

LAB-GROWN MEAT AND THE FUTURE OF FOOD GRADE 8 AND UP READING

Improve students'
literacy skills

Sub Plan

Science Applicability



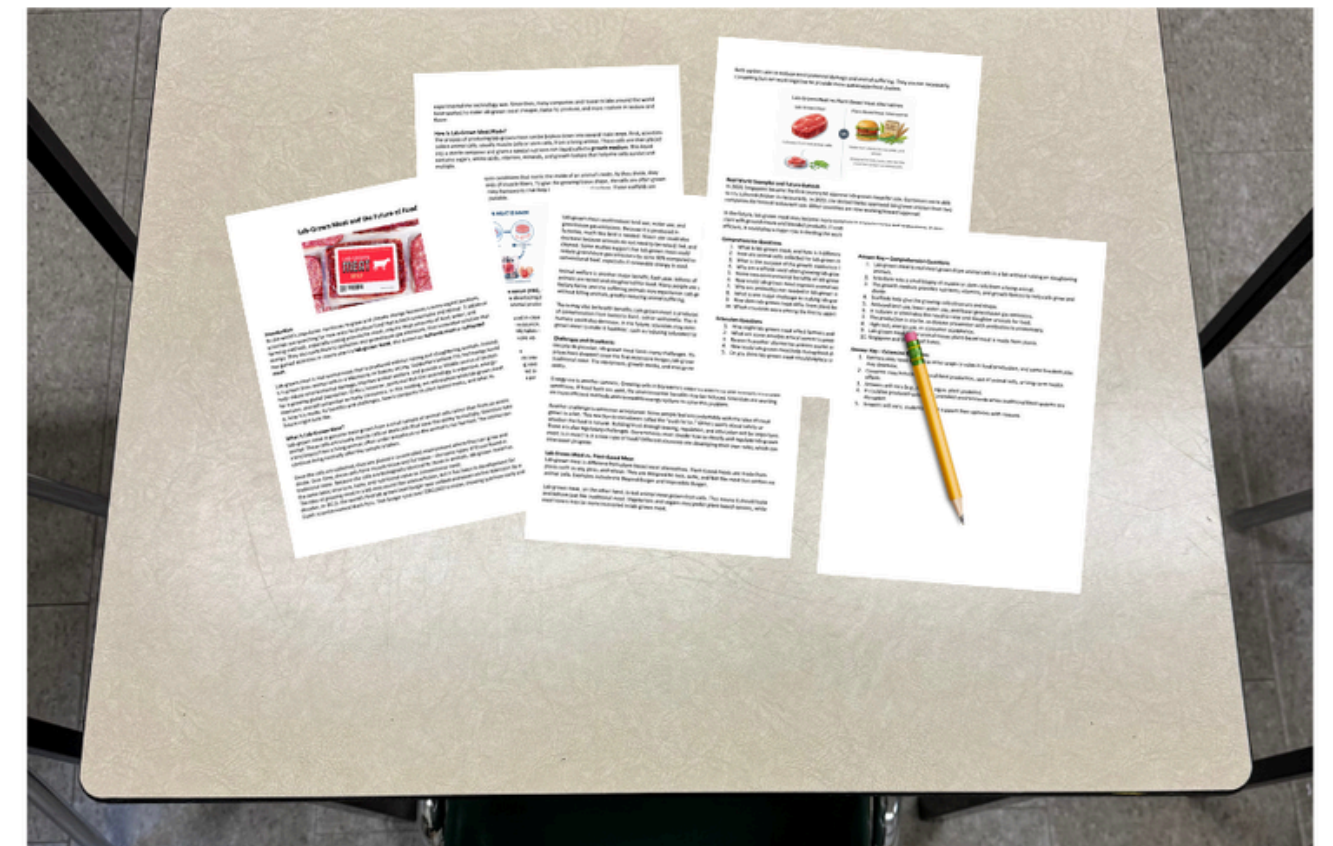
SCROLL
to take a look inside!

THE PROBLEMS YOU FACE

- Limited time to teach scientific literacy and strengthen students' reading and analysis skills.
- Need meaningful extension activities to engage fast-moving learners.
- Difficulty creating effective last-minute sub plans that still support student learning.

CLASSROOM READY

- Questions and Answer Key
- **No Prep, Ready-to-Use:** Print or assign digitally with Google Docs, Microsoft Word, and PDF formats for flexible classroom use
- **Includes Varied Question Types:** Knowledge, thinking, connecting, application, and open-ended questions.



What Will Your Students Learn?

READING COMPREHENSION ARTICLE & QUESTION BUNDLE

Article with
Comprehension
Questions

Grade 8 and Up

Print & Digital

- Lab-Grown Meat (Cultivated / Cell-Based Meat)
- How Cultured Meat Is Produced (cells, media, scaffolds, bioreactors)
- Environmental Impacts (land use, water use, greenhouse gases)
- Ethics & Animal Welfare
- Food Safety & Antibiotic Resistance
- Challenges: Cost, Energy Use, Scaling Up
- Consumer Acceptance (“yuck factor”)
- Regulations and Early Approvals
- Lab-Grown Meat vs. Plant-Based Meat
- Future of Food & Sustainability

Comprehension Questions

1. What is lab-grown meat, and how is it different from traditional meat?
2. How are animal cells collected for lab-grown meat production?
3. What is the purpose of the growth medium in lab-grown meat production?
4. Why are scaffolds used when growing lab-grown meat?
5. Name two environmental benefits of lab-grown meat.
6. How could lab-grown meat improve animal welfare?
7. Why are scaffolds used when growing lab-grown meat?
8. What are the challenges of lab-grown meat production?
9. How is lab-grown meat produced?
10. Which is better, lab-grown meat or traditional meat?

Extension Questions

1. How is lab-grown meat produced?
2. What are the challenges of lab-grown meat production?
3. Res...
4. Ho...
5. Do...



Introduction
As the world's population continues to grow and climate change becomes a more urgent problem, scientists are searching for new ways to produce food that is both sustainable and ethical. Traditional farming methods, especially raising animals for meat, require large amounts of land, water, and energy. They also contribute to pollution and greenhouse gas emissions. One innovative solution that has gained attention in recent years is **lab-grown meat**, also known as **cultured meat** or **cultivated meat**.

Lab-grown meat is real animal meat that is produced without raising and slaughtering animals. Instead, it is grown from animal cells in a laboratory or factory setting. Supporters believe this technology could help reduce environmental damage, improve animal welfare, and provide a reliable source of protein for a growing global population. Critics, however, point out that the technology is expensive, energy-intensive, and still unfamiliar to many consumers. In this reading, we will explore what lab-grown meat is, how it is made, its benefits and challenges, how it compares to plant-based meats, and what its future might look like.

What Is Lab-Grown Meat?
Lab-grown meat is genuine meat grown from a small sample of animal cells rather than from an entire animal. These cells are usually muscle cells or stem cells that have the ability to multiply. Scientists take a tiny biopsy from a living animal, often under anesthesia so the animal is not harmed, and then continue living normally after the sample is taken.

Google Access

Thank you for your purchase. Clicking the link below will automatically create a copy of this document in your Google Drive. You will find the link to the document on the left side of your page.

Important: When you click, you must first be signed in to the Google account you wish the document placed into. If the document is added to the wrong account, simply sign out and then into the correct one and repeat the process.

[Click here to place a copy directly into your Google Drive Account.](#)

PDF



Your Reading

Lab-Grown Meat and the Future of Food



Introduction

As the world's population continues to grow and climate change becomes a reality, scientists are searching for new ways to produce food that is both sustainable and ethical. One of the most promising methods, especially for raising animals for meat, requires large amounts of energy. They also contribute to pollution and greenhouse gas emissions. One of the most promising methods, especially for raising animals for meat, requires large amounts of energy. They also contribute to pollution and greenhouse gas emissions. One of the most promising methods, especially for raising animals for meat, requires large amounts of energy. They also contribute to pollution and greenhouse gas emissions.

Lab-grown meat is real animal meat that is produced without raising and slaughtering animals. It is grown from animal cells in a laboratory or factory setting. Supporters believe it will help reduce environmental damage, improve animal welfare, and provide a sustainable source of protein for a growing global population. Critics, however, point out that the technology is still experimental, and still unfamiliar to many consumers. In this reading, we will explore how it is made, its benefits and challenges, how it compares to plant-based meat, and what the future might look like.

What Is Lab-Grown Meat?

Lab-grown meat is genuine meat grown from a small sample of animal cells. These cells are usually muscle cells or stem cells that have the ability to grow into muscle tissue. A tiny biopsy from a living animal, often under anesthesia so the animal can continue living normally after the sample is taken.

Once the cells are collected, they are placed in a controlled environment where they can divide. Over time, these cells form muscle tissue and fat tissue—the same as traditional meat. Because the cells are biologically identical to those in traditional meat, they have the same basic structure, taste, and nutritional value as conventional meat. The idea of growing meat in a lab may sound like science fiction, but it has become a reality. In 2013, the world's first lab-grown beef burger was cooked and eaten by a Dutch scientist named Mark Post. That burger cost over \$300,000 to make, but it was a significant milestone in the development of lab-grown meat.

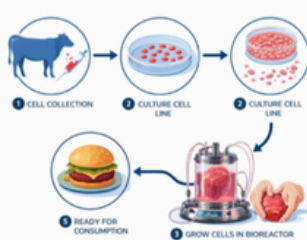
Since then, many companies and research labs have worked to make lab-grown meat cheaper, faster to produce, and more realistic in flavor.

How Is Lab-Grown Meat Made?

The process of producing lab-grown meat can be broken down into several main steps. First, cells are collected from a living animal. These cells are then placed in a sterile container and given a special nutrient-rich liquid called a growth medium. This medium provides nutrients, vitamins, and growth factors that help the cells multiply.

The cells are kept in warm conditions that mimic the inside of an animal's body. As they multiply, they begin forming long strands of muscle fibers. To give the growing tissue shape and structure, it is grown on scaffolds, which are tiny frameworks that help the tissue develop its shape. Once the tissue is ready, it is usually edible or biodegradable.

HOW LAB-GROWN MEAT IS MADE



Over time, the cells continue to grow and organize into thicker layers. Once the tissue reaches the desired texture and consistency, it is harvested and can be used in various forms, such as burger patties, meatballs, or chicken breasts. Creating thick cuts of meat, like steaks or chicken breasts, is more challenging and requires more nutrients and oxygen.

Early versions used fetal bovine serum (FBS), which comes from cow blood and is controversial. Scientists are now developing plant-based and synthetic alternatives. One important challenge is that lab-grown meat can be produced without animal products.

Because lab-grown meat is produced in clean, controlled environments, the risk of antibiotic resistance, which is a growing problem in traditional farming, is reduced. This reduces the risk of antibiotic resistance, which is a growing problem in traditional farming. The entire process currently takes several weeks, which is much faster than traditional meat production but still expensive and difficult to scale up.

Environmental and Ethical Benefits

One of the main reasons scientists are interested in lab-grown meat is its potential benefits. Traditional livestock farming uses large amounts of land to grow feed and grazing space. Forests are often cleared to make room for farms, leading to deforestation. Animals also produce methane, a powerful greenhouse gas that contributes to climate change.

Lab-grown meat could reduce land use, water use, and greenhouse gas emissions. Because it is produced in factories, much less land is needed. Water use could also decrease because animals do not need to be raised, fed, and cleaned. Some studies suggest that lab-grown meat could reduce greenhouse gas emissions by up to 90% compared to conventional beef, especially if renewable energy is used.



Animal welfare is another major benefit. Each year, billions of animals are raised and slaughtered for food. Many people are uncomfortable with the conditions in factory farms and the suffering animals may experience. Lab-grown meat could provide real meat without killing animals, greatly reducing animal suffering.

There may also be health benefits. Lab-grown meat is produced in sterile conditions, lowering the risk of contamination from bacteria like E. coli or salmonella. The risk of diseases spreading from animals to humans could also decrease. In the future, scientists may even be able to adjust the nutrients in lab-grown meat to make it healthier, such as reducing saturated fat or adding vitamins.

Challenges and Drawbacks

Despite its promise, lab-grown meat faces many challenges. The biggest problem is cost. Although prices have dropped since the first expensive burger, lab-grown meat is still far more expensive than traditional meat. The equipment, growth media, and energy needed to grow cells make the process costly.

Energy use is another concern. Growing cells in bioreactors requires electricity and carefully controlled conditions. If fossil fuels are used, the environmental benefits may be reduced. Scientists are working on more efficient methods and renewable energy options to solve this problem.

Another challenge is consumer acceptance. Some people feel uncomfortable with the idea of meat grown in a lab. This reaction is sometimes called the "yuck factor." Others worry about safety or whether the food is natural. Building trust through testing, regulation, and education will be important. There are also regulatory challenges. Governments must decide how to classify and regulate lab-grown meat. Is it meat? Is it a new type of food? Different countries are developing their own rules, which can slow down progress.

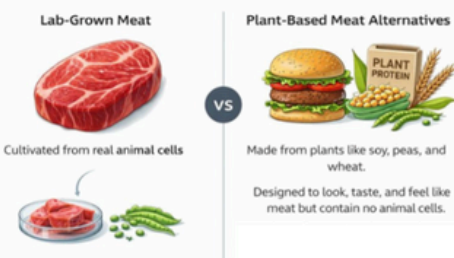
Lab-Grown Meat vs. Plant-Based Meat

Lab-grown meat is different from plant-based meat alternatives. Plant-based meats are made from plants such as soy, peas, and wheat. They are designed to look, taste, and feel like meat but contain no animal cells. Examples include the Beyond Burger and Impossible Burger.

Lab-grown meat, on the other hand, is real animal meat grown from cells. This means it should taste and behave just like traditional meat. Vegetarians and vegans may prefer plant-based alternatives, while meat lovers may be more interested in lab-grown meat.

Scientists hope that lab-grown meat will help reduce environmental damage and animal suffering. They are not necessarily trying to replace traditional meat, but rather to provide more sustainable food choices.

Lab-Grown Meat vs Plant-Based Meat Alternatives



Examples and Future Outlook

The United States became the first country to approve lab-grown meat for sale. Customers were able to try it at restaurants. In 2023, the United States approved lab-grown chicken from two major restaurant chains. Other countries are now working toward approval.

Lab-grown meat may become more common in grocery stores and restaurants. It may be used in a variety of meats and blended products. If costs continue to fall and production becomes more efficient, it could play a major role in feeding the world sustainably.

Questions

- How is lab-grown meat made, and how is it different from traditional meat?
- What are the benefits of lab-grown meat?
- What are the challenges of lab-grown meat?
- How do animal cells collected for lab-grown meat production?
- What is the purpose of the growth medium in lab-grown meat production?
- What are the scaffolds used when growing lab-grown meat?
- What are the environmental benefits of lab-grown meat?
- How can lab-grown meat improve animal welfare?
- Are antibiotics not needed in lab-grown meat production?
- What is one major challenge to making lab-grown meat widely available?
- How do lab-grown meats differ from plant-based meats?
- Which countries are among the first to approve lab-grown meat?

- How might lab-grown meat affect farmers and traditional agriculture?
- What are some possible ethical concerns people might still have about lab-grown meat?
- How is lab-grown meat another alternative protein source and compare it to other plant-based proteins?
- How can lab-grown meat help during food shortages or in disaster relief?
- Should lab-grown meat help during food shortages or in disaster relief?
- Should lab-grown meat replace traditional meat?

Comprehension Questions

- What is lab-grown meat?
- How is lab-grown meat made?
- What are the benefits of lab-grown meat?
- What are the challenges of lab-grown meat?
- How do animal cells collected for lab-grown meat production?
- What is the purpose of the growth medium in lab-grown meat production?
- What are the scaffolds used when growing lab-grown meat?
- What are the environmental benefits of lab-grown meat?
- How can lab-grown meat improve animal welfare?
- Are antibiotics not needed in lab-grown meat production?
- What is one major challenge to making lab-grown meat widely available?
- How do lab-grown meats differ from plant-based meats?
- Which countries are among the first to approve lab-grown meat?

Extension Questions

- How might lab-grown meat affect farmers and traditional agriculture?
- What are some possible ethical concerns people might still have about lab-grown meat?
- How is lab-grown meat another alternative protein source and compare it to other plant-based proteins?
- How can lab-grown meat help during food shortages or in disaster relief?
- Should lab-grown meat help during food shortages or in disaster relief?
- Should lab-grown meat replace traditional meat?

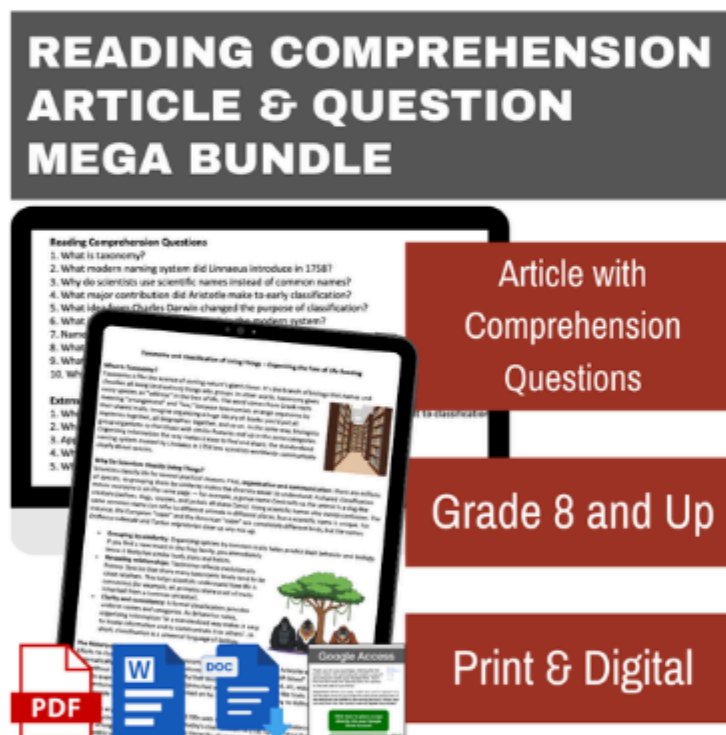
Answer Key Included

Comprehension and Extension Questions



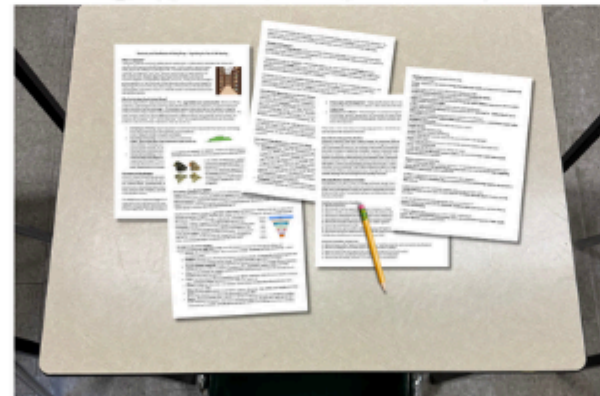
Upgrade to the Grade 8 and Up Reading Mega Bundle

Includes over 130 readings for students in grades 8 and up. The bundle covers all science topics and will save you over 75%.



CLASSROOM READY

- Questions and Answer Key
- **No Prep, Ready-to-Use:** Print or assign digitally with Google Docs, Microsoft Word, and PDF formats for flexible classroom use
- **Includes Varied Question Types:** Knowledge, thinking, connecting, application, and open-ended questions.



★★★★★ Extremely satisfied - It is a good supplemental activity either for review and at the same time introducing some concept. I also use this for sub plan. It is well presented, organized and interesting.

★★★★★ Extremely satisfied - This a great resource. I used this for a sub plan. It was fun and engaging for my students.

Grade 8 and Up Scientific Reading Comprehension Article Mega Bundle

ALL my current and future grade 8 and up readings, covering the following subject areas:

Biology
Chemistry
Earth and Space
Ecology and the Environment
Energy
Health
Natural Disasters
Physics



Improve your students' **Literacy and Analysis Skills**, use as an **Emergency Substitute Plan** or create **Applicability** in your classroom

**Click to
learn more!**

As a special bonus, I want to send you a few resources that you can use in your classroom tomorrow. Completely free and geared towards what you teach!



Just  **and then choose what you teach!**

thanks
**for your interest
in this resource!**



 devon@teachwithfergy.com