

# Genetically altered daddy longlegs have short legs

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A team of researchers from the University of Wisconsin, the Smithsonian Institution's National Museum of Natural History, and Western Connecticut State University, has assembled the first draft

genome of *Phalangium opilio*—the daddy longlegs. In their paper published in *Proceedings of the Royal Society B*, the group describes clues they found that explain why the harvestman developed such long legs.

Daddy longlegs are native to the subtropical parts of Asia. There are an estimated 10,000 species of them inhabiting all continents except Antarctica. They like warm environments which is why they are so commonly seen in buildings. In this new effort, the researchers wondered why the harvesters have such long legs. To find out, they assembled the first draft genome of the harvestman and then tweaked some of its genes to see what would happen.

The researchers isolated two genes involved with leg development. Under a microscope, they were able to see the two genes were activated in the legs while the harvestman was still an embryo. Next, using RNA interference, they were able to block the activation of the two genes in several samples. The harvesters grew up with short legs, and the short legs became pedipalps, limbs typically used for handling food.

The researchers also identified and disabled another gene linked to leg development, which led to harvesters with short legs that did not become pedipalps but who did lose their tarsomeres—joints that allow a harvestman's legs to wrap around objects. They suggest this work could lead to a better understanding of the development of prehensile legs in a wide range of harvesters.

The researchers also suggest that as more of the [genes](#) involved in leg development in *P. opilio* and other long-legged species are discovered and studied, it becomes more likely that an explanation for the development of their long legs will be found.

**More information:** Guilherme Gainett et al, The genome of a daddy-

long-legs (Opiliones) illuminates the evolution of arachnid appendages, *Proceedings of the Royal Society B: Biological Sciences* (2021). DOI: [10.1098/rspb.2021.1168](https://doi.org/10.1098/rspb.2021.1168)

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