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Spider Web Origins

The orb web is an elegant, wheel-like structure woven by two groups of spiders -- deinopoids and araneoids -- to catch flying insects. Although the webs spun by each group are architecturally similar, they employ different adhesive mechanisms for ensnaring prey (dry fibrils or aqueous glue, respectively), leading some researchers to believe that the two spider lineages evolved orb weaving independently. Now, two Brevia in the 23 Jun 2006 Science offer new insights into the origins of orb webs. Garb et al. (<http://www.sciencemag.org/cgi/content/short/312/5781/1762>) analyzed DNA from the silk glands of two kinds of deinopoids and found that these spiders have silk-making genes similar to those of araneoids, which suggests that the genes were acquired from a common orb-weaving ancestor. Based on fossil evidence, this ancestor probably lived at least 136 million years ago. In the second study, Peñalver et al.

(<http://www.sciencemag.org/cgi/content/short/312/5781/1761>), reported on the remarkable discovery of a spider web with entrapped insects within a 110-million-year-old piece of amber from Spain -- the oldest example of spider silk entrapping prey. The geometry of the silk strands suggests that it may be an orb web, which could mean that orb weaving spiders have been influencing the evolution of flying insects for millions of years. An accompanying News story by E. Stokstad (<http://www.sciencemag.org/cgi/content/short/312/5781/1730a>) highlighted the findings.