i>	Infl.	PR-death	RPE, Iris	RPE	Rare [208]	Two	No	[174]	ZebF [175]
136		<i>LCA5</i>	Rod-like	PR-death	Ret./RPE	RPE	Rare [209]	No	No	[210]	ZebF [211]
137		<i>LRAT</i>	Infl.	NOp	RPE	RPE	<1% [212]	One	No	[95]	No
138		<i>NMNAT1</i>	Hom	Hom	Ub	NF	Rare [213] [214] [215]	No	No	<i>Wld(S)</i> [216]	Droso [217]
139	<i>PRPH2</i>	Rod-like	PR-death	Ret./RPE	Ret./RPE	Rare [218]	Six	No	[30, 31]	No	
140	<i>RD3</i>	Rod-like	Hom	Testis, Ret./RPE	Retina	Rare [212]	No	No	<i>rd3</i> [219]	No	

141		<i>RDH12</i>	Rod-like	PR-death	Ret./RPE	Ret./RPE	4%-5% [189]	One	No	[33]	No
142		<i>RPE65</i>	Hom	NE	RPE	NF	5%-10% [189]	Two	No	[27]	Dog [42]
143		<i>RPGRIPI</i>	Rod-like	PR-death	Ub	Retina	5% [189]	One	No	[220]	Dog [221]
144		<i>SPATA7</i>	Hom	Hom	Testis	RPE	Rare [222]	One	No	[129]	No
145		<i>TULP1</i>	Rod-like	PR-death	Ret./RPE	Retina	Rare [223]	One	No	[134]	No
146	<b>Autosomal recessive Usher syndrome</b>	<i>ABHD12</i>	Infl.	Infl.	Ub	Ret./RPE	Rare [224]	No	No	[225]	No
147		<i>ADGRV1</i>	NF	NF	NF	NF	6.6%-19%* [226]	No	602851	[227] [228]	No
148		<i>ARSG</i>	Rod-like	NOp	RPE, Spinal c.	RPE	Rare [229]	No	No	[230]	Dog [231]
149		<i>CDH23</i>	NOp	Infl.	NOp	NF	7%-20%** [226]	No	605516	[232] [233]	Dog [234]
150		<i>CEP250</i>	Rod-like	Hom	Ub	Retina	Rare [235]	No	No	No	Cow [236]
151		<i>CEP78</i>	Hom	PR-death	Ub	Retina	Rare [237]	No	No	No	No
152		<i>CIB2</i>	Infl.	Infl.	Skel. m., Adipo.	Ret./RPE	Rare [235]	No	No	[238] [239]	ZebF [240]
153		<i>CLRN1</i>	NOp	Infl.	NOp	NF	Rare [235]	One	No	[67]	ZebF [68]
154		<i>DFNB31</i>	NF	PR-death	NF	RPE	0%-9.5%** [241]	No	No	<i>wi</i> [242]	No
155		<i>ESPN</i>	Infl.	Infl.	Intestine	Retina	Rare [243]	No	No	<i>je</i> [244]	No

156	<i>HARS</i>	Hom	Hom	Ub	RPE	Rare [235]	No	142810	No	No
157	<i>MYO7A</i>	Rod-like	Hom	Adrenal gland	RPE	53%-63%** [245]	No	No	<i>sh1</i> [246]	ZebF [247]
158	<i>PCDH15</i>	Rod-like	Hom	Retina	Retina	7%-12%** [245]	No	No	<i>av</i> [248]	Rat [249]
159	<i>USH1C</i>	Hom	Hom	Intestine	NF	1%-15%** [245]	No	No	<i>dfer</i> [250] [251]	No
160	<i>USH1G</i>	NF	NOp	NF	NF	0%-4%** [245]	No	No	<i>js</i> [252]	No
	<i>USH2A</i>	Rod-like	PR-death	Ub	Retina	57%-79%* [226]	One	No	[135]	ZebF [136]

**Legend:** Adipo.: Adipocytes, Bone mar.: Bone Marrow, Cerebel.: Cerebellum, Cone-L.: Cone-like: increase in the *rd1* retina (after rod degeneration) and decrease in human retinal detachment (after death of both rods and cones), Drosophila: Drosophila, Freq: Frequency from Retnet (<https://sph.uth.edu/Retnet/>) and Pubmed, Hom: Homogenous, Infl.: Inflammatory cells, Kidn.: Kidney, Liv.: Liver, NE: Not expressed, NF: Not found, NHP: non-human primate, NOp: Probeset non-operational, No ortho: No orthologue, PR-death: Decrease in human retinal detachment, Ret.: retina, Rod-like: decrease in the *rd1* retina. Rod-like expression pattern corresponds to an expression profile that matches that of the rhodopsin gene (*Rho*) that decreases in the *rd1* retina during the course of rod degeneration., RPE: retinal pigmented epithelium, Saliv. gl.: Salivary gland, Skel. m.: skeleton muscle, Spinal c.: Spinal cord Ub: Ubiquitous, Xen: Xenopus and ZebF: Zebrafish, \*: Percentage of Usher syndrome type II, \*\*: Percentage of Usher syndrome type I.

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