Supplemental Figures.

**Figure S1.** Positional cloning and direct sequencing reveals that *Cpfl8* mice carry a mutation in *Syne2*. (A) Haplotype figure of progeny tested unaffected and affected informative mice carrying recombinations that define the critical interval. Numbers at the bottom represent the number of chromosomes with each haplotype. (B) Genetic map showing genes and markers within the critical region. B6 (C57BL/6J); C3H (C3H/HeJ).
Figure S2. Staining with calbindin shows thinned (arrowhead) and disorganized horizontal neurofilaments at P8 (A, B) and P14 (C, D), respectively. Scale bars = 20 µM. (E-F) Transmission electron micrograph showing the displaced cell nuclei in homozygous Syne2<sup>cpfl8</sup> retina. (asterisk=Müller cell; arrowhead=photoreceptor) Note: the OPL is thinned in the mutant (F) and pre- and post synaptic regions are not well structured as observed in the wild-type (E).