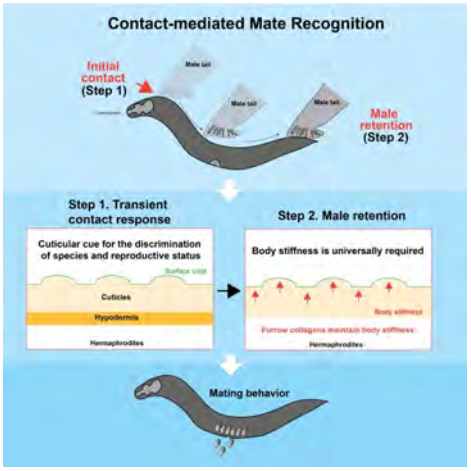
ACHIEVEMENTS

Unlocking the Secrets of Animal Mating Behavior

Physical contact is prevalent in the animal kingdom to recognize suitable mates by decoding information about sex, species, and maturity. For animals, the reproductive success of their offspring hinges on the careful selection of mates, a process governed by a variety of social behaviors. While chemical cues play a pivotal role in long-range communication, animals often switch to mechanical cues when in close proximity to potential mates. These sensory signals enable animals to pinpoint their ideal partners. While extensive research has shed light on the significance of chemical cues in mate recognition, the role of mechanical cues has remained elusive.

Led by Assistant Professor Chen Chun-hao of the Institute of Molecular and Cellular Biology, a dedicated research team has uncovered a fascinating two-step recognition mechanism in C. elegans males for recognizing conspecific and reproductive mates. The first step involves the perception of an unidentified cuticular cue found on adult hermaphrodites, triggering a transient contact response in males. Next, the mates maintain an optimal body stiffness that serves to attract their counterparts and facilitate the completion of the mate recognition behavior, ultimately enhancing their chances of successful reproduction. Through manipulations of body stiffness via physical interventions, chemical treatments, and 3D-printed bionic worms, the team proved that body stiffness is an integral mechanical property for mate recognition and increases mating efficiency. The team's discovery extends the repertoire of sensory cues of mate recognition in C. elegans and provides a paradigm for studying the important roles of mechanosensory cues in social behaviors.



The contact-mediated mate recognition of C. elegans can be broken into two steps. First the cuticular cue on the surface coat will create a transient contact response. Next, its body will stiffen up to increase male retention and complete the mating behavior.

Click or Scan the QR code to read the journal article in *Current Biology*.

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