

# The Relationship between Health, Longevity and the Microbiome

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## Abstract:

*Single-minded* plays a role in energy balance in both mammals and flies. Reduction in *single-minded* activity in *Drosophila melanogaster* results in efficient energy storage, but adult flies become inactive after 8 days. In addition, the flies are hyperphagic, obese and, ultimately, die much earlier than wild type flies. A change in the consistency of the fly food led us to investigate the flies' microbiome. For this, we performed 16S metagenomic analysis of homogenized flies and the surface of the food. To compare the amount of bacteria associated with wild type flies to flies with reductions in *single-minded* activity, we cultured bacteria derived from flies and their food. Utilizing databases of identified sequences, we compared the results to known strains associated with *Drosophila melanogaster*, including *Lactobacillus* and *Acetobacter*. Ultimately, the goal of the experiment was to determine the relationship between microbiome content and its involvement with energy balance and overall health.