

Figure S1 (related to Fig.1). *Lactobacillus plantarum*^{WJL} does not directly impact *Drosophila* adult fitness. After larval development on a normal diet inoculated or not with *L.p.*^{WJL}, adults were kept on the same normal diet (A) or transferred to a low yeast diet (D). In each case, the number of eggs laid per day was recorded (B, E) and the flies' resistance to complete starvation was assessed (C, F).

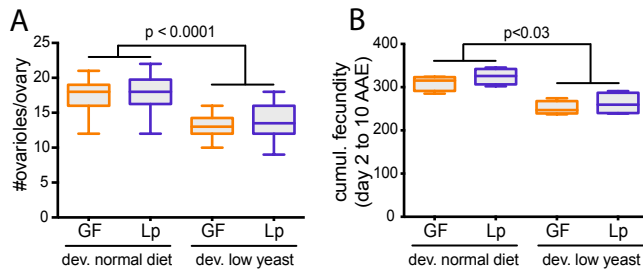


Figure S2 (related to Fig. 2). The reproductive capacity of monoassociated *Drosophila* is not altered after accelerated larval development. Number of ovarioles of adult females after development on a normal or a low yeast diet +/- *Lactobacillus plantarum*^{WJL} (A) and the corresponding cumulative fecundities (number of eggs laid per female from day 2 to day 10 after adult emergence; AAE) (B).

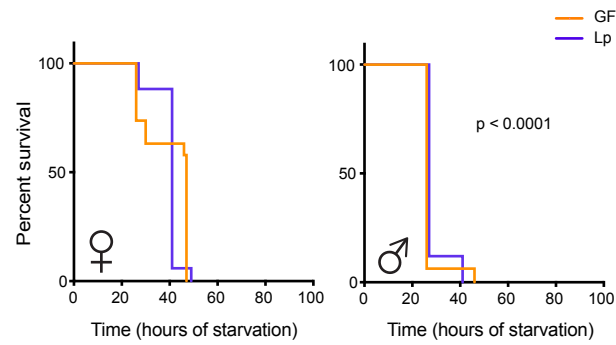


Figure S3 (related to Fig. 3). The *Lactobacillus plantarum*^{WJL}-mediated larval growth acceleration is not deleterious for adult fitness. Full starvation resistance of 10 days old adults kept on an intermediate 30g yeast/L diet.

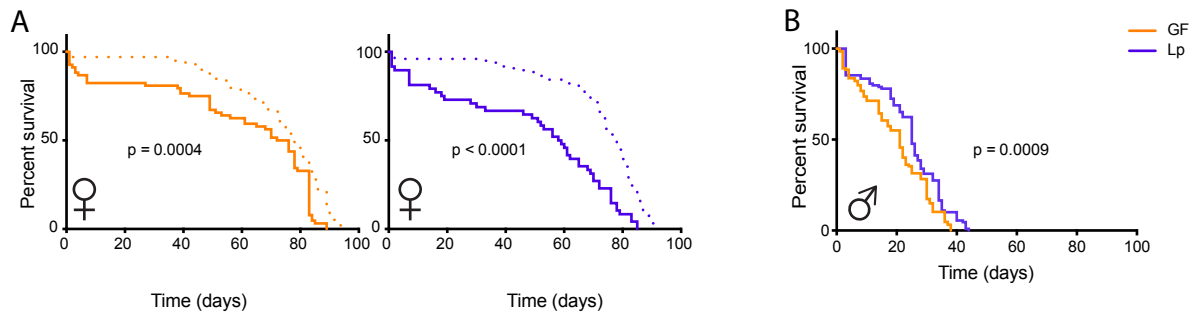


Figure S4 (related to Fig. 4). *Lactobacillus plantarum*^{WJL} increases the lifespan of nutritionally challenged males. (A) Lifespan of axenic (germ-free, GF) or *L.p.*^{WJL}-associated (Lp) female flies after larval development on a normal diet or on a low-yeast diet. (B) Repeat experiment of the lifespan study of nutritionally challenged males.

Table S1. Quantification of the fertility ratio variation across adult diets and statistical analysis

| Related to Figure 1C | | Variance | Brown-Forsythe test p-value |
|------------------------|--------------------|-------------|-----------------------------|
| GF | 50g dev/50g adults | 0,011296708 | 0.0037 |
| | 50g dev/12g adults | 0,031983024 | |
| | 50g dev/6g adults | 0,165964508 | |
| Lp | 50g dev/50g adults | 0,004924953 | 0.0003 |
| | 50g dev/12g adults | 0,013486797 | |
| | 50g dev/6g adults | 0,088402563 | |
| Related to Figure 2I-K | | | |
| GF | 8g dev/50g adults | 0,007101889 | 0.0003 |
| | 8g dev/30g adults | 0,012361203 | |
| | 8gdev/8g adults | 0,05292651 | |
| Lp | 8g dev/50g adults | 0,008243958 | < 0.0001 |
| | 8g dev/30g adults | 0,005389703 | |
| | 8gdev/8g adults | 0,080373542 | |