



X-Ray sex: Sexual conflict caught in the act

The cowpea seed beetle *Callosobruchus maculatus* is a model organism for the study of sexual conflict. The male's penis is covered in hundreds of sharp spines which pierce the female reproductive tract lining during mating (known as copulatory wounding). This has led to a sexual arms race, with both sexes evolving and counterevolving a range of behavioural, morphological, and physiological adaptations to alter the outcome of mating in their favour.

Our understanding of copulatory wounding in this species has previously been limited by the fact that it occurs inside the female, and so is difficult to observe directly. We have recently used X-Ray micro-CT scanning to overcome this limitation, enabling us to visualise the genital interactions occurring inside the female seed beetle during mating (Dougherty & Simmons, 2017). This approach has the potential to greatly improve our understanding of genital interactions during mating in a wide range of species.

The image shows a micro-CT visualisation of a male (left) and female (right) seed beetle during mating. The colour roughly corresponds to the density of the tissue, with red/yellow for high density tissue, and blue for low density tissue. The visualisation has been set to make the outer cuticle semitransparent, so that the internal anatomy is visible. The large wing and leg muscles can be seen in orange/yellow, and the female spermatheca can be seen filled with the male's sperm (spherical structure inside the female abdomen in the centre of the image).

REFERENCE

Dougherty, L. R., & Simmons, L. W. (2017). X-Ray micro-CT scanning reveals temporal separation of male harm and female kicking during traumatic mating in seed beetles. *Proceedings of the Royal Society B*, 284, pii: 20170550.

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