

Men and women may need different diets: research

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Diet can strongly influence how long you live and your reproductive success, but now scientists have discovered that what works for males can be very different for females.

In the first study of its kind, the researchers have shown that gender plays a major role in determining which diet is better suited to promoting longer life or better reproductive success.

In the evolutionary "battle of the sexes", traits that benefit males are costly when expressed in females and vice versa. This conflict may have implications for human diet, aging and reproduction, says a team of scientists from UNSW, the University of Sydney and Massey University.

"When it comes to choosing the right diet, we need to look more closely to the individual, their sex and their reproductive stage in life," says Associate Professor Rob Brooks, Director of the Evolution and Ecology Research Centre at the University of New South Wales. "It may be, for example, that women in their child-bearing years need a different diet to those who are post-menopausal.

"It also underlines the important lesson that what we want to eat or, if you like, what we're programmed to eat, is not necessarily best for us." The researchers are conducting long-term studies on Australian black field crickets and have discovered that the lifespan of both males and females is maximised on high-carbohydrate, low-protein diets, they say in the latest issue of *Current Biology*.

But reproductive success differs dramatically between the sexes when the carbohydrate-protein balance is changed: males live longest and have the greatest reproductive success with a diet that favours carbohydrates to protein by eight-to-one, whereas females have greatest success when the ratio is just one-to-one. Given a choice, however, females eat only a small amount more protein than males. The shared ability to sense and choose food dooms both males and females to eat a diet that is a compromise between what is best for each sex.

"Male and female crickets maximise their fitness on different diets," says UNSW's Dr Alexei Maklakov, the study's lead author. "Despite that, the dietary preferences of the sexes are very similar. Instead of selecting foods in a sex-specific manner, males and females select 'intermediate' diets that are less than optimal for both sexes.

The researchers believe the sexes share most of their genes and this fact can constrain the evolution of sex differences in traits such as diet choice, because many of the same genes are likely to be responsible for trait expression in both sexes.

Significance for humans – "Men and women invest differently in reproduction, a difference that is even more marked than that between male and female crickets," says Rob Brooks. "Think of the tremendous amounts of energy and protein required of a mother in carrying a baby to term and breastfeeding. We also know that men and women need to eat different diets - think of the careful attention we pay to what expectant mothers eat.

"What men and women need to eat might be more dramatically different than we had realised. However, men and women eat very similar diets and our results suggest that our tastes and food preferences could be a shared compromise, as they are in crickets."

Source: University of New South Wales

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