



**FIGURE 11.13.** *Ubx* and *abd-A* regulate *Distal-less* (*Dll*) expression during *Drosophila* embryogenesis. *Dll* protein (red) is expressed in specific cells in the head and thorax that mark the appendages of these segments, but *Dll* is not expressed in the abdomen. Although *Ubx* is eventually expressed in T3 and the abdomen (blue bar), initial expression of *Ubx* is restricted to the abdomen (yellow bar), and this initial domain of *Ubx* expression plays a role, along with *abdA*, in keeping transcription of the *Dll* gene off in the abdomen. In *Ubx* mutants, *Dll* expression expands to include A1, and in *Ubx/abdB* double mutants, expression of *Dll* expands to include A1–A8. Thus, the early domains of expression of *Ubx* and *abdA* are essential to prevent *Dll* expression and appendage development in the abdomen. Later in development, *Dll* is no longer regulated by *Ubx* or *abdA*, and the expansion of the *Ubx* domain to include T3 allows *Ubx* to help establish the distinctions between T2 and T3.

11.13, Nipam H. Patel