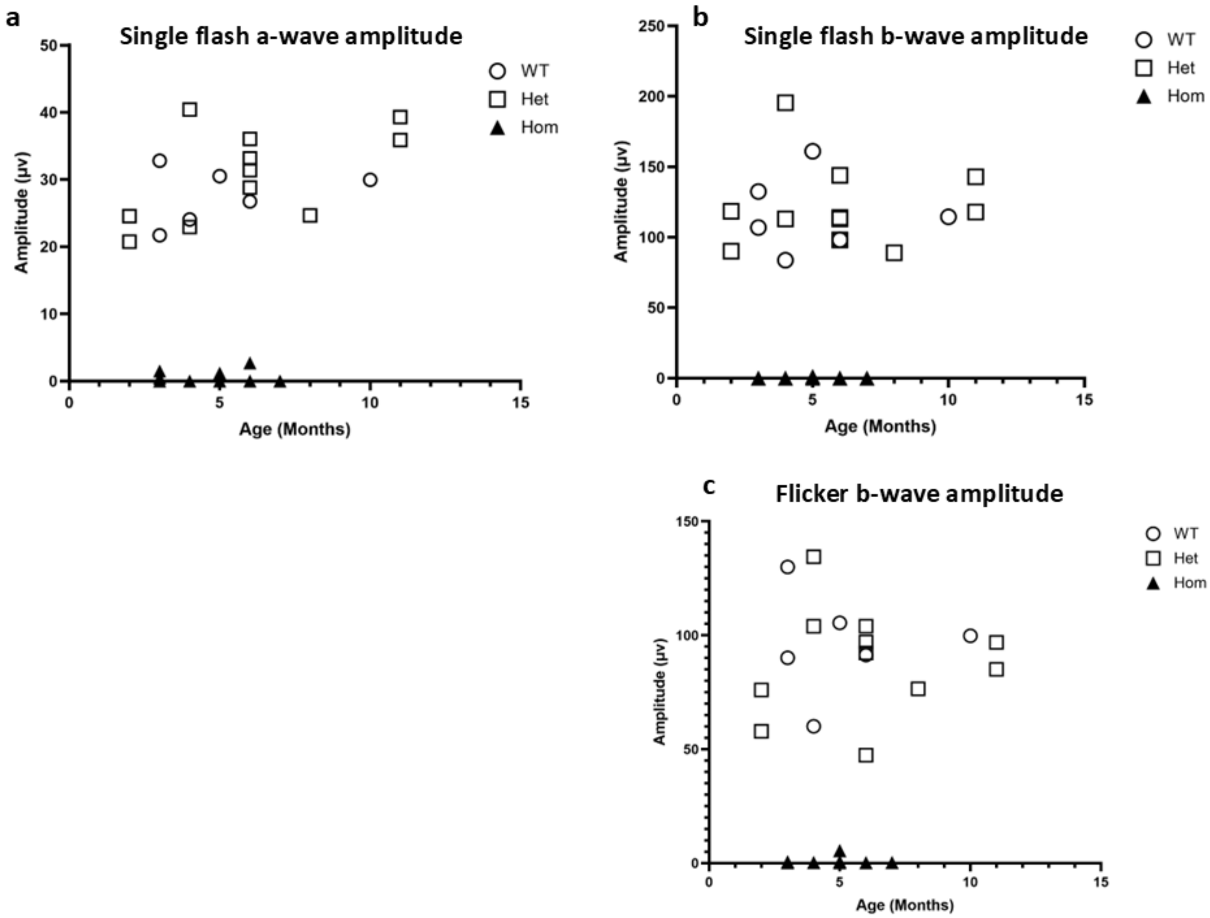
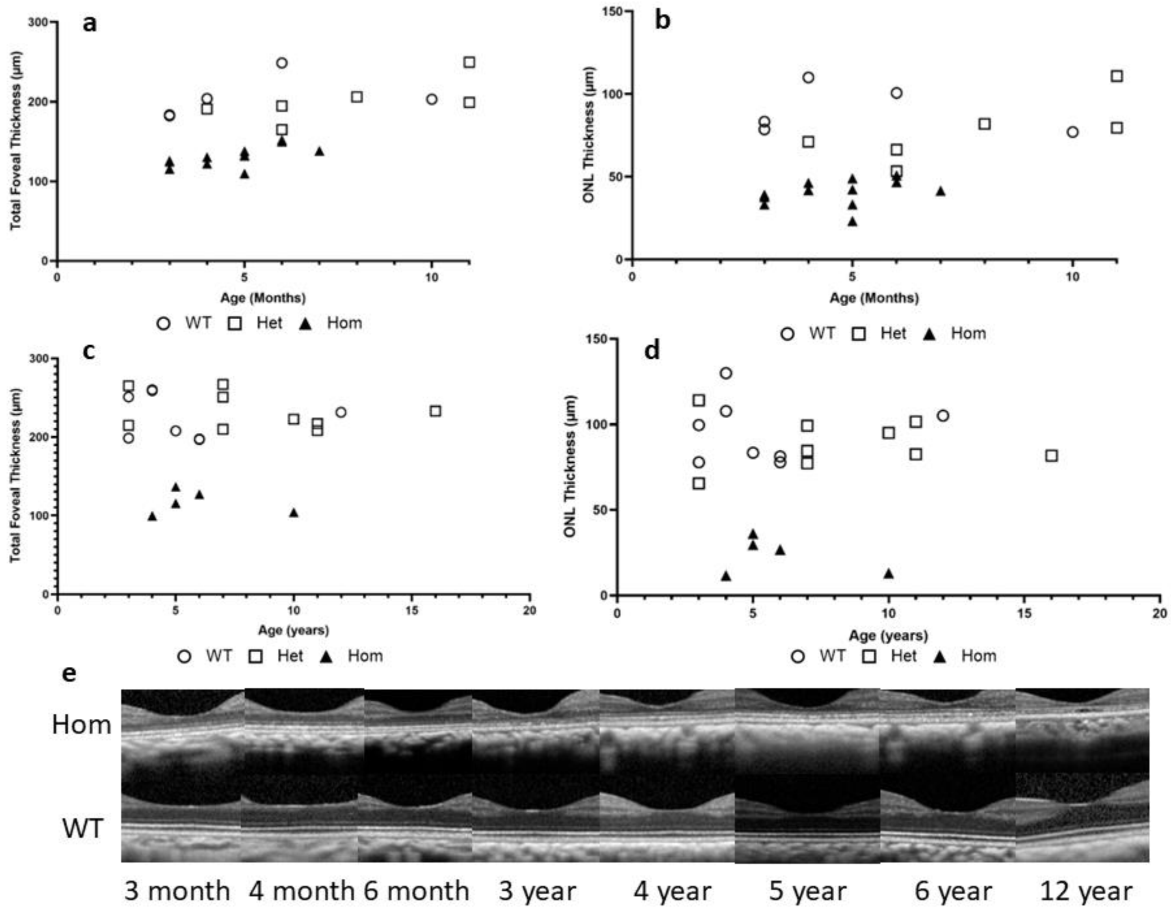
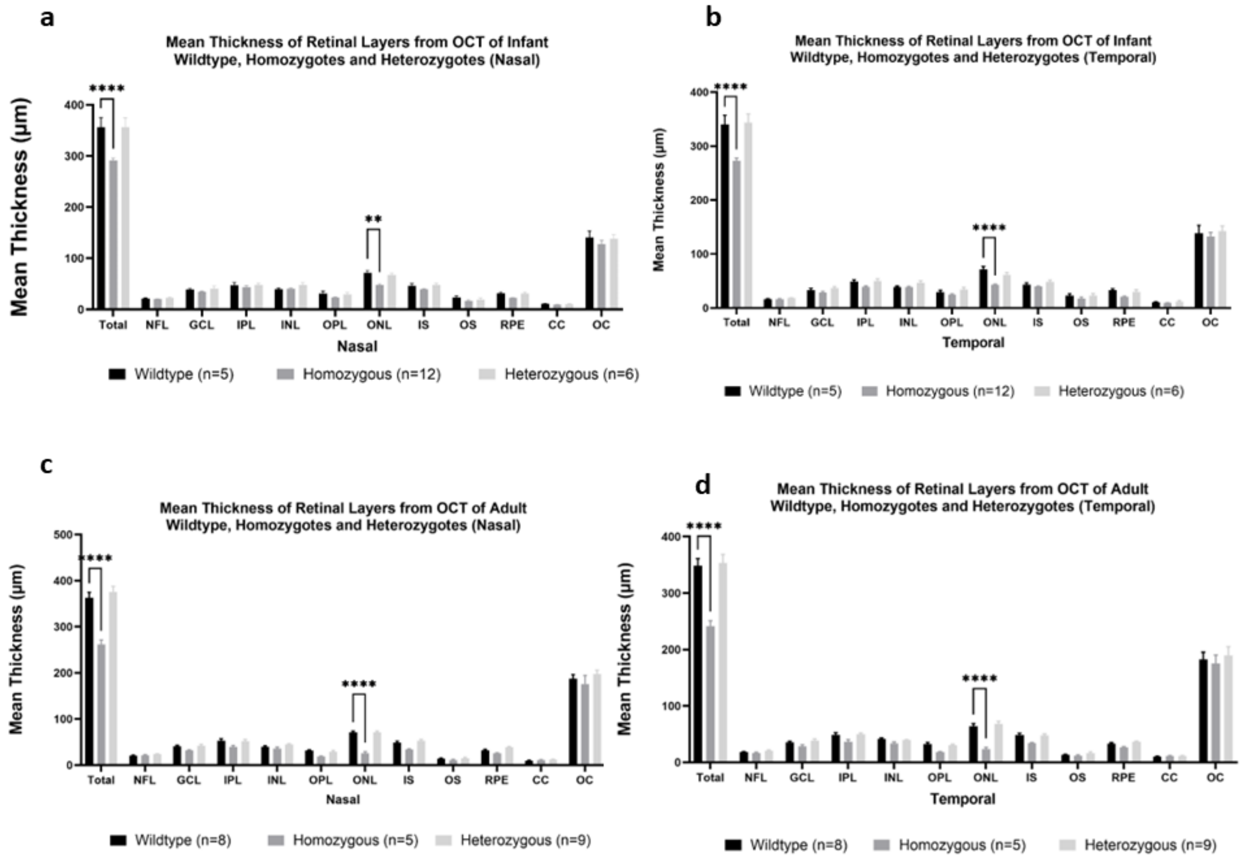


Supplemental Figure 1. Homozygote infants have no cone photoreceptor response.

Scatterplots show wildtype (n=6), heterozygote (n=11), and homozygote (n=11) infants at a single flash 3.0 cd•s/m^2 stimulus of both a- (**a**), b-(**b**), and flicker (30Hz) (**c**) waves.

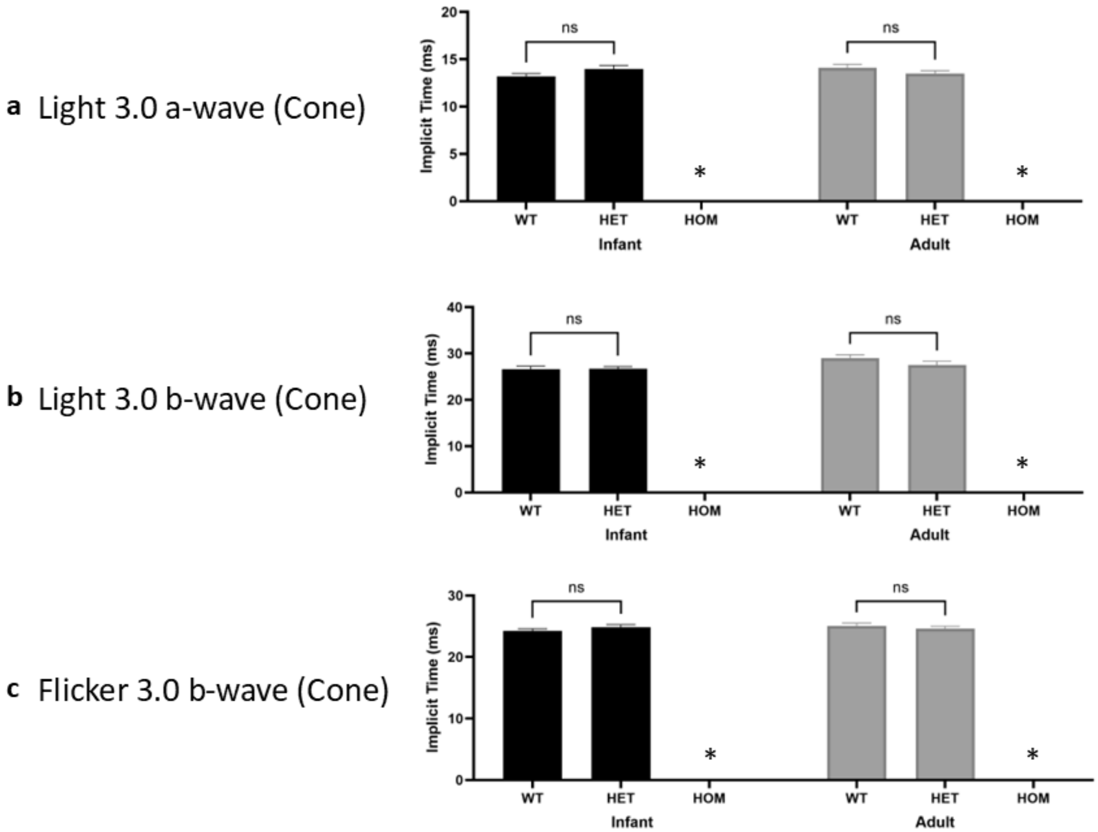


Supplemental Figure 2. Infant homozygotes as young as 3 months post-natal show reduced total and ONL foveal thickness. Scatterplots show infant **(a-b)** and adult **(c-d)** total foveal thickness and ONL foveal thickness where age is on the x-axis and thickness is on the y-axis. OCT images of age matched wildtype and homozygote primates from infancy to adulthood (**e**).



Supplemental Figure 3. Infant and adult homozygotes show reduced total and ONL thickness nasal and temporal to the fovea. Bar graphs show infant **(a**-**b)** and adult **(c-d)** total foveal thickness and ONL foveal thickness where genotype is on the x-axis and thickness is on the y-axis. (**a**) Two-way ANOVA was done in measurements nasal to the fovea showed significant interaction between genotype and retinal layer, F (22,240) = 5.309, P< 0.0001. Dunnett's multiple comparisons found that the total retinal thickness (P< 0.0001) and ONL (P< 0.0001) are significantly reduced in infant homozygote (290.8 ± 4.9, 47.8 ± 1.9) when compared to wildtype (356.3 ± 19.0, 71.6 ± 4.7) and heterozygote (356.0 ± 18.5, 67.4 ± 3.3) primates. (**b**) Two-way ANOVA was performed in measurements done temporal to the fovea and showed significant interaction between genotype and retinal layer, F (22,240) = 6.291, P<

0.0001. Dunnett's multiple comparisons found that the total retinal thickness (*P*< 0.0001) and ONL (*P*< 0.0001) at the temporal measurement are significantly reduced in infant homozygote (273.0 ± 4.9, 42.9 ± 1.2) when compared to wildtype (340.3 ± 17.0, 71.3 ± 5.6) and heterozygote (343.8 ± 15.9, 61.4 ± 4.3) primates, respectively. (**c**) A Two-way ANOVA showed that there was an interaction between genotype and retinal layer thickness in adult macaques at the nasal area around the fovea, F (22,228) = 9.173, *P*< 0.0001. Dunnett's multiple comparisons test confirmed that adult homozygotes (261.5 ± 9.9, 25.5 ± 3.5) had a significant reduction at both total foveal thickness (*P*< 0.0001) and at the ONL (*P*< 0.0001) when compared to wildtype (362.9 ± 12.0, 71.0 ± 2.9) or heterozygote (375.8 ± 11.9, 71.2 ± 2.6) primates. (**d**) This was also seen temporal to the fovea F (22,228) = 6.308, *P*< 0.0001. Dunnett's multiple comparisons test confirmed that adult homozygotes (241.0 ± 10.1, 23.3 ± 3.3) had significant reduction at both total foveal thickness (*P*< 0.0001) and at the ONL (*P*< 0.0001) when compared to wildtype (349.0 ± 12.1, 63.5 ± 4.9) or heterozygote (353.6 ± 14.8, 68.1 ± 4.4) macaques.



Supplemental Figure 4. Homozygote infants and adults did not have implicit times when compared to age matched wildtype and heterozygote macaques. Under light adapted conditions, a single flash 3.0 cd•s/m^2 stimulus of both a- (**a**), b-(**b**), and flicker (30Hz) (**c**) waves from infant and adult wildtype (n=6, 7) and heterozygotes (n=11, 9), respectively, was recorded. Homozygote infant (n=11) and adult (n=5) macaques did not have an implicit time, as graphically denoted by an asterisk (*). Mean ± SEM of ERG implicit time (ms: milliseconds) were graphically depicted. Two-way ANOVA did not reveal significance amongst genotype and age at any of the three light adapted conditions.