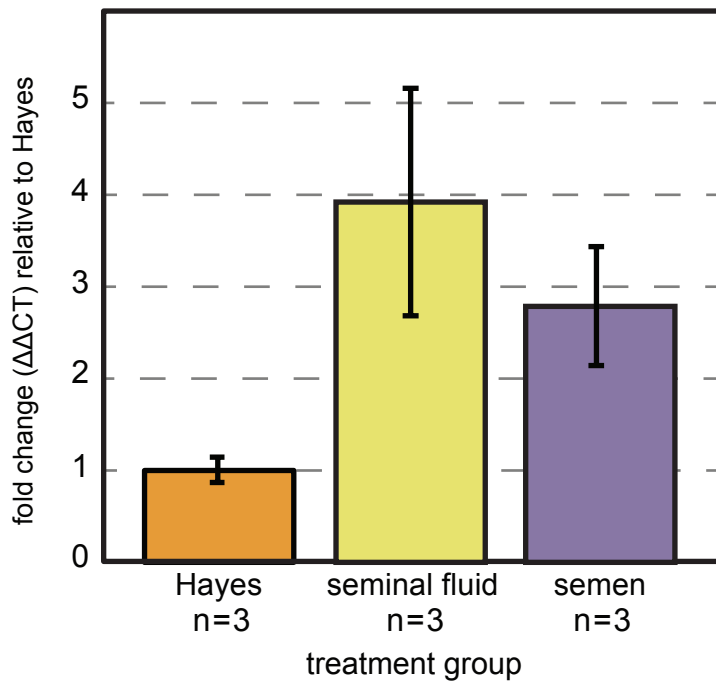
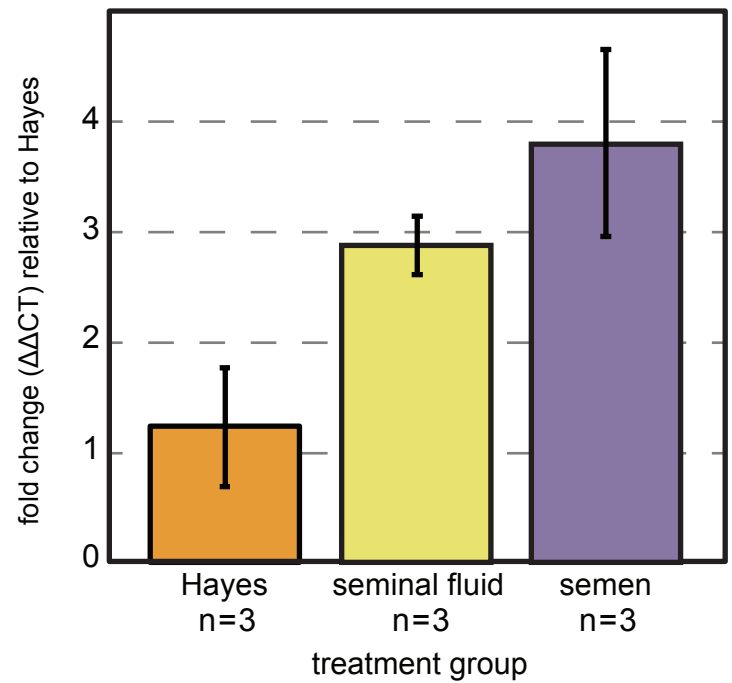


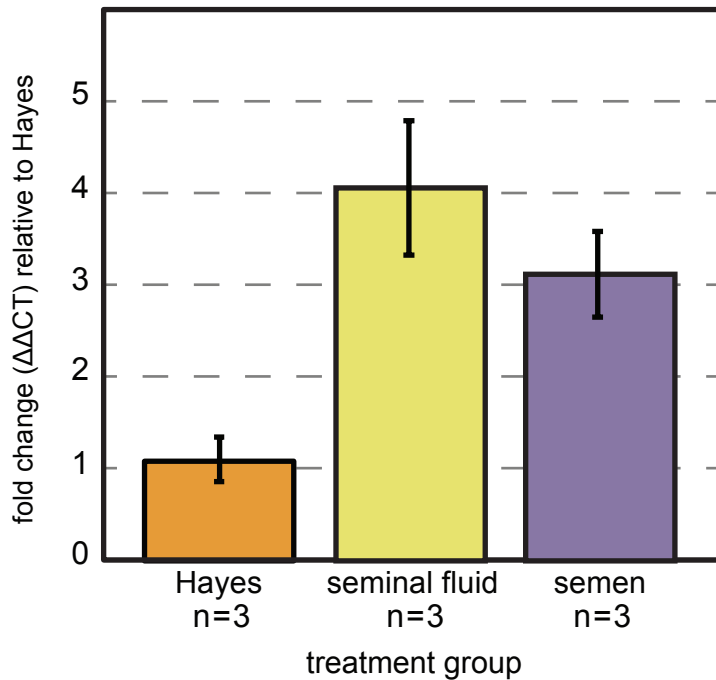
serine protease snake expression



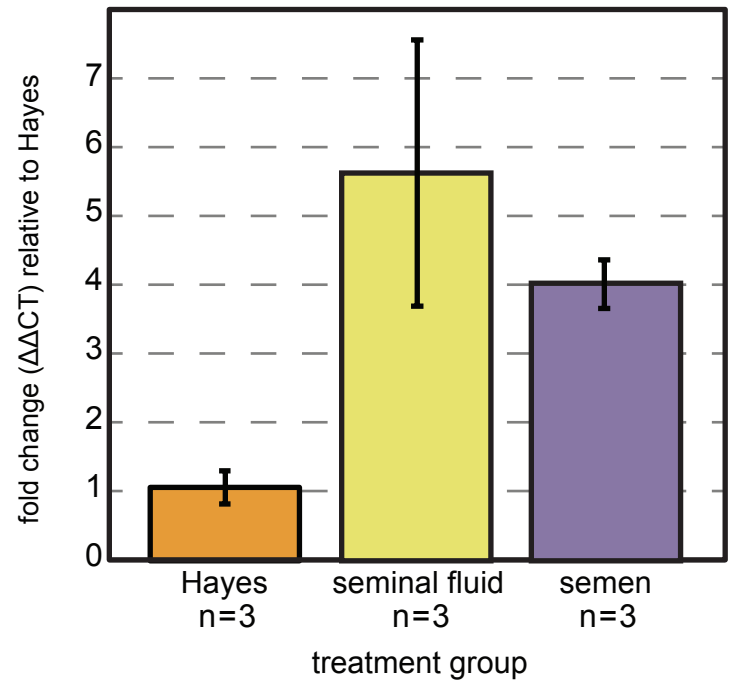
LOC408643 expression



antitrypsin expression



LOC409674 expression



Supplemental Figure S5. qPCR validation of four genes that were determined to be differentially regulated via RNAseq. Based on RNAseq analysis of queens that were injected with Hayes solution (control), seminal fluid, or semen, *serine protease snake*, *LOC408643*, *antitrypsin*, and *LOC409674* were upregulated in both seminal fluid and semen-injected queens as compared in Hayes-injected queens. qPCR was then used to further validate these results by designing primers against the four genes and normalizing their expression against the housekeeping gene *Rpl8* (ΔCT) and then normalizing all ΔCT s against the average Hayes ΔCT using the $\Delta\Delta CT$ method. Bars represent standard error of the mean.

1 **Injection of seminal fluid into the hemocoels of honey bee queens (*Apis mellifera*)**
2 **can stimulate post-mating changes**
3
4

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