Fig. S1. The results of HE staining and flash electroretinogram of B6J and *RhoP23H/P23H* mice retinas. a-b The HE staining of C57BL/6J (B6J) mice and *RhoP23H/P23H* mice retinas at PN14. The outer segments (OS) of *RhoP23H/P23H* mice (b) are shorter and not clear comparing to B6J mice (a). c-d The HE staining of B6J mice and *RhoP23H/P23H* mice retinas at PN21. The OS and inner segments (IS) of *RhoP23H/P23H* mice (d) disappear, and the outer nuclear layers (ONL) are shorter than B6J mice (c). e-f The HE staining of B6J mice and *RhoP23H/P23H* mice retinas at PN35. By PN35, the ONL of *RhoP23H/P23H* mice (f) remained less than a full row. g-i ONL thickness analysis at PN14, PN21 and PN35, statistical analysis of the difference in the line charts between *RhoP23H/P23H* mice and B6J mice at the same distance from ONH is performed with student’s t-test(n=3). j-k The plots of fERG based on dark-adapted stimulus intensity 0.003 and 3.0 cd·s/m2 and light-adapted stimulus intensity 10.0 cd·s/m2 at PN21 and PN35. l-o The statistical analysis of scotopic and photopic fERG a-wave and b-wave amplitudes in different stimulus intensity at PN21. p-s The statistical analysis of scotopic and photopic fERG a-wave and b-wave amplitudes in different stimulus intensity at PN35. Nonparametric tests analyzed data if data failed to pass the normality test and variance homogeneity test. OPL, outer plexiform layer. INL, inner nuclear layer. IPL, inner plexiform layer. GCL, ganglion cell layer. ONH, optic nerve head. fERG, flash electroretinogram. \*p < 0.05, \*\*p < 0.01, \*\*\*p < 0.001, \*\*\*\*p < 0.0001. Scale bar: 50 μm.