New findings suggest life span can be increased by making cells less efficient at producing energy

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A new study has shown that BAM15, a compound that makes

mitochondria less efficient at producing energy, extended life span in fruit flies and was associated with less body fat and increased muscle function.

The paper is titled "Restricting bioenergetic efficiency enhances longevity and mitochondrial redox capacity in Drosophila melanogaster" and is published in the journal *Aging Cell*.

A key focus of this research was on limiting the ability of mitochondria to make energy. It is generally believed that maximizing the efficiency of mitochondria is favorable for health and lifespan across species. However, in today's world of excess eating and reduced physical activity, reducing the efficiency of mitochondria may limit fat accumulation by burning calories in a futile cycle.

Research has shown that the life span of insects and mammals can be controlled through experimental manipulation of mitochondrial function; however, the specific role of bioenergetic efficiency in health and longevity has remained largely unknown. Pennington Biomedical researchers and others have previously demonstrated that restricting bioenergetic efficiency brings with it protection against obesity, type 2 diabetes, cancer, and other chronic diseases by improving mitochondrial fitness and cellular function.

This current study is the first to show that adding BAM15 to the diet can uncouple mitochondria, extend life span, improve body composition, and protect against age-related decline in motor activity in a fruit fly model of aging.

The authors state, "In summary, our findings indicate that mitochondrial uncoupling by BAM15 confers life span extension, improves body composition, and protects against age-related decline in locomotor activity in Drosophila (fruit flies). Collectively, these data support an

emerging role for restricting bioenergetic efficiency to maintain mitochondrial redox fitness across the life span."

The authors note that further studies are required in humans to confirm these findings and address effectiveness for improving longevity.

More information: Analisa L. Taylor et al, Restricting bioenergetic efficiency enhances longevity and mitochondrial redox capacity in Drosophila melanogaster, *Aging Cell* (2024). DOI: 10.1111/acel.14107

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