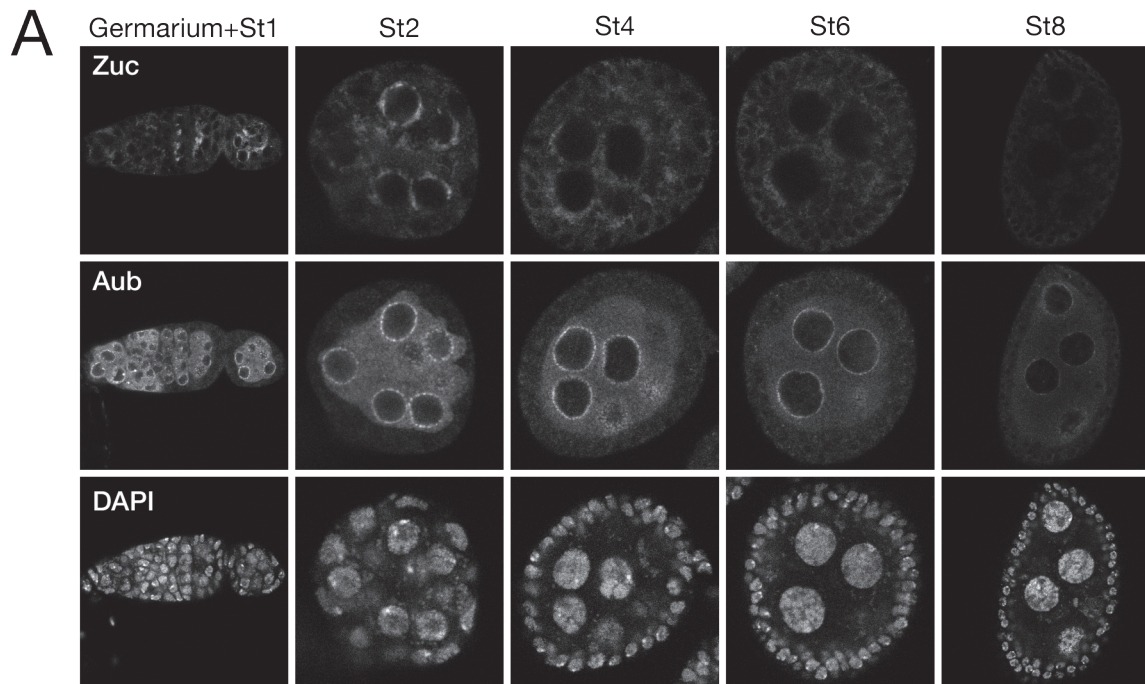


Molecular Cell

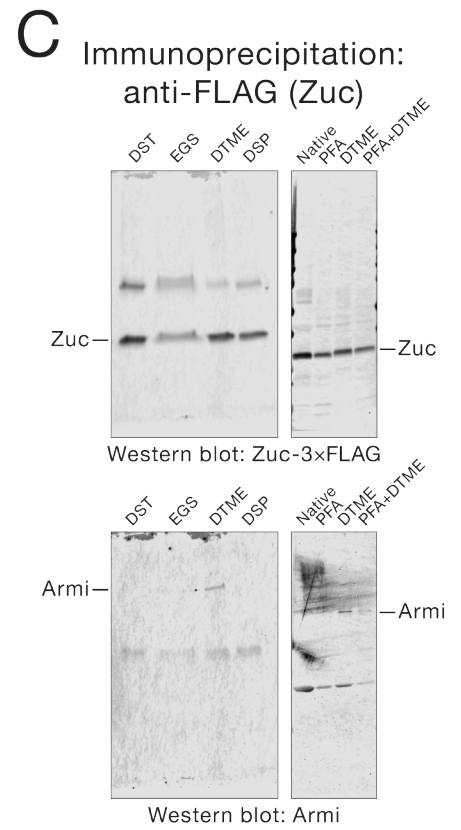
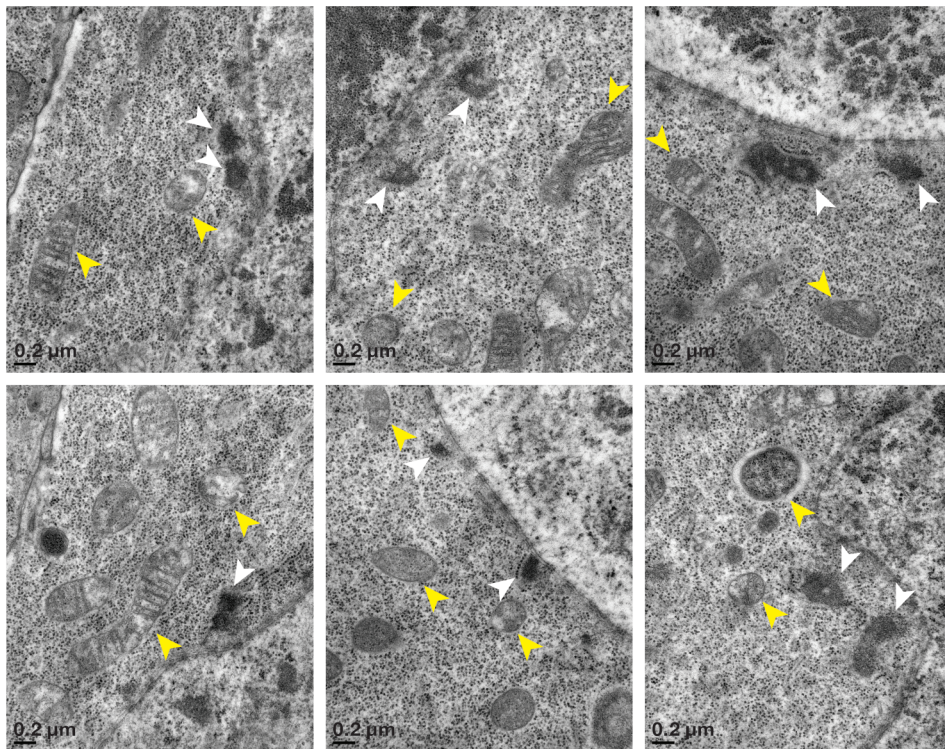
Supplemental Information

**The RNA-binding ATPase, Armitage,
Couples piRNA Amplification in Nuage to
Phased piRNA Production on Mitochondria**

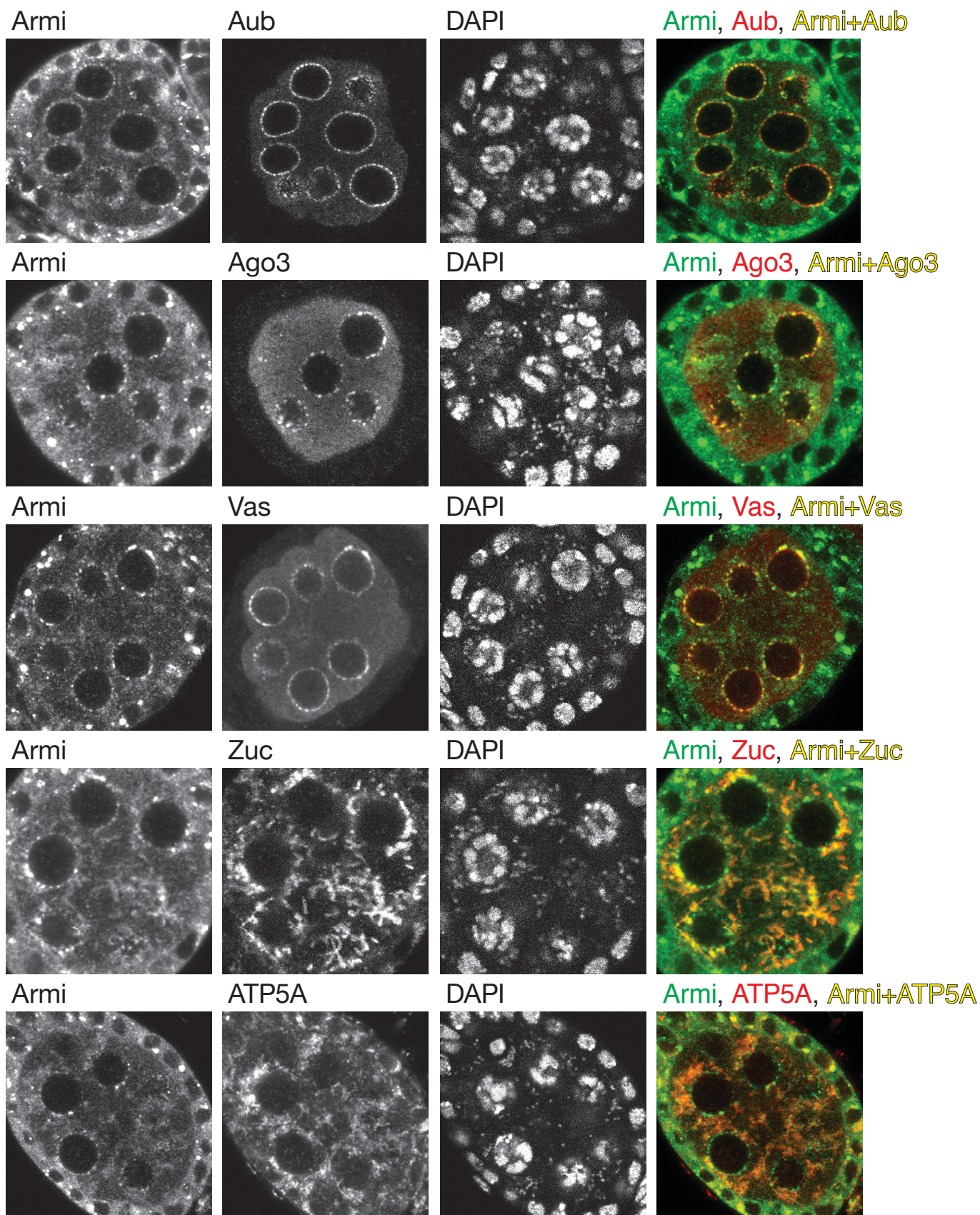
Daniel Tianfang Ge, Wei Wang, Cindy Tipping, Ildar Gainetdinov,
Zhiping Weng, Phillip D. Zamore



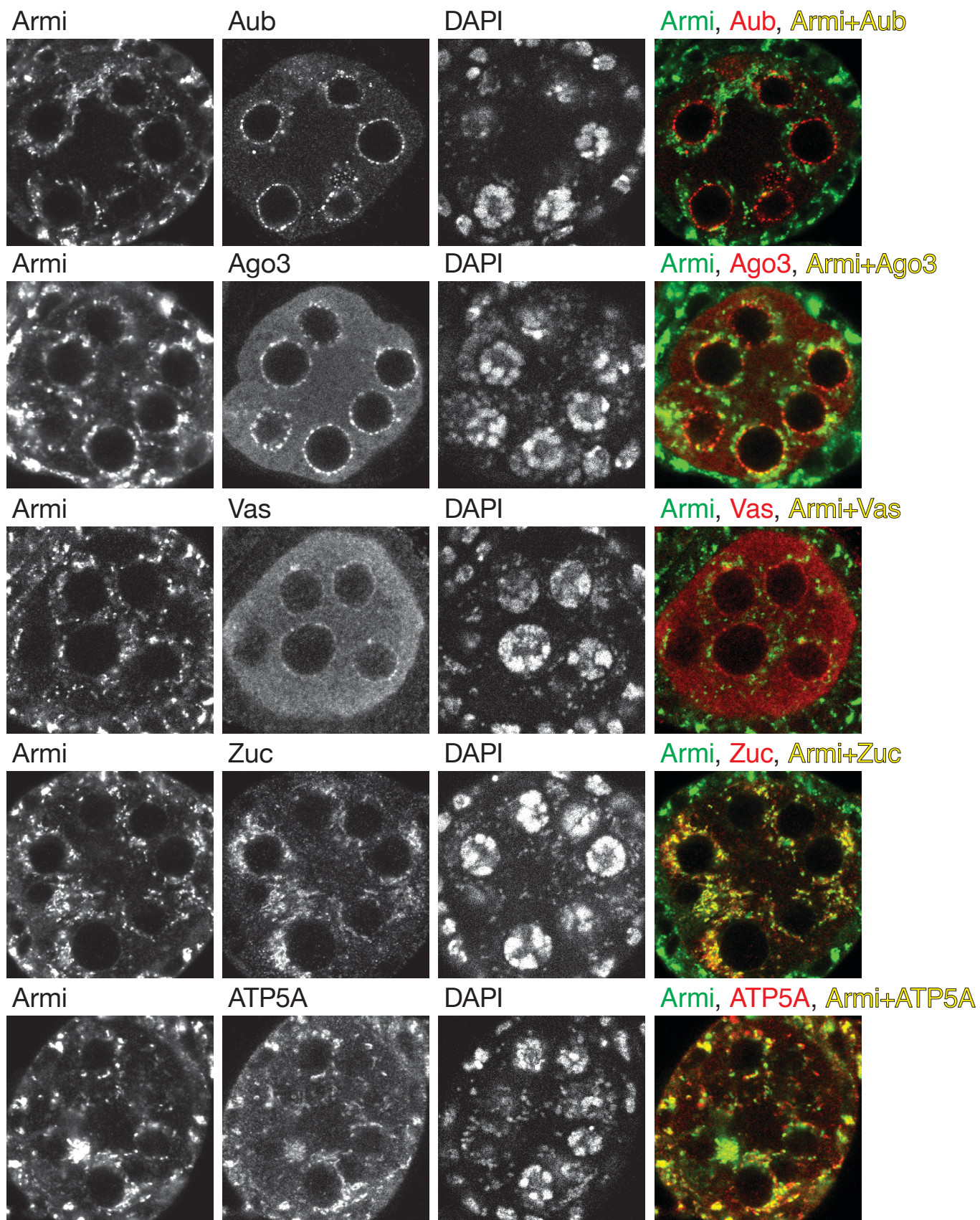
B Nuage, mitochondria



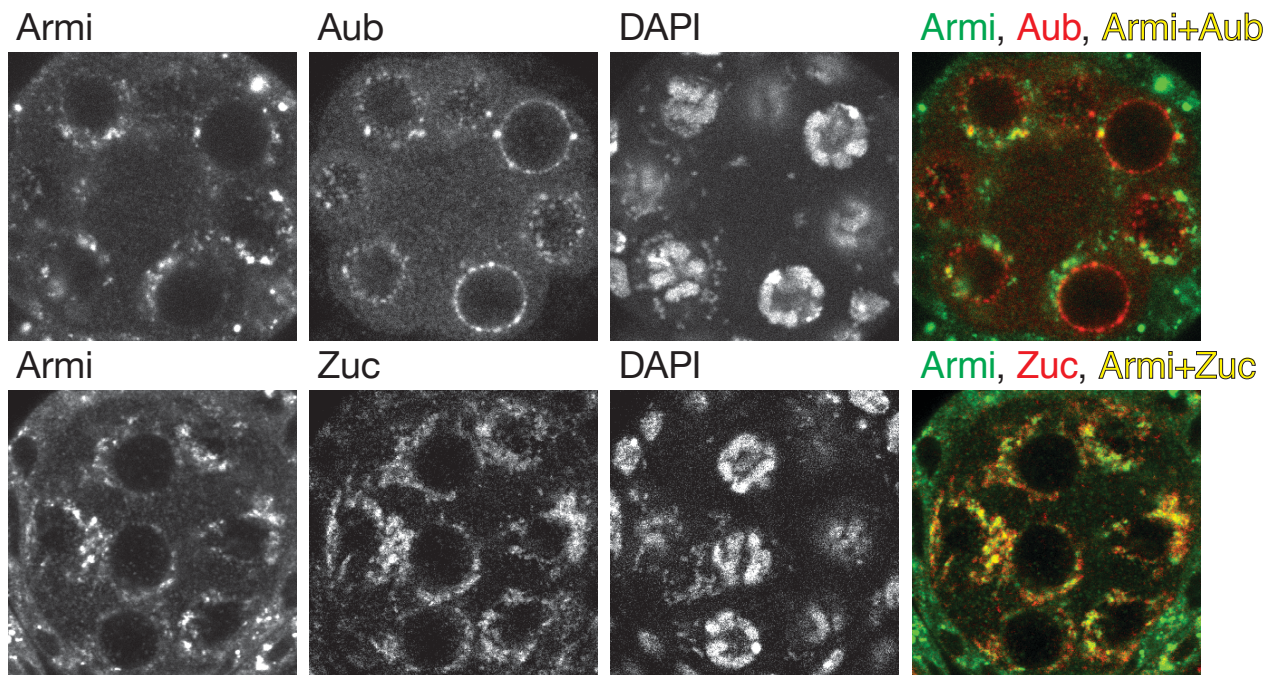
Wild-type



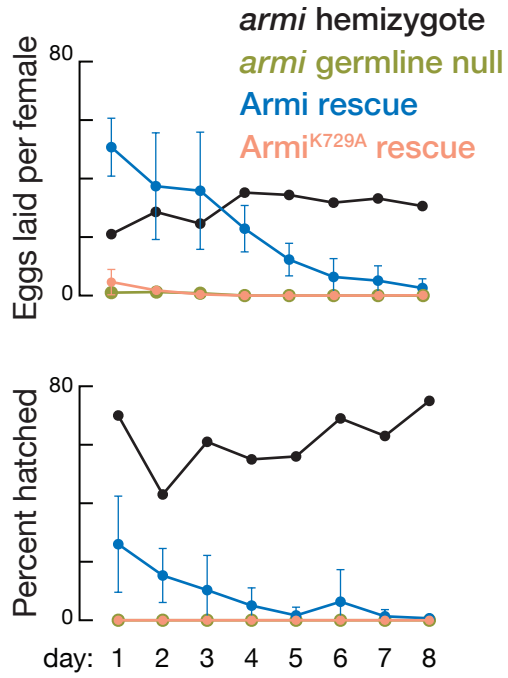
ZUC^{H169Y}



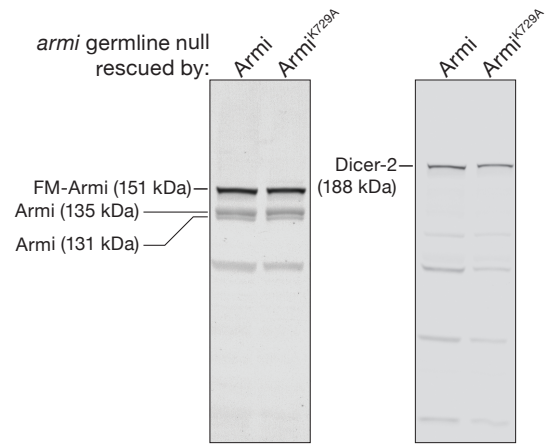
minotaur^{z3-5967}



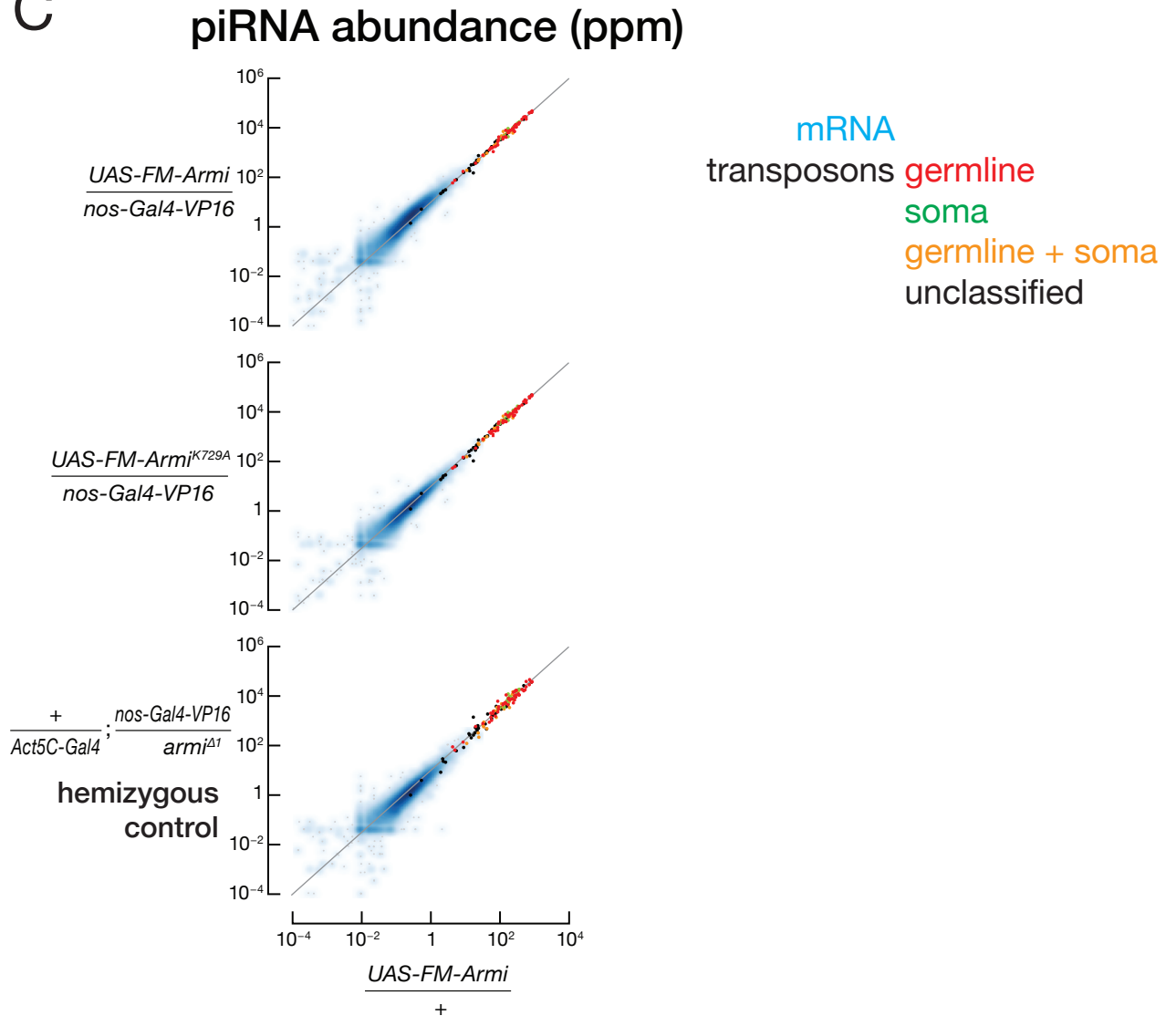
A

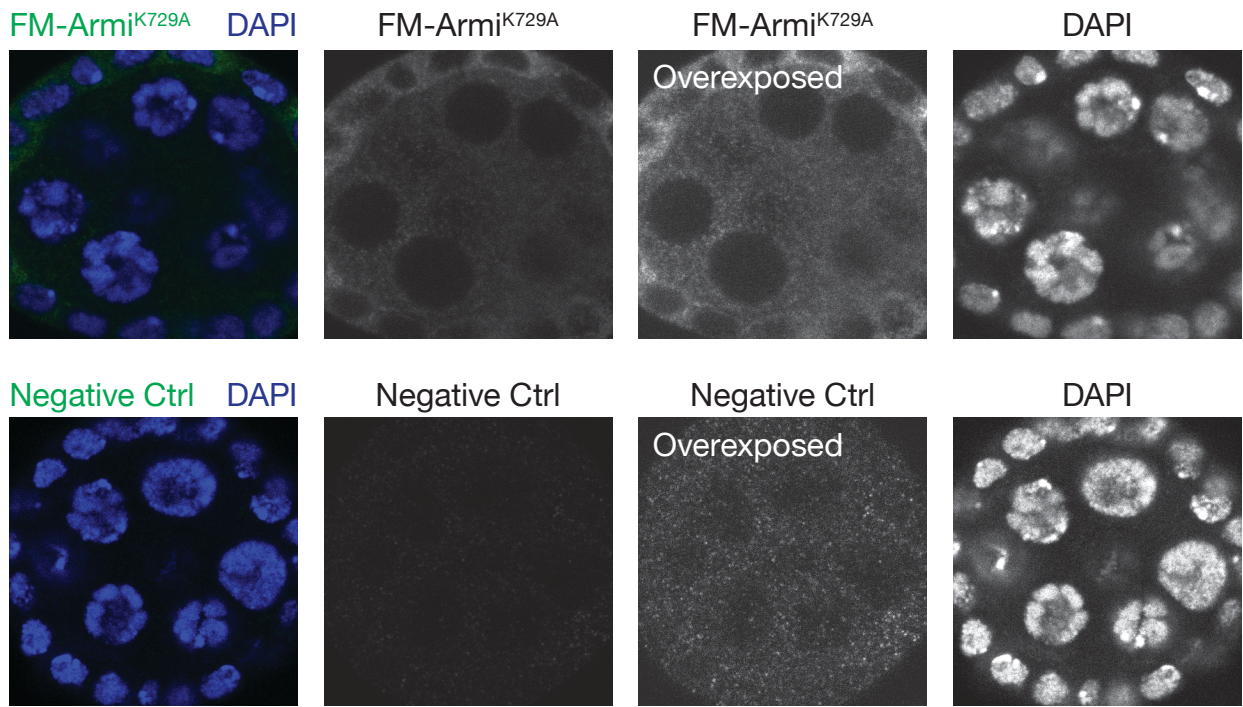


B



C





SUPPLEMENTAL FIGURE LEGENDS

Figure S1. piRNA biogenesis factors are expressed higher in early stages of oogenesis; nuage and mitochondria are separate in nurse cells; DTME best crosslinks Armi to Zuc. Related to Figure 1.

(A) Immunofluorescence detection of Zuc-3×FLAG, Aub and nucleic acids (DAPI). St, stage.

(B) Transmission electron microscopy of wild-type stage 3 egg chambers.

(C) Before tissue lysis, *Zuc-3×FLAG* fly ovaries were crosslinked as indicated. Eluate from the FLAG immunoprecipitation was analyzed by Western blotting. PFA, paraformaldehyde; DST, disuccinimidyl tartrate; EGS, ethylene glycol bis(succinimidyl succinate); DSP, dithiobis(succinimidyl propionate); DTME, dithio-bis-maleimidoethane.

Figure S2. Individual channels of immunofluorescence co-detection of Armi and Aub, Ago3, Vasa, Zuc-3×FLAG or ATP5A in wild-type stage 3 egg chambers. Related to Figure 2.

Figure S3. Individual channels of immunofluorescence co-detection of Armi and Aub, Ago3, Vasa, Zuc-3×FLAG or ATP5A in *zuc^{H169Y}* stage 3 egg chambers. Related to Figure 2.

Figure S4. Individual channels of immunofluorescence co-detection of Armi and Aub or Zuc-3×FLAG in *minotaur^{z3-5967}* stage 3 egg chambers. Related to Figure 2.

Figure S5. Wild-type Armi, but not Armi^{K729A}, rescues the fertility of *armi* germline mutant females; Armi^{K729A} abundance is similar to that of Armi; piRNA abundance

in *armi* hemizygote flies and in flies expressing transgenic FM-Armi or FM-Armi^{K729A}. Related to Figure 4.

(A) Female fertility test. For UAS-FM-Armi and UAS-FM-Armi^{K729A} transgenic flies, error bars show S.D. from three biological replicates.

(B) Western blotting to detect Armi. Dicer-2 provided a loading control.

(C) Scatter plot of the abundance of transposon- or gene-mapping piRNAs from the indicated genotype.

Figure S6. Armi^{K729A} is detected in nurse cell cytoplasm. Related to Figure 5.

Immunofluorescence detection using anti-FLAG antibody of transgenic FLAG-Myc-Armi^{K729A} in *armi* mutant or wild-type germ cells from stage 3 egg chambers. The FLAG fluorescent channel is overexposed to show signal in FLAG-Myc-Armi^{K729A}.