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Antlers make the beetle

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By Dan Vergano, USA TODAY

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Are big antlers indeed a sign of fitness, as evolution suggests? Yep, at least for male rhinoceros beetles, a study shows.



CAPTION Will Frehofer and Douglas Emlen

"The most elaborate male ornaments and weapons of sexual selection grow to exaggerated proportions, especially in the largest and best-conditioned individuals," begins the *Science journal* study led by Douglas Emlen of the University of Montana. From the peacock's feathers to moose antlers, male ornamentation is taken a signal used by females to select mates in evolutionary theory, a process known as "sexual selection" first described by Darwin in 1871.

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In rhinoceros beetles, as in other animals, a "good genes" explanation for such antlers has served evolutionary biologists, where the horns act as a signal to female beetles on the fitness of mates. But how does that work?

Emlen and colleagues find that "enhanced sensitivity" to insulin and related growth factors explains the wide variation in antler sizes among rhinoceros beetles. Since insulin is supplied by eating, the best-fed and hence, most fit beetles do sport the largest antlers. The same insulin signals likely drive similar outsized ornaments in males of other species:

"We suggest that exaggerated animal structures may be unfakable signals of quality because of the developmental mechanism responsible for their accelerated growth. If true, then our hypothesis of 'intrinsic reliability' could help explain why so many different signal traits embark on an evolutionary trajectory of bigger and bigger size."

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