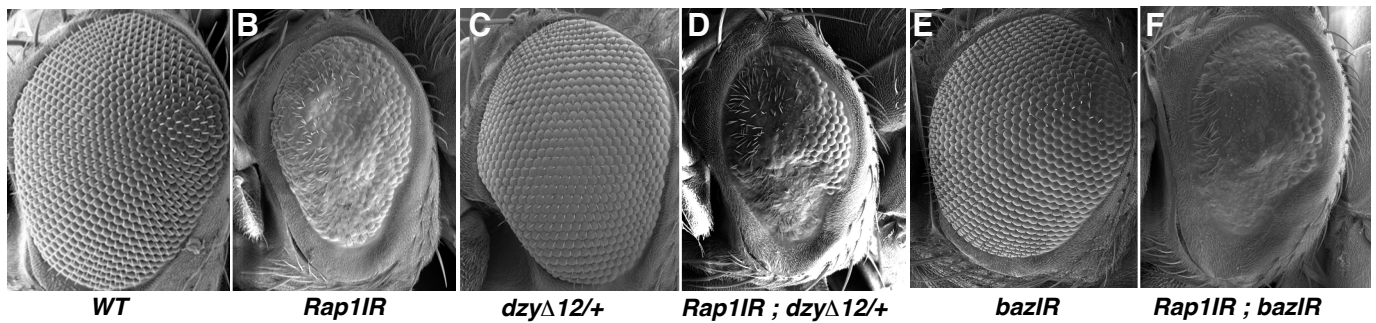
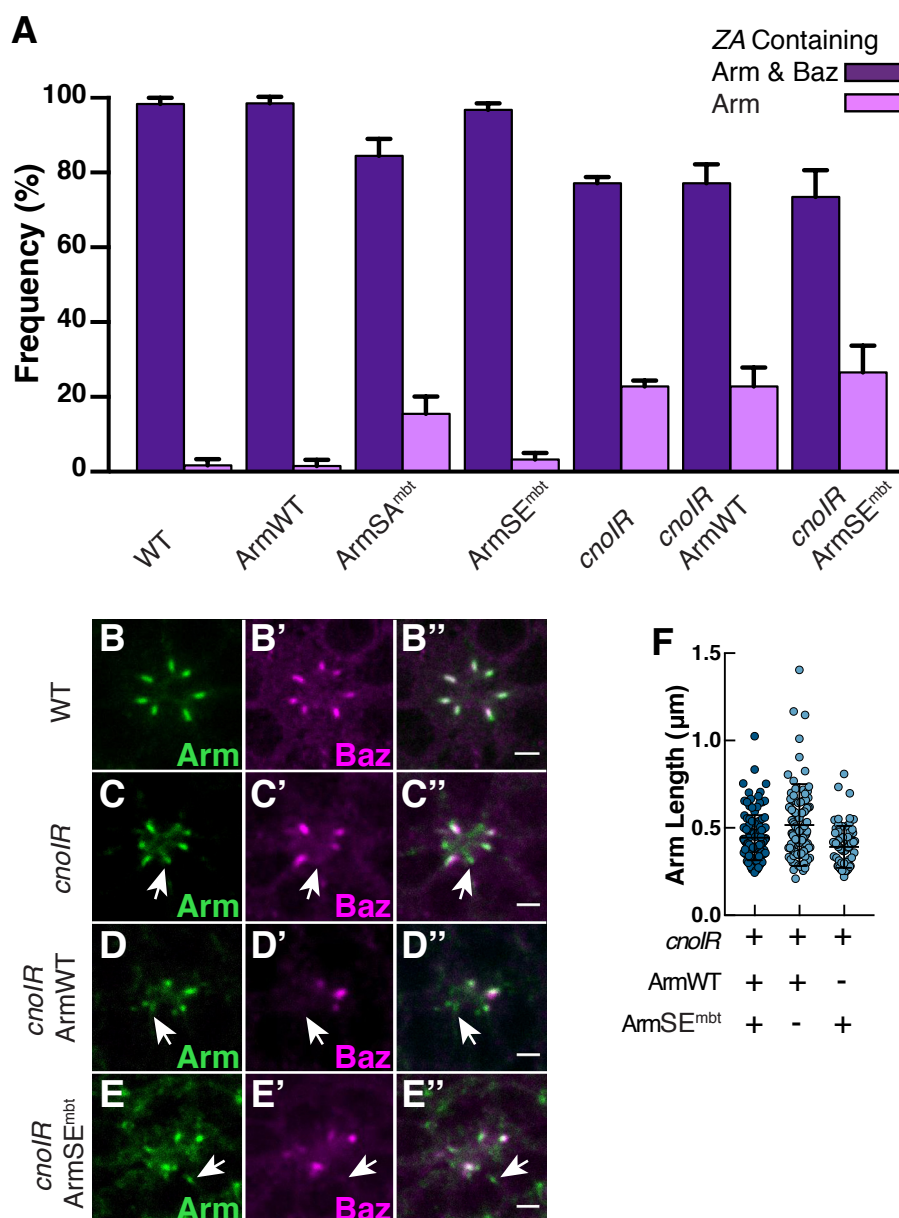


Supplementary Figure 1: Rap1 is required to preserve retinal tissue integrity. (A-A'') *Rap1IR* cells positively labeled by GFP (A) and stained for Arm (A'). Yellow stars label cone cells in the *Rap1IR* tissue. White stars label cone cells in one wild type ommatidium. Note the *Rap1IR* ommatidia lack cone cells. A yellow dashed box highlights *Rap1IR* ommatidia lacking interommatidial cells. (B-D) *Rap1IR* cells positively labeled by GFP (blue, (B, C and D)) and stained for Arm (B', C', D'), aPKC (B'', C'', D'') and Mbt (B''', C''', D'''). Note that many *Rap1IR* photoreceptors delaminate below the floor of the retina, indicated by white arrows (D-D'''). Scale bars = 2µm.

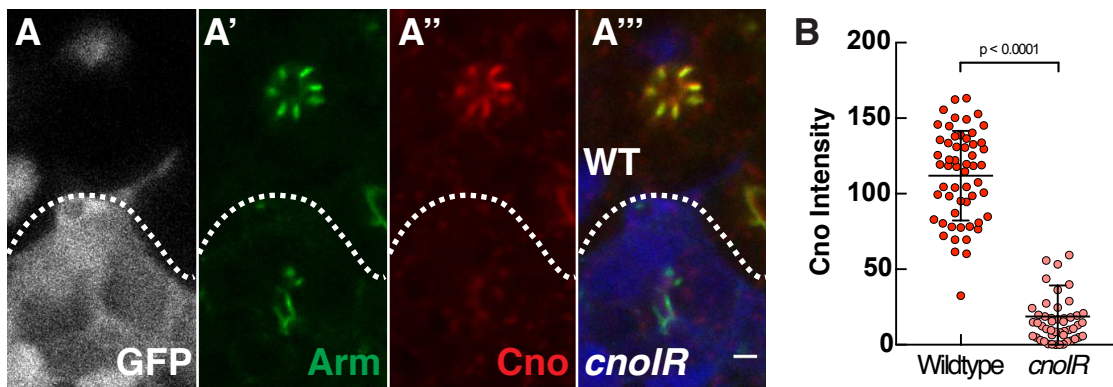


Supplementary Figure 2: Genetic modifiers of the *Rap1IR* rough eye phenotype. (A) SEM of a wild type eye, (B) *Rap1IR*, (C) Heterozygous *dzy*¹² eye, (D) *Rap1IR* combined with *dzy*¹² / +, (E) *bazIR*, (F) *bazIR* combined with *Rap1IR*.



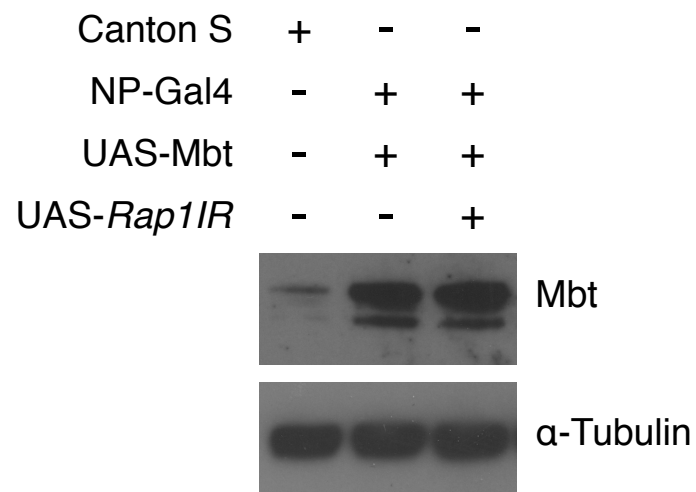
Supplementary Figure 3: Expression of ArmSE^{mbt} fails to rescue junction length and Baz retention in *cnoIR* photoreceptors

(A) Quantification of the percentage of photoreceptor ZA that contain both Arm and Baz (dark purple) or containing Arm but depleted for Baz (light purple). (B-E'') WT (B-B''), *cnoIR* (C-C''), *cnoIR* co-expressing ArmWT (D-D'') or *cnoIR* co-expressing ArmSE^{mbt} (E-E'') retina, stained for Arm (B, C, D, E) and Baz (B', C', D' and E'). White arrows indicate ZA that contain Arm but are depleted for Baz. Scale bars = 2μm. (F) Quantification of Arm domain length at the ZA in *cnoIR* photoreceptors and *cnoIR* photoreceptors expressing ArmWT or ArmSE^{mbt}.



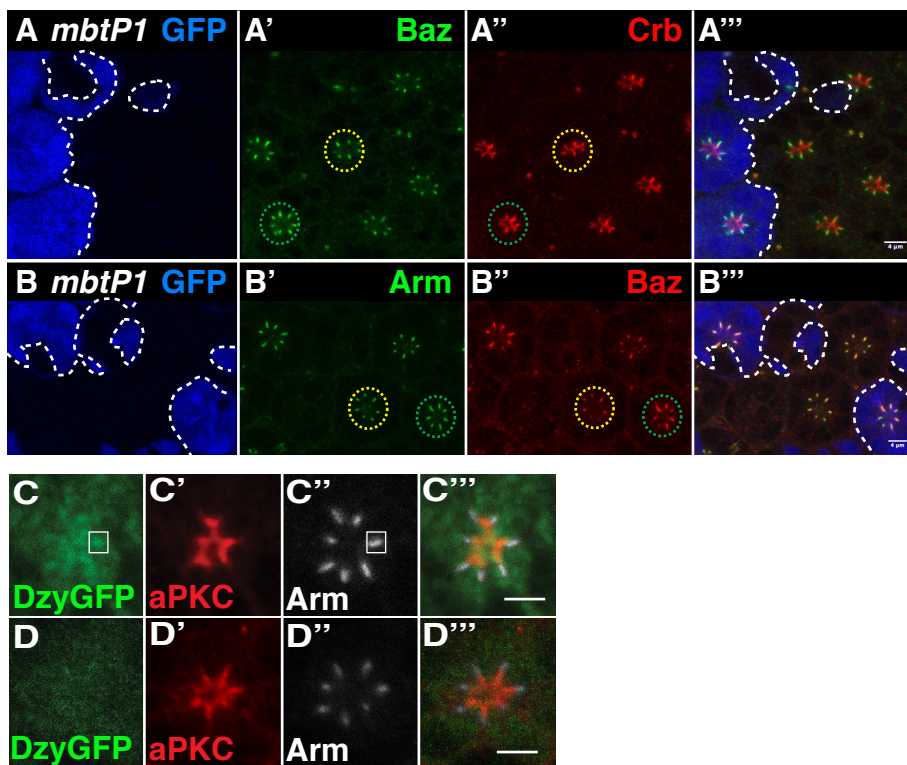
Supplementary Figure 4: *cnoIR* abolishes Cno expression

(A-A''') *cnoIR* cells positively labeled by GFP (A) and stained for Arm (A') and Cno (A''). Scale bars = 2 μ m. (B) Quantification of residual Cno intensity within the ZA, measured along the Arm domain, in *cnoIR* photoreceptors.



Supplementary Figure 5: Expression levels of Mbt in *Rap1IR* retinas

Western blot performed on retinal protein extracts, dissected at 40% after puparium formation.



Supplementary Figure 6: Mbt Regulates the accumulation of Arm, Baz and Dzy at the ZA. (A-B) *mbt^{P1}* mutant cells (lacking of GFP, blue, (A and B)), stained for Baz (A' and B''), Arm (B') and Crb (A''). (C-C''') Dzy::GFP distribution in wild type photoreceptors (C), stained for aPKC (C') and Arm (C''). (D-D''') Dzy::GFP distribution in *mbt^{P1}* mutant photoreceptors (D), stained for aPKC (D') and Arm (D''). Scale bars = 2 μ m.