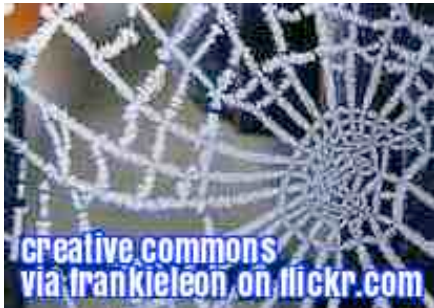## Scientists make super-strong spider web silk

14th January, 2017

A group of researchers from Sweden has unlocked one of nature's biggest secrets. The scientists worked out how spiders make such strong silk when they spin their spider webs. The silk that spiders spin is incredibly strong and is tougher than steel. For decades, scientists have been researching what makes the silk so amazing. Finally, researchers from Sweden's University of Agricultural Sciences and the Karolinska Institute have found the answer. They found that the materials for webs are stored in a spider's silk gland as protein. The gland has a level of acidity that helps to make the protein into very strong silk. The researchers copied this process to make enough artificial spider-web silk to stretch for one kilometer.

The new artificial silk could be very useful to humans. Doctors are interested in it to use for stitches. They also think it can help the skin recover after a burn. Some doctors believe the new silk could replace torn ligaments in the body. Airplane manufacturers and makers of protective clothing also see many uses for the new silk. Senior researcher Anna Rising spoke about how important the discovery could be. She said: "This is the first successful example of [copying] spider silk spinning. In the future, this may allow industrial production of artificial silk for bio-material applications or for the manufacture of advanced textiles." The silk could become an important new material for us in the future.

Sources: *cnet.com* / *livescience.com* / *cosmosmagazine.com*

Writing

Spiders are very useful and important. They are not scary Discuss.

Chat

Talk about these words from the article.

researchers / nature / secrets / silk / spider webs / answer / materials / process / artificial / doctors / recover / clothing / discovery / industrial / production / future

True / False

a) Swedish researchers have unlocked nature's biggest secret. T / F

b) Researchers have made a spider's web made from steel. T / F

c) Protein in the spider's silk gland helps make the spider web. T / F

d) Researchers made a 10-km-long spider-web thread. T / F

e) Doctors say the new silk could be used to stitch up cuts and injuries. T / F

f) Airplane manufacturers are interested in the artificial silk. T / F

g) The researchers are the first to successfully copy how spiders spin silk. T / F

h) The artificial silk is already being used to make advanced textiles.   T / F

Synonym Match

(The words in **bold** are from the news article.)

1.	**unlocked**	a.	heal
2.	**secrets**	b.	kept
3.	**worked out**	c.	mysteries
4.	**stored**	d.	manmade
5.	**copied**	e.	manufacture
6.	**artificial**	f.	opened
7.	**recover**	g.	duplicated
8.	**protective**	h.	fabric
9.	**production**	i.	discovered
10.	**material**	j.	safety

Discussion – Student A

a) What uses could the new silk have in hospitals?

b) What uses could the new silk have in our homes?

c) Do you think silk could be used to make a real-life Spiderman?

d) What are bio-materials?

e) What else can we learn from spiders?

f) What do you do when you see a spider web?

g) Why are spider webs also called cobwebs?

h) What questions would you like to ask the researchers?

Phrase Match

1.	unlocked one of nature's	a. for stitches
2.	when they spin	b. as protein
3.	stored in a spider's silk gland	c. for one kilometer
4.	The researchers copied	d. textiles
5.	enough artificial spider-web silk to stretch	e. their spider webs
6.	Doctors are interested in it to use	f. clothing
7.	help the skin recover	g. biggest secrets
8.	makers of protective	h. of artificial silk
9.	allow industrial production	i. after a burn
10.	the manufacture of advanced	j. this process

Discussion – Student B

a) What do you think of spider webs?

b) What other kinds of webs do you know of?

c) What do you think about what you read?

d) How useful is silk?

e) How important is this new discovery?

f) What do you think of spiders?

g) What three adjectives best describe spider webs, and why?

h) What other secrets of science should researchers unlock?

Spelling

1. one of nature's biggest scsrete

2. silk that spiders spin is bneiicdrly strong

3. the amtlsreia for webs

4. make the tiponre into very strong silk

5. make enough firialciat spider-web silk

6. ehcttrs for one kilometer

7. use for steschit

8. help the skin erovecr after a burn

9. makers of prtcioetve clothing

10. how important the sdcivyero could be

11. this may allow uistrnliad production

12. the crtaufnamue of advanced textiles

Role Play

Role A – Spiders
You think spiders are the most useful creatures. Tell the others three reasons why. Tell them what is wrong with their creatures. Also, tell the others which is the least useful of these (and why): ants, cats or horses.

Role B – Ants
You think ants are the most useful creatures. Tell the others three reasons why. Tell them what is wrong with their creatures. Also, tell the others which is the least useful of these (and why): spiders, cats or horses.

Role C – Cats
You think cats are the most useful creatures. Tell the others three reasons why. Tell them what is wrong with their creatures. Also, tell the others which is the least useful of these (and why): ants, spiders or horses.

Role D – Horses
You think horses are the most useful creatures. Tell the others three reasons why. Tell them what is wrong with their creatures. Also, tell the others which is the least useful of these (and why): ants, cats or spiders.

Speaking – Creatures

Rank these with your partner. Put the most useful creatures at the top. Change partners often and share your rankings.

- cats
- dolphins
- camels
- bees
- spiders
- dogs
- ants
- horses

Answers – Synonym Match

1. f	2. c	3. i	4. b	5. g
6. d	7. a	8. j	9. e	10. h

Answers – True False

a	F	b	F	c	T	d	F	e	T	f	T	g	T	h	F

Answers to Phrase Match and Spelling are in the text.