

Resilin

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Resilin is a highly elastic polymerized protein found in most arthropods such as fleas. This polymer is part of a family of elastic proteins, which also include gluten, elastin, and abductin, as well as others. Resilin contains randomly coiled chains that are crosslinked by di-tyrosine and tri-tyrosine links. Insects are able to jump to a distance 150 times their length because of the elasticity of resilin.

An artificial resilin was synthesized in 2005 by Australian scientists, and reported in *Nature*. The protein was made by genetic engineering. A part of the fruit fly gene (*Drosophila melanogaster* CG15920) that encodes a resilin-like protein was expressed in *E. coli* bacteria. The recombinant protein can be turned into a rubber-like biomaterial through rapid photochemical crosslinking. This synthesized resilin was found to have high resilience. Furthermore, this biomaterial is found to be more resilient than polybutadiene, another resilient rubber. The construction of artificial resilin can be used for many applications in the field of industry and biomedicine.