

**Table S2 Compilation of screening data for *Tribolium* orthologs of *Drosophila* genes known to regulate various aspects of muscle development with no annotated muscle phenotypes, uninterpretable muscle phenotypes, or no injected dsRNAs.**

No muscle phenotypes with pupal injections and larval injections (if performed) were annotated for iB dsRNA injections for the following muscle development-related genes (*Drosophila* gene name (alphabetical)/*Tribolium* gene name/iB dsRNA fragment tested):

*aret*/TC012080/iB\_05164 (not done with larval injection)  
**CLIP190**/TC031243/iB\_01909  
*H15*\*/TC013513/iB\_05442  
*Hand*\*/TC004726/iB\_03827  
*how*<sup>#</sup>/TC000827/iB\_03083 (all animals died after pupal injection) (not done with larval injection)  
*Ilk*<sup>#</sup>/TC002476/iB\_00385 (but wing blisters & possible muscle phenotype w. larval injections) (lethal after pupal injection)  
*kette*<sup>#</sup> (*hem*)/TC001541/iB\_00258 (animals sterile after pupal injection)  
*Klc*/TC007992/iB\_09878 (animals sterile after pupal injection)  
*Ibe*\*/TC011748/iB\_05096  
*mid*\*/TC014296/iB\_05605 (not done with larval injection)  
*mp20*/TC007135/iB\_01129  
*msh*<sup>#</sup> \* (*Dr*)/TC011744/05095  
*msh*<sup>#</sup> \* (*Dr*)/TC012748/iB\_05308 (embryonic muscle defects potentially obscured by early defects)  
*Msp300*<sup>#</sup>/TC033655/iB\_04879  
*Msp300*<sup>#</sup>/TC034351/iB\_04893 (not done with larval injection)  
*parvin*<sup>#</sup>/TC000078/iB\_00014 (but wing blisters w. larval injections; animals sterile after pupal injection)  
*paxillin*/TC010609/iB\_01717  
*poxm*<sup>\*</sup> <sup>#</sup>/TC008838/iB\_04548  
*Ptx1*\*/TC032174/iB\_07879 (not done with larval injection)  
*rhea*<sup>#</sup>/TC033529/iB\_01537 (for pupal injections; no adults obtained with larval injections)  
*rols*<sup>#</sup>/TC002665/iB\_07027 (not done with larval injection)  
*Scar*<sup>#</sup>/TC006152/iB\_01003 (strongly reduced egg lays after pupal injection, no embryonic cuticle)  
*sd*/TC032219/09689 (disrupted embryo morphology, > 80% inside-out)  
*sing*<sup>#</sup>/TC012091/iB\_05167  
*six4*<sup>\*</sup> <sup>#</sup>/TC003852/iB\_03634  
*slou*\*/TC012332/iB\_05216  
*slow*/TC005670/iB\_07509 (not done with larval injection)  
*sns*<sup>#</sup>, *hbs*/TC032336/iB\_03544  
*Tsp*<sup>#</sup>/TC033883/iB\_01372 (> 80% not fertilized/not developed and no cuticle)

Not injected (---), or not screenable for muscle phenotypes due to lethality prior to muscle development (pupal, adult, or early embryonic) upon larval and pupal injections, were dsRNAs for the following muscle development-related genes:

*abba*/TC031245/iB\_01986 (not screenable with pupal injections; --- with larval injections)  
*ara*\*/*caup*\*/TC031040/iB\_03594 (not screenable)  
*Arp2*/TC000144/iB\_00026 (not screenable)  
*Arp3*/TC002963/iB\_00483 (not screenable)  
*blow*/TC014242/---  
*col*<sup>\*</sup> (*kn*)/TC001270/---  
*dia*/TC006029/iB\_00980 (no embryonic cuticle)  
*Dhc64C*/TC008801/---  
*Dlc90F*/TC010513/---  
*Dlc90F*/TC009745/---  
*ens*/TC010873/---  
*Fit1/Fit2*/TC010123/iB\_01652 (all animals died in both screens after injection)  
*Grip*/TC034397/---  
*hoip*/TC002918/---  
*lms*<sup>\*</sup>/TC033532/---  
*mbc*/TC012454/iB\_10628 (early embryonic lethality + no cuticle)  
*Mef2*/TC010850/iB\_04920 (not screenable)  
*mew*/TC034177/---  
*mys*/TC011707/---  
*mys*/TC013706/---  
*stck*/TC011050/---  
*Wasp*/TC013303/---

\* muscle identity genes

# genes used for estimating the recovery rate of the screen for identifying *Tribolium* muscle regulatory genes. The marked genes have been reported and judged to give sufficiently conspicuous embryonic muscle phenotypes in *Drosophila* zygotic or germline clone mutants so that they should be detectable under conditions similar to those used in our pupal RNAi injection screen. Among muscle founder genes only those are included that affect more than ~15% of the muscles in each segment.