

# Big brains bring change: Inside the social life of spiders

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The Australian huntsman spider. Credit: Sam Gordon/Flickr (CC BY 2.0)

For anyone with arachnophobia, the only thing worse than finding a lone spider dangling in a doorway or resting on your rear-view mirror is finding a whole cluster.

While most spiders are creatures of solitude, a study involving researchers from The Australian National University (ANU) has found

some species have become more gregarious.

Spiders including the Australian huntsman have evolved to be more social, according to Professor Alexander Mikheyev from the ANU Research School of Biology.

"When we think of spiders, we tend to think of the ones that just hang in the web or sit in the corner and kill things," he says. "But certain species of spider have independently evolved in a very similar way to become more social."

At a hypothetical Australian spider gathering, it's the huntsman spiders that would be hanging out in a group while others lurked in corners on their own.

Much like us, spiders tend to socialize over food.

"A lot of spider sociality is them sitting together and eating in the same place, or sharing food. It's a lot like having a meal with family," Mikheyev says. "There is also a level of relatedness, similar to how you're more social with your family members as opposed to complete strangers."

How social a spider is comes down to genetics. While socializing might seem like a learned behavior, it depends on particular genes being expressed or altered.

In the case of many creatures, including spiders, social behavior is driven by neurons in the brain.

"One of the conditions for [social animals](#) is that they have a bigger brain size," Mikheyev says. "Not only do they need to store information about the [physical environment](#), but also the social one."

Arthropods—[invertebrate animals](#) that include spiders, insects and butterflies—don't have brains like humans. Instead, they distribute their [neural tissue](#) widely, meaning their brain can take up space in their entire body. Research shows that social [spiders](#)—such as the Australian Huntsman and the African social spider—have a more developed nervous system than solitary species.

Mikheyev says the genetic changes that enabled these different species to become more social are very similar. Both exhibited changes to genes that control behavior, neuron building and metabolism function.

"We found that across different species, very similar genes and the same sorts of mechanisms were involved in the shift from solidarity to sociality," Mikheyev says.

One of the biggest benefits to being social is that it allows individuals to share information, explains Professor Mikheyev.

Take humans for example; most of what we know we learnt from someone else. Everything you do comes from information you have gathered socially.

The benefits of being social has driven evolution as it favors the survival of relevant genes.

"While we can't predict the future, I wouldn't be surprised if more [spider species](#) followed this pattern and came to the party," says Professor Mikheyev.

This might be great news for the liveliness of spider gatherings, but a nightmare for the arachnophobes among us.

Provided by Australian National University

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