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Jan 26, 2007

NUS scientists shed light on jumping spiders' sexual behaviour

Researchers hope findings can help produce nanomaterials that reflect ultraviolet light

By Amelia Tan

HITTING the lights is usually synonymous with getting romantic - but not for jumping spiders. These leaping arachnids only get frisky with the lights on.

Local scientists have found out that ultraviolet (UV) light influences their sexual behaviour, the first time a connection has been discovered between light and sex in the animal kingdom.

National University of Singapore (NUS) don Li Daiqin and his PhD student Matthew Lim have found out that female jumping spiders are aroused when their male counterparts reflect UV light. Male spiders, meanwhile, recognise females when UV light induces fluorescence in them.

Said Dr Li: 'These findings are significant because they add to our knowledge of animal communication. No study has proven that UV light influences the sexual behaviour of animals. The findings will add to our understanding of behavioural biology.'

Their findings will be published today in the latest issue of Science, a top weekly scientific journal.

'Jumping spiders have UV vision. From our five years of study, we found that female spiders choose their partners according to the colours and intensity of the UV light that is reflected from the bodies of the male spiders,' said Dr Li, who has spent the past 20 years studying spiders.

UV light has a wavelength shorter than that of visible light and cannot be seen by the human eye. A natural source of UV light is the sun.

The two scientists said they chose to study this area because it is uncharted territory.

'Most research has been based on observing animals through human eyes. But we have to realise that animals see things differently from us. We don't have UV vision but jumping spiders do. The way animals are studied should be reassessed,' said Dr Li.

Professor Peter Ng, director of Raffles Museum of Biodiversity Research, said:

'Dr Li has just discovered a new method that animals use to choose their mates. It may seem strange at first that spiders choose their mates through the reflection of UV light. But if you think about it, it is actually a very precise method. Females will know immediately which spiders are male.'

The researchers' findings are based on the species known as *Cosmophasis umbratica*, which reflects UV light particularly well. They also have good vision, which means what they see has an immediate impact on their behaviour.

The next step is to study the structure of the UV-reflecting scales of male spiders.

Dr Lim said: 'By studying the scales of the spiders, we hope to contribute to the analysis and production of nanomaterials which can reflect UV light.'

Such materials can be used in products such as sunglasses and ski masks.

They are currently applying for research grants to fund this next stage of the study.

Prof Ng said looking at nature for inspiration in producing materials is logical and efficient.

'We are copying what Mother Nature has been doing since the beginning of time.'

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DIFFERENT POINT OF VIEW

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DR LI DAIQIN

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