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## Level 4

### Soft, robotic muscles 1,000 times stronger

30th November, 2017

<https://breakingnewsenglish.com/1711/171130-muscles-4.html>

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Please try Levels 5 and 6. They are (a little) harder.

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# THE READING

From <https://breakingnewsenglish.com/1711/171130-muscles-4.html>

Scientists from elite universities have found a new way of creating artificial muscles. They called their discovery a "soft robot". It weighs 2.6 grams and looks like a small water-filled bag. An origami-inspired framework gives it support and strength. This means it can lift something 1,000 times its own weight. This is like a newborn baby lifting a four-wheel-drive car. The ground-breaking discovery could benefit many areas of science and medicine.

The scientists work in the area of soft robotics. Their muscle takes 10 minutes to make and costs less than a dollar. A researcher hopes to create "softer" robots that are like humans. He said: "Humans are normally soft and brittle compared to the big industrial robots....The next step is to take this system and develop it into a fully functional robot." It could be like the human hand - strong enough to grip an object, while being soft and gentle.

Sources: <https://www.newscientist.com/article/2154480-feather-light-artificial-muscles-lift-1000-times-own-weight/>  
<https://www.theverge.com/2017/11/27/16705062/soft-robot-muscles-origami-skeleton-mit-harvard>  
<https://www.news-medical.net/news/20171127/Origami-inspired-artificial-muscles-can-lift-1000-times-their-weight.aspx>

# PHRASE MATCHING

From <https://breakingnewsenglish.com/1711/171130-muscles-4.html>

## PARAGRAPH ONE:

- |                                     |                       |
|-------------------------------------|-----------------------|
| 1. Scientists from elite            | a. its own weight     |
| 2. a new way of creating artificial | b. breaking discovery |
| 3. a small water-                   | c. and medicine       |
| 4. gives it support                 | d. baby               |
| 5. lift something 1,000 times       | e. universities       |
| 6. a newborn                        | f. filled bag         |
| 7. The ground-                      | g. muscles            |
| 8. areas of science                 | h. and strength       |

## PARAGRAPH TWO:

- |                             |                       |
|-----------------------------|-----------------------|
| 1. Their muscle takes       | a. functional robot   |
| 2. robots that are          | b. 10 minutes to make |
| 3. Humans are normally soft | c. gentle             |
| 4. big industrial           | d. and brittle        |
| 5. The next                 | e. grip an object     |
| 6. develop it into a fully  | f. like humans        |
| 7. strong enough to         | g. step is to take    |
| 8. being soft and           | h. robots             |

# LISTEN AND FILL IN THE GAPS

From <https://breakingnewsenglish.com/1711/171130-muscles-4.html>

Scientists from elite universities (1) \_\_\_\_\_ new way of creating artificial muscles. They called (2) \_\_\_\_\_ a "soft robot". It (3) \_\_\_\_\_ and looks like a small (4) \_\_\_\_\_. An origami-inspired framework gives it support and strength. This means it can lift something 1,000 times (5) \_\_\_\_\_. This is like a newborn baby lifting a four-wheel-drive car. The ground-breaking discovery could (6) \_\_\_\_\_ of science and medicine.

The scientists work in the (7) \_\_\_\_\_ robotics. Their muscle takes 10 minutes to make and (8) \_\_\_\_\_ a dollar. A researcher hopes to create "softer" robots that are like humans. He said: "Humans are normally (9) \_\_\_\_\_ compared to the big industrial robots....The next step is to (10) \_\_\_\_\_ and develop it into a fully functional robot." It could be like (11) \_\_\_\_\_ - strong enough to (12) \_\_\_\_\_, while being soft and gentle.

# PUT A SLASH ( / ) WHERE THE SPACES ARE

From <https://breakingnewsenglish.com/1711/171130-muscles-4.html>

Scientists from elite universities have found a new way of creating artificial muscles. They called their discovery a "soft robot". It weighs 2.6 grams and looks like a small water-filled bag. An origami-inspired framework gives it support and strength. This means it can lift something 1,000 times its own weight. This is like a newborn baby lifting a four-wheel-drive car. The ground-breaking discovery could benefit many areas of science and medicine. The scientists work in the area of soft robotics. Their muscles take 10 minutes to make and cost less than a dollar. A researcher hopes to create "softer" robots that are like humans. He said: "Humans are normally soft and brittle compared to the big industrial robots.... The next step is to take this system and develop it into a fully functional robot." It could be like the human hand - strong enough to grip an object, while being soft and gentle.

# ROBOTIC MUSCLES SURVEY

From <https://breakingnewsenglish.com/1711/171130-muscles-4.html>

Write five GOOD questions about robotic muscles in the table. Do this in pairs. Each student must write the questions on his / her own paper. When you have finished, interview other students. Write down their answers.

	STUDENT 1 _____	STUDENT 2 _____	STUDENT 3 _____
Q.1.			
Q.2.			
Q.3.			
Q.4.			
Q.5.			

- Now return to your original partner and share and talk about what you found out. Change partners often.
- Make mini-presentations to other groups on your findings.

## WRITE QUESTIONS & ASK YOUR PARTNER(S)

Student A: Do not show these to your speaking partner(s).

a) \_\_\_\_\_

b) \_\_\_\_\_

c) \_\_\_\_\_

d) \_\_\_\_\_

e) \_\_\_\_\_

f) \_\_\_\_\_

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## WRITE QUESTIONS & ASK YOUR PARTNER(S)

Student B: Do not show these to your speaking partner(s).

a) \_\_\_\_\_

b) \_\_\_\_\_

c) \_\_\_\_\_

d) \_\_\_\_\_

e) \_\_\_\_\_

f) \_\_\_\_\_

