

Breakthrough in bio-printing of new body organs

7th May, 2019



Scientists say they have greatly advanced the possibility of being able to reproduce the body's organs via the use of 3D printing. Replacement organs could be created using a new technique for bio-printing organic tissue. This allows

scientists to create networks of thin tubes and vessels, like those used in our body for the flow of blood and air. These are called vascular networks. Bio-engineering professor Jordan Miller explained why the breakthrough was so important. He said: "One of the biggest roadblocks to generating functional tissue replacements has been our inability to print the complex [vascular networks] that can supply nutrients to densely populated tissues."

Professor Kelly Stevens of the University of Washington wrote about the difficulties scientists had in recreating a vascular network. She said: "Tissue engineering has struggled with this for a generation." She believes the new breakthrough will allow medical practices to change in the future. She asked: "If we can print tissues that look and now even breathe more like the healthy tissues in our bodies, will they also then functionally behave more like those tissues?" Professor Stevens said "This is an important question, because how well a bio-printed tissue functions will affect how successful it will be as a therapy." Scientists hope this method will help millions of people waiting for an organ transplant.

Sources:
digitaltrends.com / popularmechanics.com / independent.com

Writing

Bio-printing new body organs is a good thing. Discuss.

Chat

Talk about these words from the article.

possibility / organs / 3D printing / technique / blood / breakthrough / roadblock / print difficulties / network / generation / medical / breathe / tissue / successful / therapy

True / False

- a) Scientists have perfected the use of 3D printing to recreate organs. T / F
- b) Scientists won't be able to make vessels for transporting blood. T / F
- c) A professor called Jordan Miller said the breakthrough wasn't important. T / F
- d) The inability to supply nutrients to tissues was a big roadblock. T / F
- e) A professor said scientists had struggled for many generations. T / F
- f) A professor believes the breakthrough will change medicine. T / F
- g) A professor said the breakthrough could be a new form of therapy. T / F
- h) Scientists hope the 3D printing will help organ transplant patients. T / F

Synonym Match

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

- | | |
|------------------------|------------------|
| 1. greatly | a. movement |
| 2. reproduce | b. wrestled |
| 3. via | c. procedure |
| 4. flow | d. through |
| 5. densely | e. development |
| 6. difficulties | f. considerably |
| 7. struggled | g. issue |
| 8. breakthrough | h. complications |
| 9. question | i. duplicate |
| 10. method | j. tightly |

Discussion – Student A

- a) What do you think about what you read?
- b) What ethical issues are there with bio-printing?
- c) What would it be like to be a scientist?
- d) What will medicine look like in 100 years from now?
- e) What three adjectives best describe this story?
- f) What do you think of cyborg humans with bio-printed organs?
- g) What new medical breakthroughs would you like to see?
- h) What questions would you like to ask the researchers?

Phrase Match

- | | |
|--|-----------------------------|
| 1. Scientists say they have greatly | a. scientists had |
| 2. reproduce the body's organs via the | b. was so important |
| 3. the flow | c. nutrients |
| 4. Miller explained why the breakthrough | d. healthy tissues |
| 5. supply | e. for an organ transplant |
| 6. wrote about the difficulties | f. be as a therapy |
| 7. the new breakthrough will allow medical | g. advanced the possibility |
| 8. breathe more like the | h. practices to change |
| 9. affect how successful it will | i. use of 3D printing |
| 10. millions of people waiting | j. of blood and air |

Discussion – Student B

- What do you think of the idea of bio-printing?
- Would you accept a bio-printed organ if you needed one?
- Is bio-printing a little like Frankenstein?
- What are the dangers of bio-printing?
- Would it be possible to bio-print a new brain?
- Would someone with many bio-printed organs be human?
- Will scientists be able to bio-print a whole human one day?
- Is bio-printing body organs like playing God?

Spelling

- oprrduece the body's organs
- using a new ecntqihue
- networks of thin tubes and essvels
- omplcex vascular networks
- supply tneirnuts
- ensdley populated tissues
- struggled with this for a enrgtaeion
- allow medical rcpitaces to change
- aertbhe more
- cfotinulanly behave
- how successful it will be as a rethpay
- waiting for an organ apnsrlatnt

Answers – Synonym Match

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

Role Play

Role A – The Wheel

You think the wheel is the biggest scientific breakthrough. Tell the others three reasons why. Tell them why their breakthroughs aren't as great. Also, tell the others which is the least important of these (and why): water purification, the Internet or electricity.

Role B – Water Purification

You think water purification is the biggest scientific breakthrough. Tell the others three reasons why. Tell them why their breakthroughs aren't as great. Also, tell the others which is the least important of these (and why): the wheel, the Internet or electricity.

Role C – The Internet

You think the Internet is the biggest scientific breakthrough. Tell the others three reasons why. Tell them why their breakthroughs aren't as great. Also, tell the others which is the least important of these (and why): water purification, the wheel or electricity.

Role D – Electricity

You think electricity is the biggest scientific breakthrough. Tell the others three reasons why. Tell them why their breakthroughs aren't as great. Also, tell the others which is the least important of these (and why): water purification, the Internet or the wheel.

Speaking – Breakthroughs

Rank these with your partner. Put the biggest scientific breakthroughs at the top. Change partners often and share your rankings.

- | | |
|------------------|----------------------|
| • air transport | • the wheel |
| • electricity | • water purification |
| • sewage systems | • antibiotics |
| • 3D printing | • the Internet |

Answers – True False

a	F	b	F	c	F	d	T	e	F	f	T	g	T	h	T
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Answers to Phrase Match and Spelling are in the text.