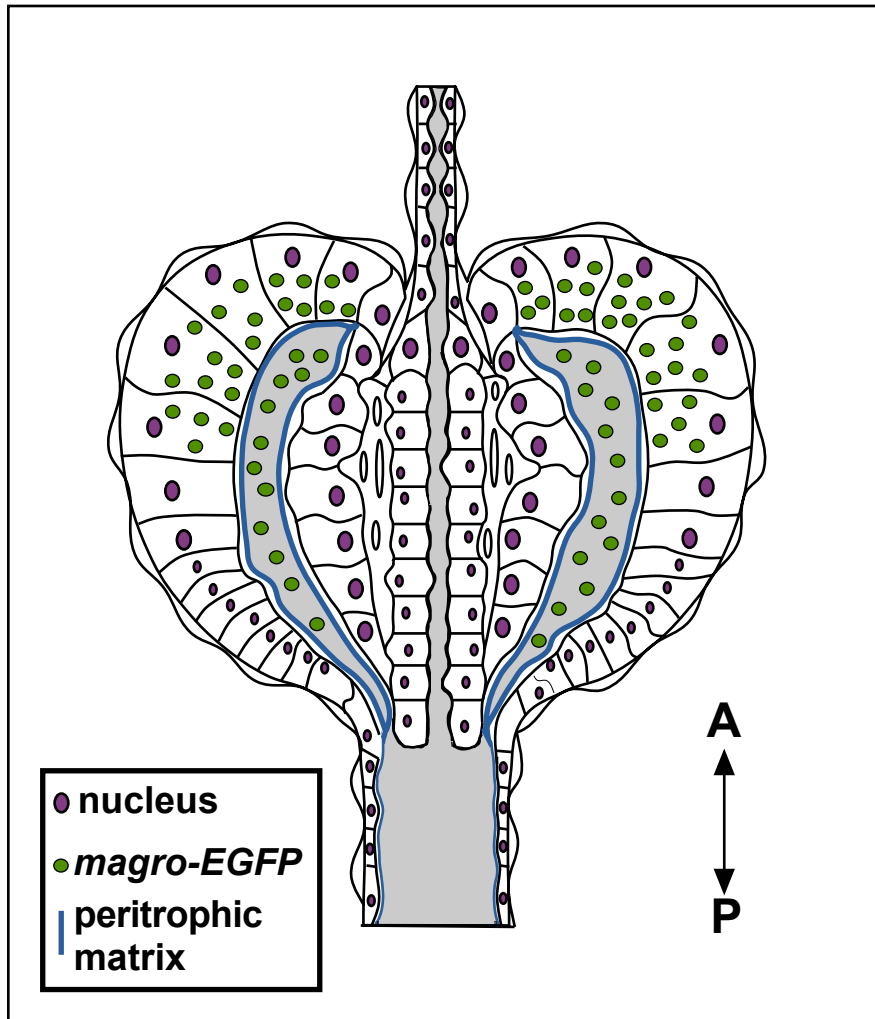


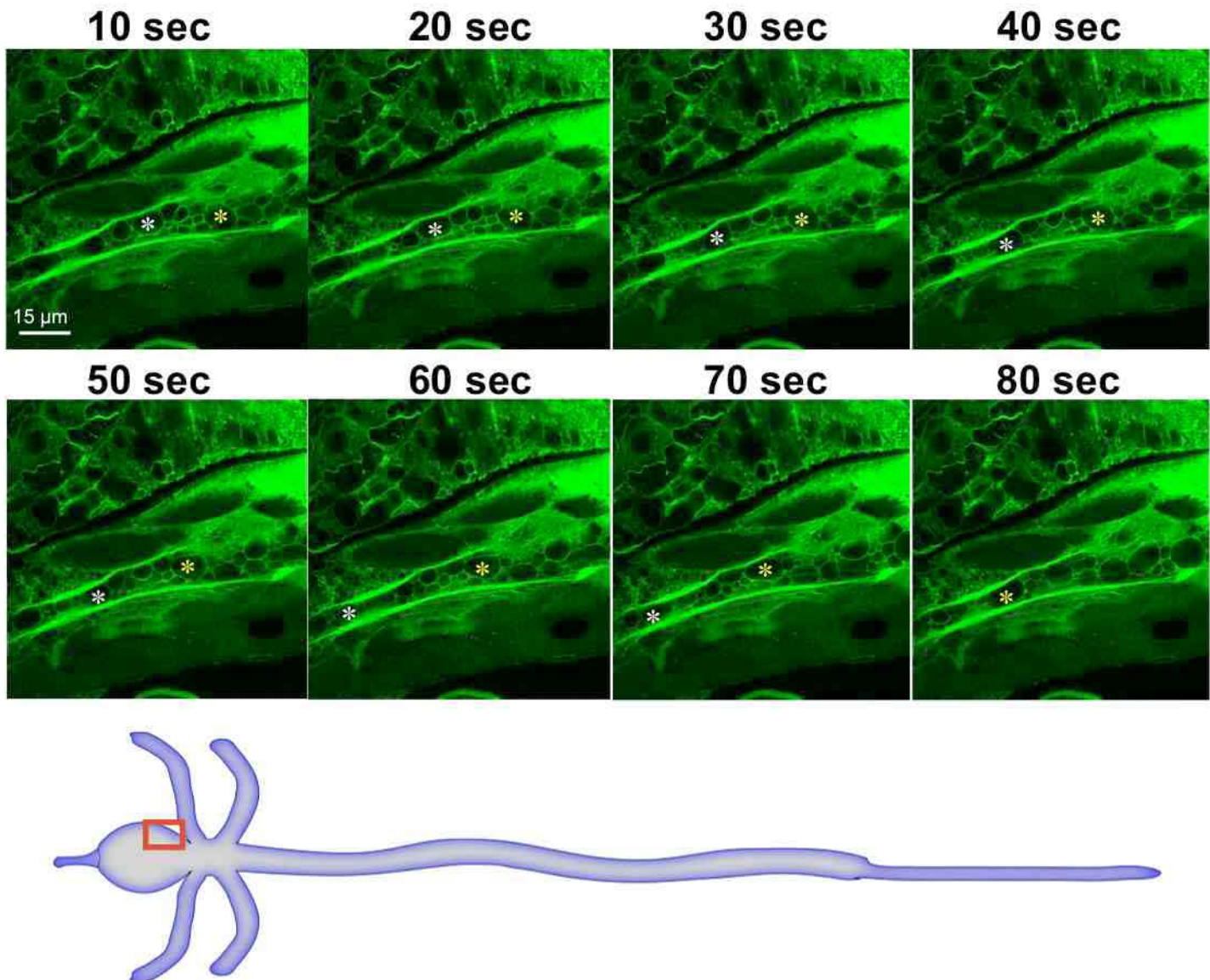
**Figure S1. Disruption of *magro* function results in elevated levels of cholesterol in the intestine.**

Intestines were dissected and cholesterol was measured from mature adult males of the following genotypes: *Act5C-GAL4/+* and *UAS-magroRNAi/+* controls, and *Act5C>magroRNAi* animals. Cholesterol measurements were then normalized to total protein and displayed as percent of the *Act5C-GAL4/+* control sample. The resulting data is a representation of 15 samples containing 10 dissected intestines each. Error bars indicate  $\pm$  SEM. \*  $p < 0.02$



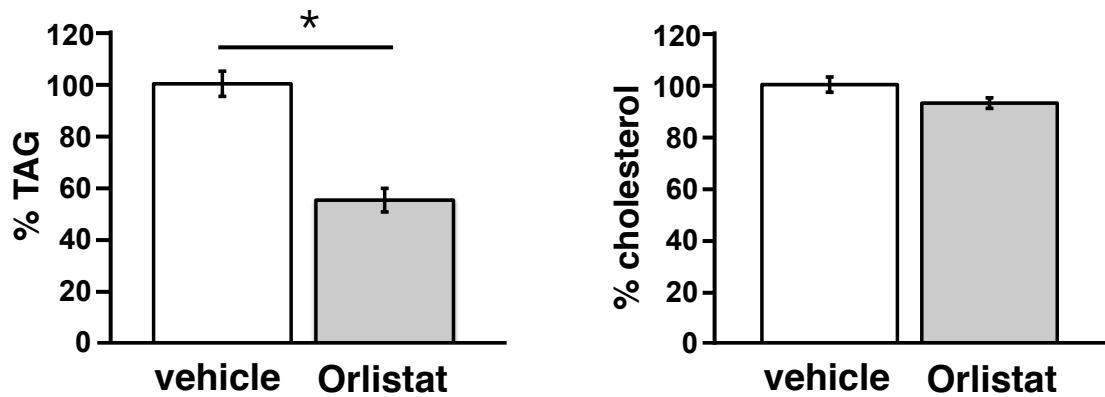
**Figure S2. Schematic representation of the *Drosophila* proventriculus.**

The proventriculus is a bulb shaped structure that consists of three distinct cell layers. The esophagus, which enters from the anterior end (top of figure) and runs to the base of the proventriculus, folds back on itself to form a second, internal cell layer that runs back to the anterior end of the proventriculus and again folds back on itself to form the outermost cell layer, which is continuous with the body of the intestine (King, 1988). magro-EGFP protein (green) is abundantly expressed in the anterior outermost cell layer, and released as vesicles that appear to be localized to the intercellular space where the peritrophic matrix is deposited.



**Figure S3. *CD8-GFP* positive vesicles move within the proventriculus**

*Tub-GAL4* was used to drive expression of the *UAS-CD8-GFP* membrane marker to visualize membrane-bound vesicles in the posterior region of the proventriculus (red box in diagram at bottom). Images were captured at 10 second intervals for 80 seconds, revealing rapid vesicle movement toward the base of the proventriculus. Two vesicles are marked with white and yellow asterisks. Movement at a similar rate was observed in all intestines examined (n=35).



**Figure S4. Orlistat treatment decreases TAG levels, but has no effect on cholesterol levels in wild-type flies**

Mature adult male *Canton S* flies were transferred to a diet supplemented with 2.0  $\mu$ M Orlistat for seven days, after which TAG and cholesterol levels were determined. The data was normalized to protein levels and are presented relative to a level of 100% for treatment with vehicle alone. These results were compiled from six replicate samples and repeated at least three times. Error bars represent +/- SEM. \*  $p < 0.0001$