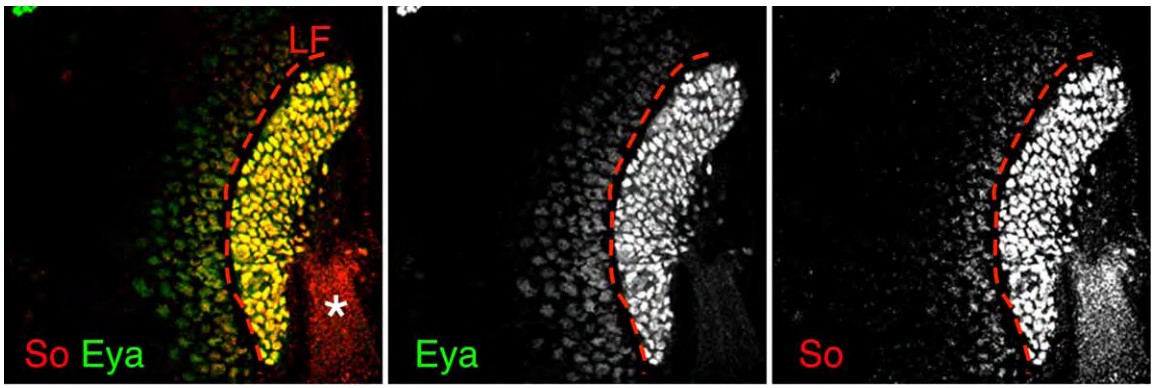

Fig. S1. *eya* and *so* are expressed in indistinguishable patterns in the OL. Lateral view of a late L3 OL stained for Eya and So. Merged and individual channels are shown. The dashed line marks the location of the lamina furrow (LF). The asterisk marks background signal in the optic stalk.

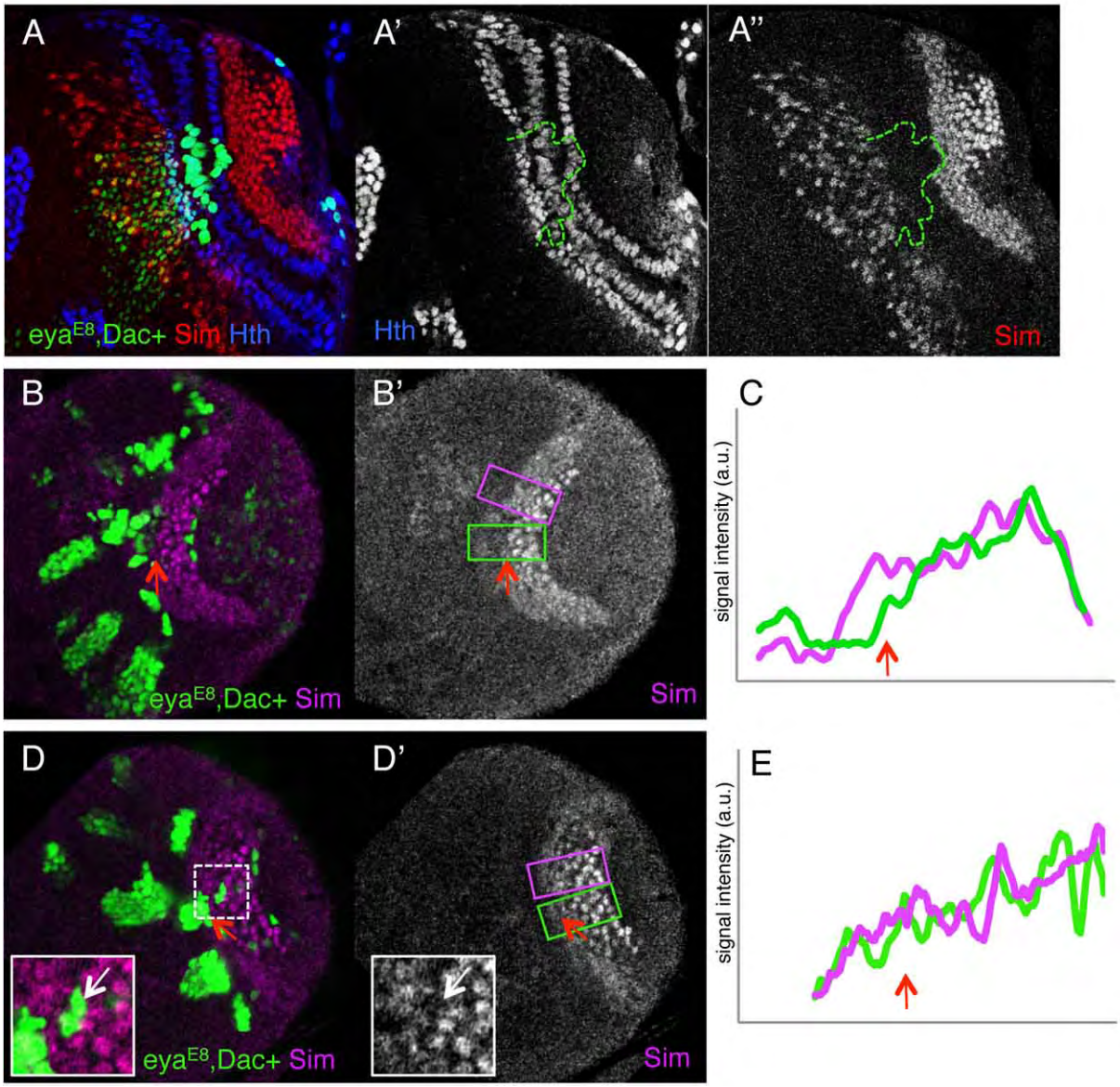

Fig. S2. Dac cannot repress *hth* in the OL neuroepithelium independently of Eya. MARCM *eyaE8, dac*$^{+}$ clones, marked positively with GFP and stained for Hth and Sim (A-A´´) or for Sim only (B,D). (A) A GFP-marked *eyaE8, dac*+ clone spanning the *hth* domain and abutting the lamina does not show significant changes in Hth signal. The clone ouline is marked by the green dashed line. (B) An OL containing a number of GFP clones. The arrow points to one clone partly overlaping the Sim-expressing cells. In these cells (boxed in green) Sim signal is reduced compared with the neighboring wild type cells (boxed in magenta). In (C) the Sim signal profiles of both boxed regions are plotted. Sim signal is weaker in the region affected by the clone. The approximate extend of the clone is marked by the arrow. A similar clone (D, arrow) does not show differences in Sim expression levels (see the comparison of Sim signal profiles from the affected region (green box) and the wild type neighboring region (magenta box) in E, where the red arrow marks the approximate extent of the clone). In this same optic lobe, a small *eyaE8, dac*+ clone (D,D boxed and magnified in the inset) shows background levels of Sim signal. Merged and individual channels are shown.

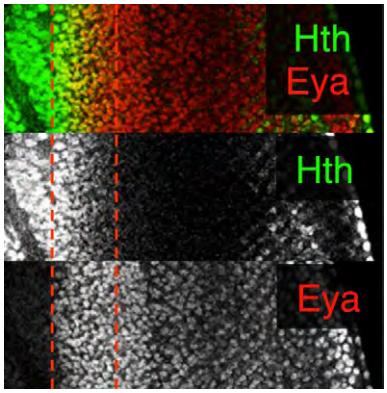

Fig. S3. Hth-positive eye progenitors express low levels of *eya*. (A) Close-up views of a late L3 eye disc stained for Hth and Eya. The region of overlapping expression is flanked by the two dashed lines. Merged as well as individual channels are shown.

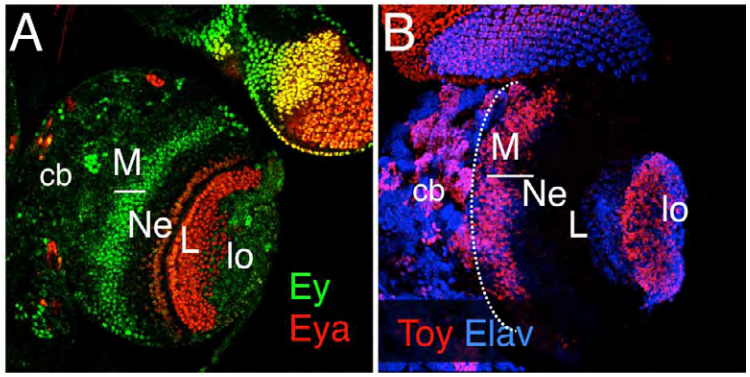

Fig. S4. *ey* and *toy* are expressed in the medulla region of the OLs in L3. (A,B) Late L3 OLs stained for Ey and Eya (A) or Toy and Elav (B). Both *ey* and *toy* are expressed in the prospective medulla. In addition, *toy* is also detected in the lobula region. Central brain: cb; medulla: M; neuroepithelium: Ne; lamina (L); lobula (lo).

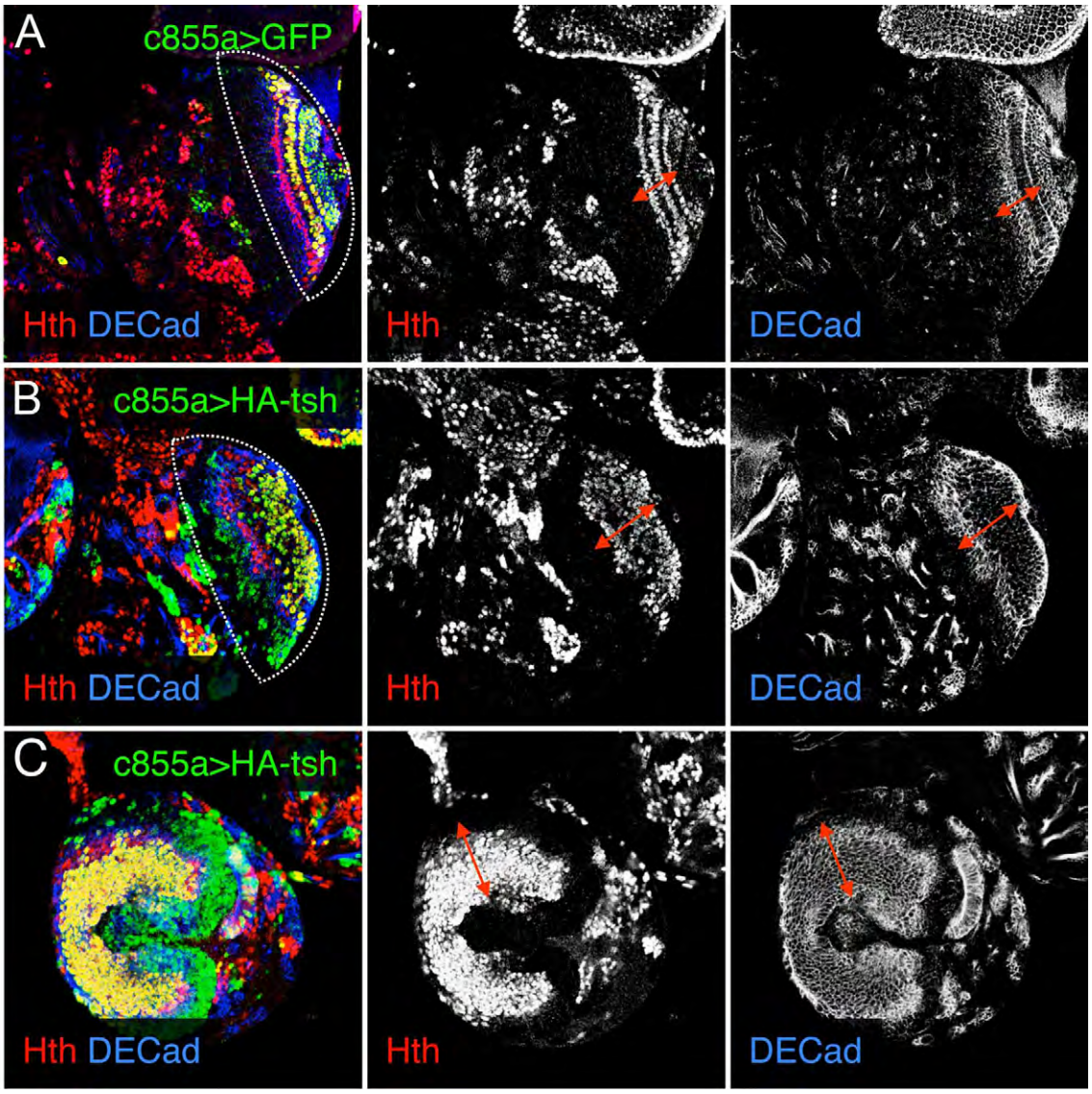

Fig. S5. *tsh* overexpression in the OLs expands the *hth*-expressing neuroepithelium. (A,C) The *c855a-Gal4* (Hrdlicka et al., 2002; Egger et al., 2007) was used to drive UAS-constructs to the optic lobe's outer and inner proliferative centers. Late L3 OLs expressing either GFP (A) or HA-Tsh (B, C) driven by *c855a-GAL4*, and stained for Hth, DECad and anti-HA. The view in (C) is from the lateral side. Overexpression of *tsh* widens the region of densely packed DECad-positive, *hth*-expressing cells (double-headed arrows). OLs in (A) and (B) are outlined by the dotted line.