



**Spider Goats &
Bullet Proof vests**



Science Nation: Got Silk? <http://www.youtube.com/watch?v=ktgACq4zcAU>

Bioprospecting – Dragline spider silk

Darwin's bark spider (*Caerostris darwini*) of Madagascar



- Darwin's bark spider webs as wide as 82 feet (25 meters)—about as long as two city buses. – spans entire river, from bank to bank. Can catch 30 or more prey at a time.
- 10 times stronger than kevlar

Biochemistry – Dragline spider silk

One of the major components of spider (dragline) silk are *spidroins*:

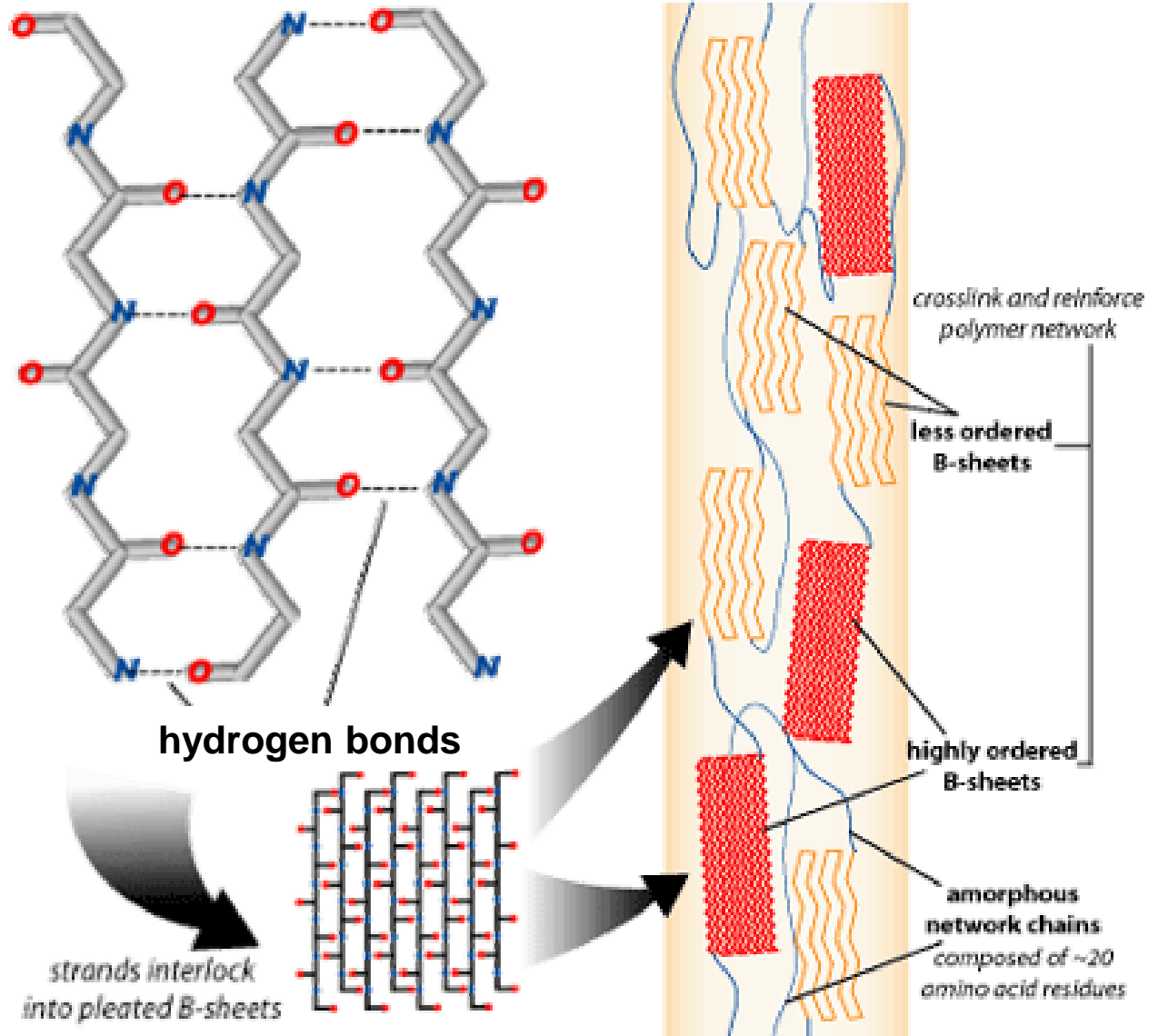
Spidroin

- Huge proteins = 3,000 amino acids



- NUMEROUS repeats of amino acids – glycine, alanine and serine

- Alanine & glycine are the smallest of the 20 amino acids in a cell. They can pack together closely to form β -pleated sheets.

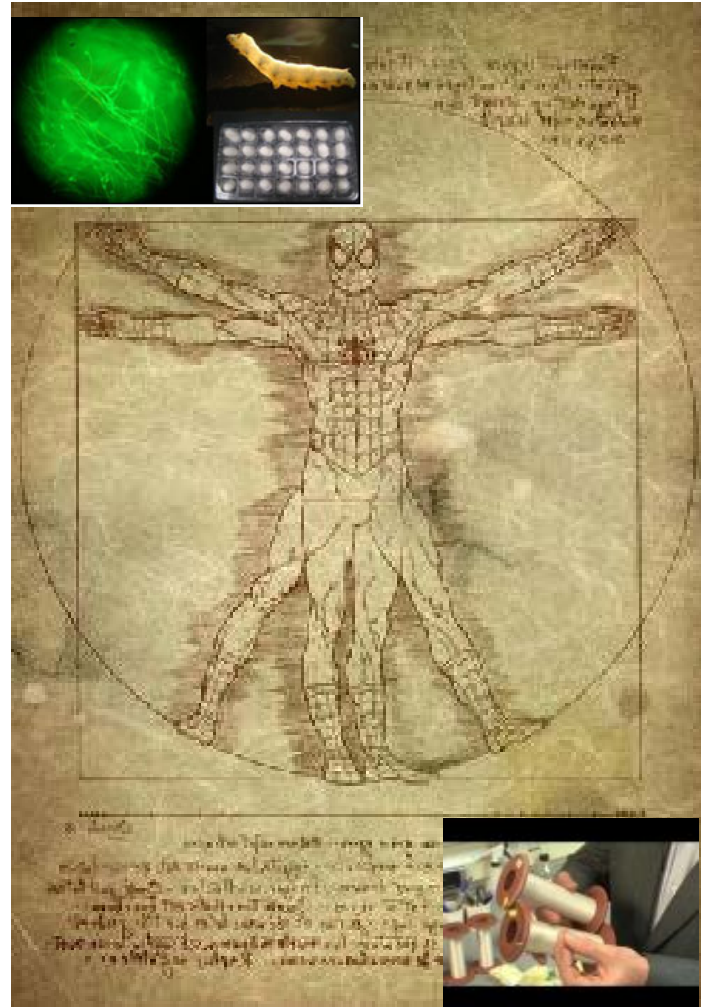


See animation of dragline spider silk -

Shortcut to Spider silk animation.avi.lnk



Bioengineering – Dragline spider silk



Notre Dame Research: Transgenic Silkworms Spin Artificial Spider Silk - <http://www.youtube.com/watch?v=WUFxdPVfG38>

References:

Unraveling the Weave of Spider Silk -

<http://www.mhhe.com/biosci/genbio/life/articles/article1.mhtml>

The amazing spider silk -

<http://euchems2010.wordpress.com/2010/05/25/the-amazing-spider-silk/>

Tying up spider silk's loose ends -

<http://www.rsc.org/chemistryworld/News/2010/May/12051004.asp>

Spidroin (music) - <http://www.whozoo.org/mac/Music/Spidroin.htm>

Smooth evolution: spider silk proteins -

<http://www.lucasbrouwers.nl/blog/2010/08/the-smooth-evolution-of-spider-silk-proteins/>

A Spider's Web (problem of the week) -

<http://www.glencoe.com/sec/science/chemistry/mc/pow/chapter24.shtml>