The mossy scent of sex reported ScienceNOW 18 July 2012 and *Nature* doi:10.1038/nature11330. We are all familiar with flowering plants reproducing by producing pollen, which is transported by insects, birds and other creatures to the female parts of another plant in order to fertilise it and produce seeds. Unlike flowering plants, mosses reproduce by making sperm, which swim in water. When this was first discovered it was assumed the sperm simply swam at random to other moss plants when they were wet with rain. In 2006 biologists discovered that micro-arthropods, tiny creatures such as mites, thrips and springtails, helped carry moss sperm from one plant to another, just as insects carry pollen for flowering plants. A group of biologists led by Sarah Eppley of Portland State University in Oregon has carried out further research into moss fertilisation and found another similarity with flowering plants. Just as flowers attract pollinators with fragrance, mosses emit scents that attract sperm-carrying bugs.

The researchers tested this by placing springtails and mosses in separate chambers so the springtails could smell the moss, but not touch it. The springtails were strongly attracted to the source of the scent. The research team wrote: "Taken together, our results indicate the presence of a scent-based 'plant-pollinator-like' relationship that has evolved between two of Earth's most ancient terrestrial lineages, mosses and microarthropods".

Robert Raguso, a chemical ecologist at Cornell University, and an expert on mosses commented: "This really shows that mosses and arthropods aren't just bumping into each other in the dark. ... They're all talking to each other".

The researchers have yet to work out which particular chemicals in the moss aroma are so attractive. Neither do they know what the arthropods are getting out of the relationship. Sarah Eppley commented: "There's this much more complicated system than we knew, and that will expand ideas about how plants evolved".

Editorial Comment: Our prediction: while this research has definitely revealed that the relationship between mosses and micro-arthropods is more complex than "just bumping into each other in the dark", it will not reveal anything about how mosses or arthropods may have evolved.

Why not? To reveal anything about how mosses or arthropods may have evolved, you would need to discover how plants that were not mosses changed into moss plants with genes for the

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scent and sperm, as well as how animals that were not arthropods changed into micro-arthropods that could smell this newly evolved scent and be attracted to it, and somehow swap the smell for a free sperm ride to another moss. As the researchers wrote, the relationship between mosses and micro-arthropods is similar to the flowering plant and pollinator relationship, but just as the presence of insects cannot create genes for flowers, the presence of springtails did not and does not make genes for the arthropod attracting scent in moss. In fact, research described above reveals a well-designed functioning relationship that mutually benefits mosses and micro-arthropods, and we predict that further research will confirm this, and provide no evidence for evolution.

Finally, you do need to know that since springtails are normally attracted by rotting leaf litter, both we and the scientists suspect the moss aroma won't be worth a scent for bottling. (Ref. bryophytes, mutualism, fertilisation)

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