3-2-1 Reading Summary

Student Activity: In this printable activity, students complete a 3-2-1 Graphic Organizer to summarize what they learned.

It also includes pages for vocabulary, reading the article and taking notes, short answer questions, multiple choice questions, and a discussion worksheet for open-ended prompts.

How to share with students: These pages are sized for printing or can be assigned digitally using an LMS (like Google Classroom), where students can work on their own slide decks via “Make a Copy for Each Student.” Each slide is set up with text boxes for students to type in.

Please Note: Because Diffit resources can vary in length, be sure to check the formatting on each slide.

Suggested Lesson Flow:
1. Students record what they notice and what they wonder about the image.
2. Complete the 3-2-1 Graphic Organizer
3. Students read and take notes.
4. Students answer the questions and explain their thinking.
5. Students write answers to the short answer questions.
6. Have students complete the Open Ended Questions and discuss with partners or groups.

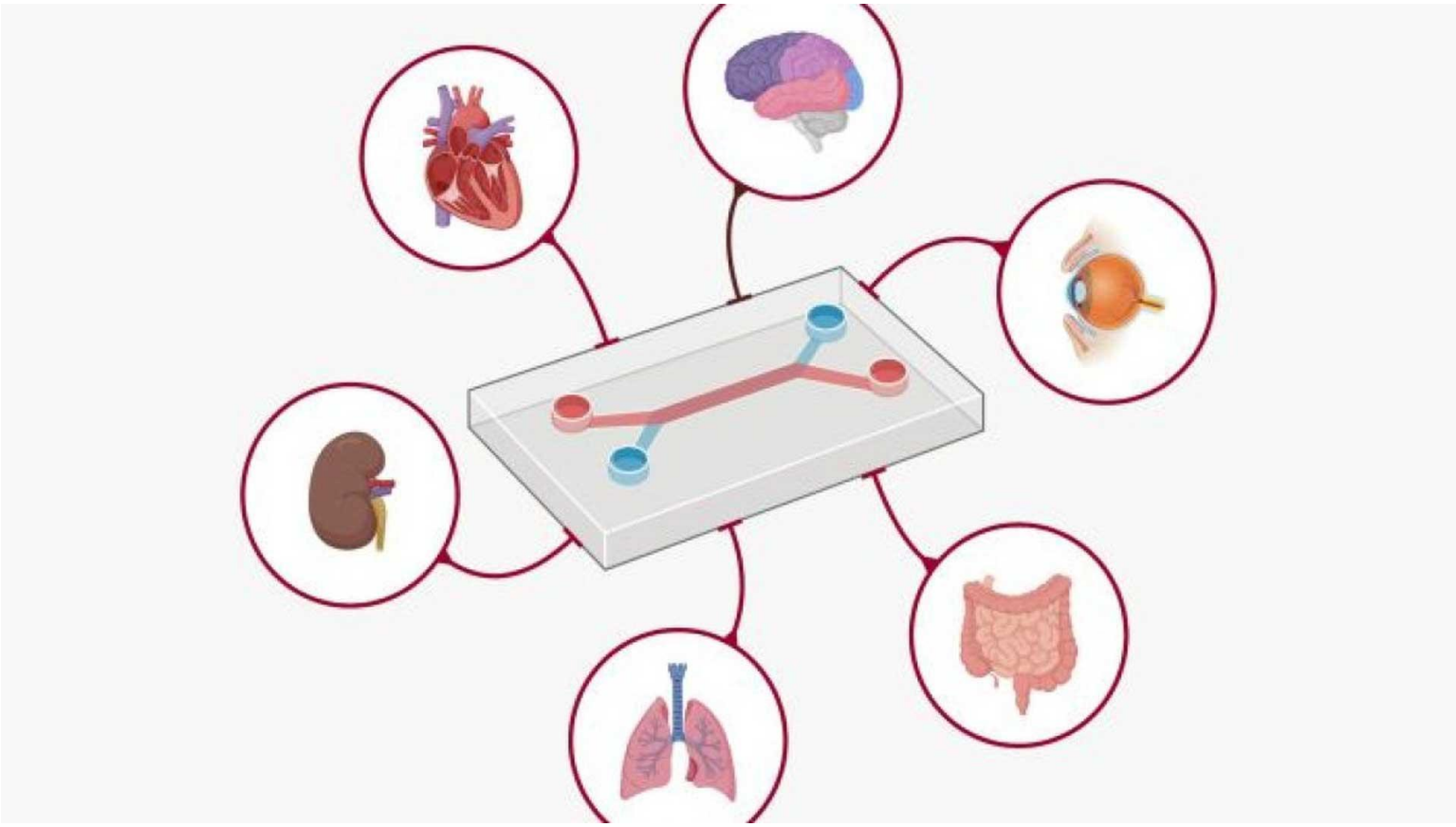
Feel free to edit, remix, and use this resource however works best for you and your students! **Find editing tips here!**

Learn More: Please reach out with any questions or feedback. You can also learn more on our FAQ page, or get more resources at Diffit.me!

Image Analysis: Notice & Wonder

Instructions: Look at the image and write down 2-3 things you notice (key details, main ideas, themes) and then write down 2-3 things you wonder (questions you have because of the image, things you are curious about when you look at the image.)

What do you notice?	



What do you wonder?	

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3-2-1 What I Learned

Instructions: After reading, complete this 3-2-1 chart using all of the vocabulary words.

Key Vocabulary

mimic	replicate	interact	revolutionize	personalized
To copy or imitate someone or something.	To make an exact copy of something.	To act or communicate with each other.	To completely change the way something is done.	Made or designed for a specific person.

3 Things I Learned...

From the reading I learned...	Another thing I learned...	One more thing I learned...

2 Drawings or Pictures to Represent the Reading...

1 Question I have is...

After reading, one question I have is...

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Read & Take Notes

Instructions: Read the passage below. Take notes in the space provided.

Imagine a tiny chip, smaller than your fingernail, that can mimic the workings of a human organ. That's the idea behind "organ on a chip" technology, a new and exciting field of science. These chips are like miniature laboratories, containing tiny channels and chambers that are designed to replicate the structure and function of real organs.

Think of it like building a tiny city for cells. Scientists can grow cells from a specific organ, like the liver or the heart, on these chips. These cells then interact with each other and their environment, just like they would in the real organ. This allows researchers to study how organs work, how diseases affect them, and how new drugs might work to treat them.

One of the biggest advantages of organ on a chip technology is that it allows scientists to test drugs and treatments in a more realistic way than ever before. Instead of using animals for testing, which can be expensive and sometimes inaccurate, researchers can use these chips to see how drugs interact with human cells. This can help them develop safer and more effective treatments for diseases.

Organ on a chip technology is still in its early stages, but it has the potential to revolutionize the way we understand and treat diseases. It could lead to personalized medicine, where treatments are tailored to each individual's unique biology. It could also help us develop new therapies for diseases that are currently difficult to treat, like cancer and Alzheimer's disease.

The future of organ on a chip technology is bright. As scientists continue to improve these tiny chips, they will become even more powerful tools for understanding and treating human diseases. This technology has the potential to save lives and

Take Notes Here

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Read & Take Notes

Instructions: Read the passage below. Take notes in the space provided.

improve the health of people around the world.

Take Notes Here

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Answer and Explain

Instructions: For each question, answer the question and then explain why you picked the answer you did using specific evidence from the text.

Question: **1. What is the main purpose of 'organ on a chip' technology?**

Pick the Answer

A) To study how organs work and how diseases affect them.

B) To create artificial organs for transplantation.

C) To grow new organs in a lab.

D) To test the effectiveness of new drugs on animals.

Explain: Why did you pick that answer?

Question: **2. What is one advantage of using 'organ on a chip' technology over using animals for testing?**

Pick the Answer

A) It is more expensive.

B) It is more accurate.

C) It is more time-consuming.

D) It is less ethical.

Explain: Why did you pick that answer?

Question: **3. What is one potential benefit of 'organ on a chip' technology for the future?**

Pick the Answer

A) It could help us understand how to prevent diseases.

B) It could help us develop new treatments for diseases.

C) It could help us create new organs for transplantation.

D) It could help us understand how animals get sick.

Explain: Why did you pick that answer?

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Short Answer Questions

Question	1. What is an 'organ on a chip'?

Question	2. How do scientists use 'organ on a chip' technology to study diseases?

Question	3. What is one way that 'organ on a chip' technology could help to develop new treatments?

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Reflect and Discuss

Instructions: Respond to the following question using the reading and your own knowledge and experiences. Be as thorough as possible.

1. Imagine you are a scientist working on an organ-on-a-chip project. What organ would you choose to study and why? How could this research help people in the future?

Write Your Response Here. Be sure to use what you learned in the reading and your own knowledge and experiences to answer the question thoroughly.

Instructions: When instructed, you will share your responses with your group. Take notes on their responses in the boxes below. Be sure to write their names at the top of each box.

Student #1: _____

Student #2: _____

Student #3: _____

Student #4: _____

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Reflect and Discuss

Instructions: Respond to the following question using the reading and your own knowledge and experiences. Be as thorough as possible.

2. The text mentions that organ-on-a-chip technology could lead to personalized medicine. What does this mean and how could it affect you or your family? Think about how doctors treat illnesses now and how personalized medicine might be different.

Write Your Response Here. Be sure to use what you learned in the reading and your own knowledge and experiences to answer the question thoroughly.

Instructions: When instructed, you will share your responses with your group. Take notes on their responses in the boxes below. Be sure to write their names at the top of each box.

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Reflect and Discuss

Instructions: Respond to the following question using the reading and your own knowledge and experiences. Be as thorough as possible.

3. The article describes organ-on-a-chip technology as a 'tiny city for cells.' How does this analogy help you understand the technology? Can you think of other examples of miniature worlds or cities in books, movies, or video games?

Write Your Response Here. Be sure to use what you learned in the reading and your own knowledge and experiences to answer the question thoroughly.

Instructions: When instructed, you will share your responses with your group. Take notes on their responses in the boxes below. Be sure to write their names at the top of each box.

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