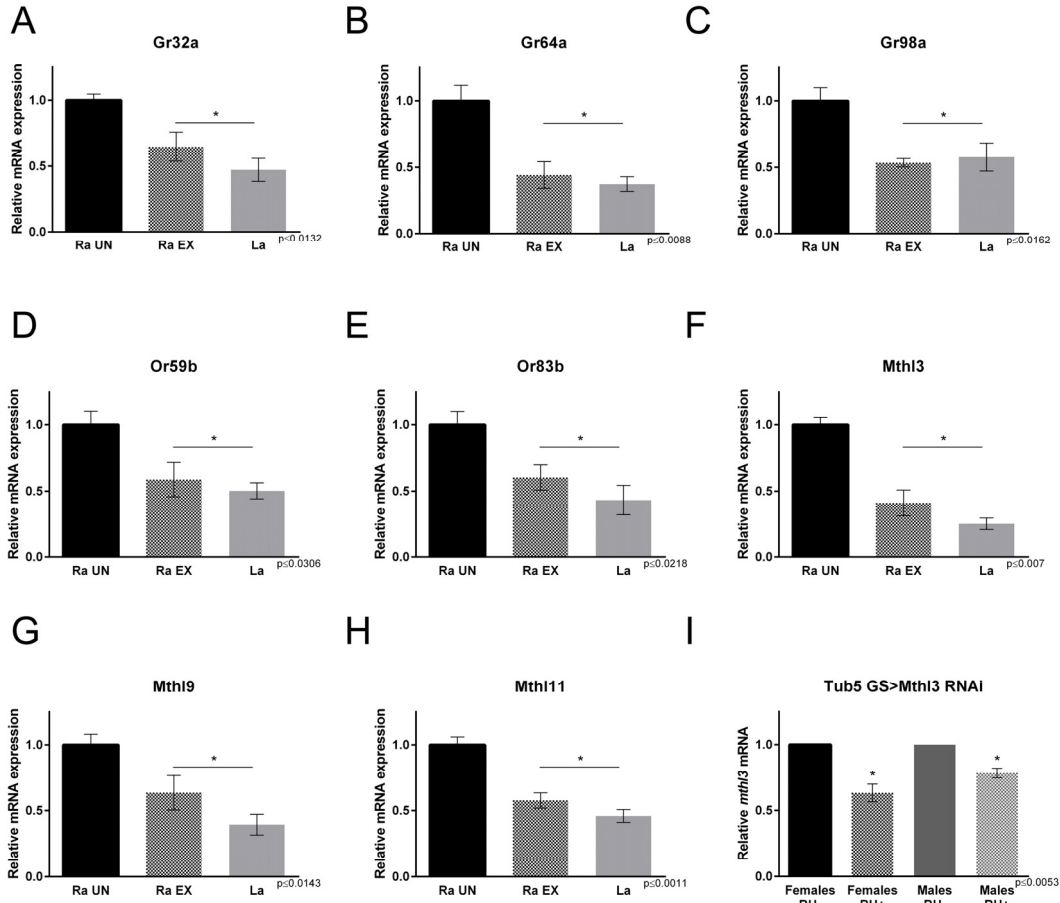
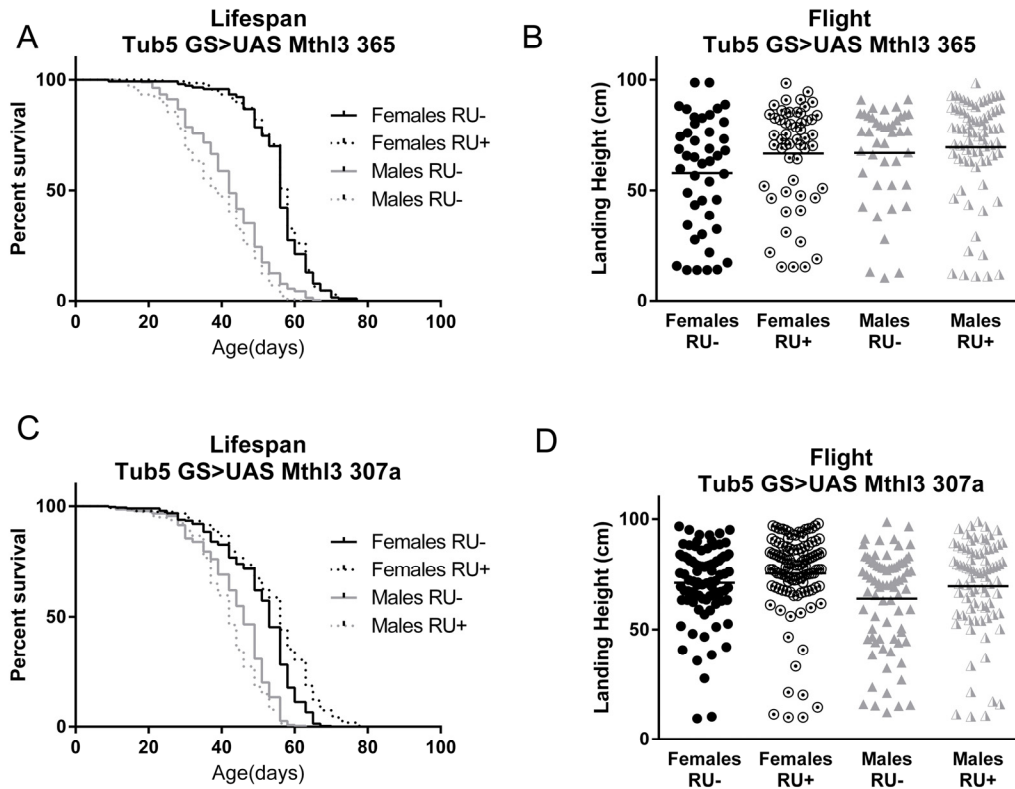


SUPPLEMENTARY INFORMATION

Please browse the full text version of this manuscript to see the Supplementary Tables S1-S3.



Supplementary Figure S1. qRT-PCR confirmation of microarray results. RNA was isolated from 3-week old Ra unexercised, 3-week old Ra exercised and 3-week old La flies. Gene expression levels from the following genes were compared. *Gr32a* (A), *Gr64a* (B), *Gr98a* (C), *Or59b* (D), *Or83b* (E), *Mth3* (F), *Mth9* (G), *Mth11* (H). In all cases exercised Ra and La had significantly lower expression than unexercised Ra flies (t-test, $p < 0.0362$). (I) *Tub5 GS>UAS Mth3* RNAi flies were collected and exposed to either RU486 (RU+) or vehicle (RU-) for 5 days prior to RNA isolation and qRT-PCR analysis. RU+ flies had significantly lower *Mth3* expression than RU- controls (t-test, $p \leq 0.0053$).



Supplementary Figure S2. Overexpression of *methuselah-like 3* does not affect longevity or flight ability. (A, C) Ubiquitous overexpression of *mthl3* does not significantly alter longevity of males or females compared to RU- controls using either of two lines containing UAS-*mthl3* at different insertion sites. (B, D) Ubiquitous overexpression of *mthl3* does not significantly alter flight ability of males or females compared to RU- controls using either of two lines containing UAS-*mthl3* at different insertion sites.