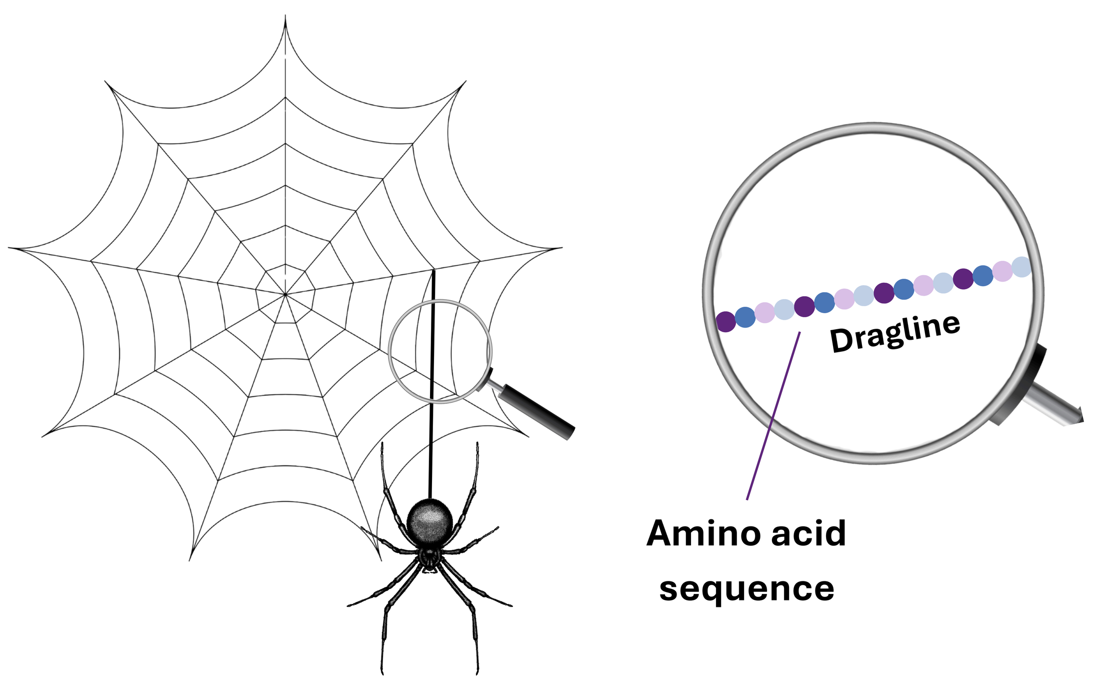
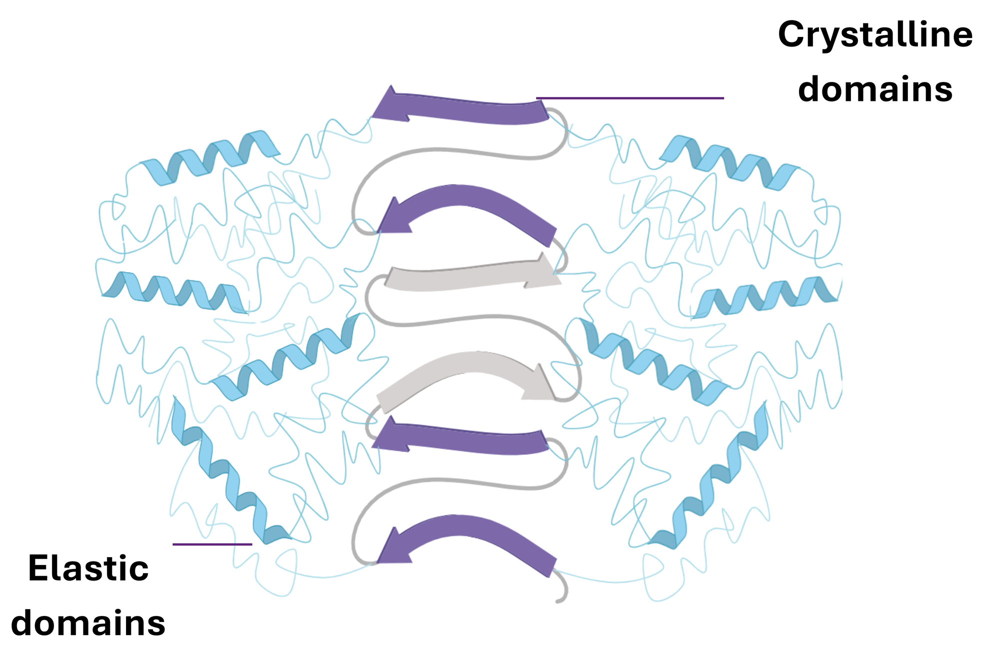
Exploring spider silk: structure, function, and industrial potential

AMSilk, a German biotechnology company founded in 2008, has developed a scalable method for producing spider silk proteins. This innovative ingredient serves as a sustainable alternative to conventional polymers and chemicals commonly used in home and personal care formulations. Not only does it have a low environmental impact, but it also delivers strong performance across various applications.

What is spider silk protein?

Spider webs are made of multiple types of protein. Dragline is a type of thread made of a long, unique sequence of amino acids, which combines strength and elasticity.

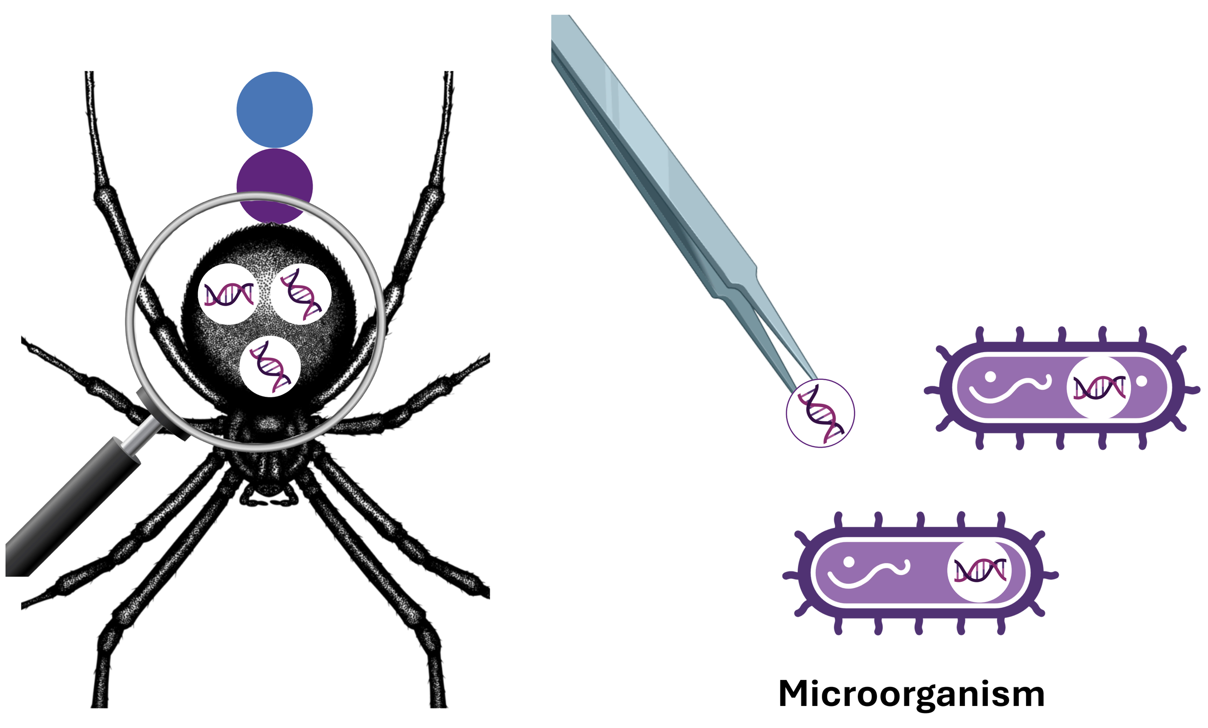




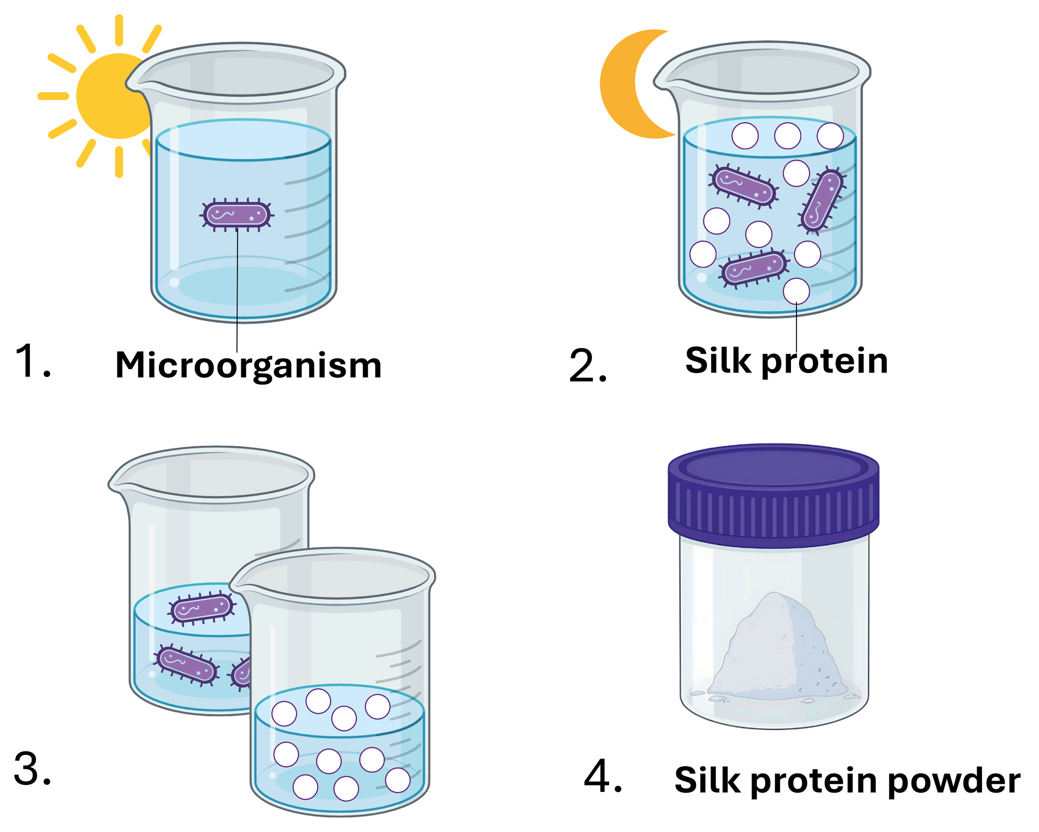
These amino acids form crystalline (ensuring strength) and amorphous domains (ensuring elasticity).

How to produce silk proteins with biotechnology?

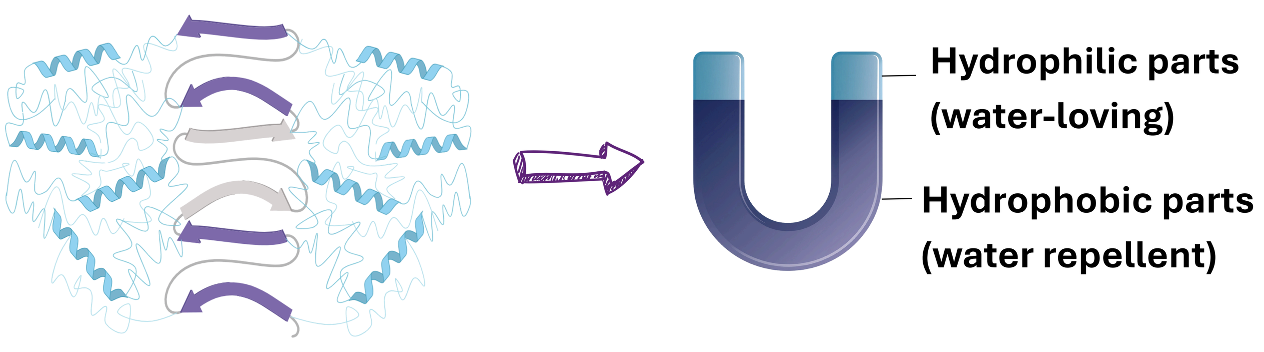
A small segment of DNA, inspired by spider and coding for silk protein, is inserted into a microorganism.



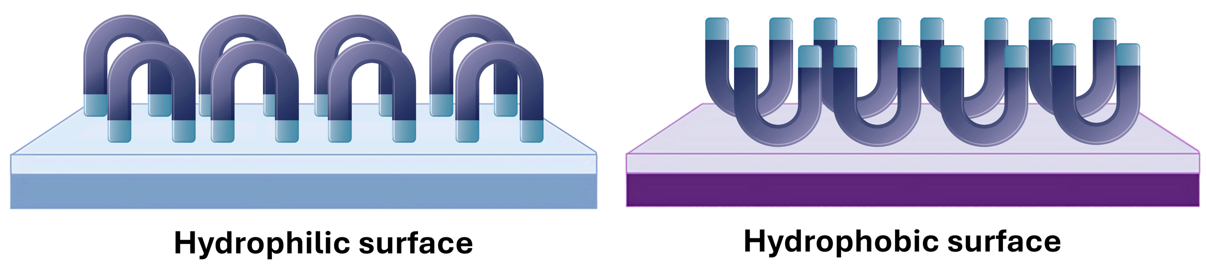
Microorganisms are cultivated via biofermentation (1). As they grow, they produce silk proteins (2). The proteins and bacteria are then separated and purified (3) to create silk protein powder (4).



Mechanism of silk proteins



Once applied to a surface, the proteins self-assemble into ultra-thin films to coat the surface.



Applications

Silk proteins' coating benefits enable their use in various products and applications.

Laundry care
- Bring softness
- Retain fragrance

Dish care
- Bring shine
- Spot-free
- Streak-free

Surface care
- Improve hygiene
- Easy to clean

The incredible potential of silk protein for brands

Silk protein is an innovative ingredient that serves as a true market differentiator for brands. It aligns with consumers' growing demand for sustainable products, without compromising on performance.

Biodegradable | Superior performance | Chemical-free | Meet latest regulations | Market differentiation

Want to know more? https://www.amsilk.com/amsilk-consumer-care-solutions/