

# Why fad diets work well for some, but not others

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Ever notice some people seem to eat anything they want and never gain a pound, while others seem to gain weight just by looking at fattening foods? You may be seeing things correctly after all. According to research published in the July 2010 issue of *Genetics*, this may have a biological cause. Using fruit flies, researchers have found that genes interacting with diet, rather than diet alone, are the main cause of variation in metabolic traits, such as body weight. This helps explain why some diets work better for some people than others, and suggests that future diets should be tailored to an individual's genes rather than to physical appearance.

"There is no one-size-fits all solution to the diseases of [obesity](#) and type-2 diabetes," said Laura K. Reed, Ph.D, a researcher from the Department of Genetics at North Carolina State University, the lead investigator in the work. "Each person has a unique set of [genetic](#) and environmental factors contributing to his or her metabolic health, and as a society, we should stop looking for a panacea and start accepting that this is a complex problem that may have a different solution for each individual."

To make this discovery, the scientists studied 146 different genetic lines of [fruit flies](#) that were fed four different diets (nutritionally balanced, low calorie, high sugar, and high fat). Researchers then measured a variety of metabolic traits, including body weight, in each group. Flies in some of the genetic lines were highly sensitive to their diets, as reflected by changes in body weight, while flies of other lines showed no change

in weight across diets.

The scientists were able to ascertain what portion of the total variation in the metabolic traits was determined by genetics alone, by diet alone, or by the interaction between [genotype](#) and diet. Results showed that diet alone made a small contribution to the total variation, while genotype and genotype interactions with diet made very large contributions. This study strongly suggests that some individuals can achieve benefits from altering their dietary habits, while the same changes for others will have virtually no effect.

"The summer beach season often serves as a 'gut check' for many in terms of their weight," said Mark Johnston, Editor-in-Chief of the journal *Genetics*. "This research explains why the one-size-fits-all approach offered by many diet programs can have dramatically different effects for people who try them."

**More information:** <http://www.genetics.org>

Provided by Genetics Society of America

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