Lesson Plan

Lights, Camera, Science!

Created: 04/2026 by the National FFA Organization

Description of Lesson: Students explore real biomedical research currently being conducted and connect it to agriculture, animal health and food systems by analyzing a supervised agricultural experience (SAE) example and creating a short educational video.

Student Learning Objectives:

After completing these activities, students will …

1. Explain how biotechnology and biomedical research are used to address real-world challenges in agriculture, animal health and food systems.
2. Analyze a real SAE example to identify responsibilities, safety practices and industry impact.
3. Communicate scientific research clearly and accurately through a short educational video.

Suggested Grade Level:

Grades 9 and 10 (This lesson is written so instructors can scale up or down based on class needs.)

Suggested Time:

60 minutes (*Time requirements may vary based upon student understanding and class schedule.)

Resources/References:

1. Video: “Poultry Science SAE,” https://vimeo.com/1148062258

Related Resources:

1. Morgan Weidow – Biomedical Research SAE, https://FFA.box.com/s/8l8bwyu020w0hm7gsgx9f81phw7mvzpg

Equipment and Supplies Needed:

1. A copy of the “Lights, Camera, Science!” worksheet for each student
2. Internet access to play the video in real time or embed it in a PowerPoint ahead of time

Vocabulary:

1. Biomedical Research
2. Biosecurity
3. Biotechnology
4. Diagnostics
5. Supervised Agricultural Experience (SAE)

Cross-Curricular Connections:

Science	Technology
Analyze real biomedical research and apply concepts.	Research credible digital sources and create a short educational video.

SAE and FFA Connections

1. Poultry Evaluation CDE, FFA.org/participate/poultry/
2. Proficiency Areas: Agricultural Processing, Poultry Production, FFA.org/participate/awards/proficiencies/

Name: _____

3. Foundational SAE Connections: Career Exploration and Planning, Employability Skills for College and Career Readiness

Student Activity Sheets:

Direct access to student activity sheets without lesson plan or answer key for easy upload to a learning management system or printing for classwork.

https://ffa.box.com/s/gqjoe45atupiioforqz41m7ikiokrg0r (Word)
https://ffa.box.com/s/cr9ics685rav7oooog6q2bostq8jwpdx (PDF)
https://docs.google.com/document/d/145huiQsdjvD7Z8AoF5eQFQ7JAAnTy2qj0y9IPkM8jQg/copy (Google)

These Activities Are Aligned to the Following Standards:

AFNR Performance Element

- CS.05. Describe career opportunities and means to achieve those opportunities in each of the Agriculture, Food & Natural Resources career pathways.

FFA Precept

- FFA.PL-A.Action A1. Work independently and in groups to get things done.
- FFA.PL-A.Action A3. Plan effectively.
- FFA.PL-A.Action A4. Identify and use resources.
- FFA.PL-C.Vision C2. Conceptualize ideas.
- FFA.PL-F.Continuous Improvement F5. Acquire new knowledge.
- FFA.PG-I.Professional Growth I5. Demonstrate exemplary employability skills.
- FFA.PG-J.Mental Growth J1. Think critically.
- FFA.CS-N.Decision Making N1. Demonstrate the decision-making process.

Common Career Technical Core

- AG5 Describe career opportunities and means to achieve those opportunities in each of the Agriculture, Food & Natural Resources Career Pathways.

NASDCTEc

- AGC09.02 Select, research and examine critical aspects of career opportunities in one or more AFNR career pathways in order to gain an understanding of the breadth of occupations within this cluster.

Common Core – Reading: Informational Text

- CCSS.ELA-LITERACY.RI.9-10.4. Determine the meaning of words and phrases as they are used in a text, including figurative, connotative and technical meanings; analyze the cumulative impact of specific word choices on meaning and tone (e.g., how the language of a court opinion differs from that of a newspaper).
- CCSS.ELA-LITERACY.RI.11-12.7. Integrate and evaluate multiple sources of information presented in different media or formats (e.g., visually, quantitatively) as well as in words in order to address a question or solve a problem.

Common Core – Writing

- CCSS.ELA-LITERACY.W.9-10.2. Write informative/explanatory texts to examine and convey complex ideas, concepts and information clearly and accurately through the effective selection, organization and analysis of content.
- CCSS.ELA-LITERACY.W.9-10.4. Produce clear and coherent writing in which the development, organization and style are appropriate to task, purpose and audience.

Common Core – Speaking and Listening

- CCSS.ELA-LITERACY.SL.9-10.2. Integrate multiple sources of information presented in diverse media or formats (e.g., visually, quantitatively, orally) evaluating the credibility and accuracy of each source.

Common Core – Language

- CCSS.ELA-LITERACY.L.9-10.1. Demonstrate command of the conventions of standard English grammar and usage when writing or speaking.
- CCSS.ELA-LITERACY.L.9-10.2. Demonstrate command of the conventions of standard English capitalization, punctuation and spelling when writing.

AFNR Career Ready Practices

- CRP.02. Apply appropriate academic and technical skills.
- CRP.04. Communicate clearly, effectively and with reason.
- CRP.06. Demonstrate creativity and innovation.

Name: _____

- CRP.08. Utilize critical thinking to make sense of problems and persevere in solving them.

Partnership for 21st Century Skills

- Communication
- Critical Thinking and Problem Solving
- Information Literacy
- Initiative and Self-Direction
- Productivity and Accountability
- Think Creatively

Name: _____

Lesson Plan:

1. **Bell Ringer:** What is one example of science or research you've seen in the news recently?

2. **Introduction:** *Science can play a major role in the agriculture industry! Today, you'll watch a student who turned her interest in science and poultry health into an SAE, then you'll research real biomedical research happening right now and explain it through a short video.*

3. **Activity:** Each student needs a copy of the worksheet "Lights, Camera, Science!"
    a. **Part 1:** Play the video "Poultry Science SAE," available at https://vimeo.com/1148062258. Students will watch the video and answer the questions on the student activity sheet as they follow along. You may choose to show the video to the entire class or have students view it individually on their own devices.

    b. **Part 2:** Have students research a real biomedical research project that is currently happening. Examples are found on their student activity sheets, but this list could be edited depending on your area or educational goals for your students. This should be something scientists, universities, hospitals or government agencies are actively studying right now. They will fill in the activity sheet as they research.

    c. **Part 3:** Students should take what they researched and create a 60- to 90-second video informing their classmates about the topic. The video should include the problem, the research being done, how biotechnology is involved, why it matters and one career or SAE connection. They should use the video rubric found on their student activity sheets and answer the reflection questions when done.

4. **Follow-up:** Share with students: *If you are interested in science, health, problem-solving or preventing disease, there are strong SAE opportunities in biotechnology, biomedical research and biosecurity. Many careers focus on protecting animal health, food safety and people, and those experiences can begin as an SAE.*
Briefly connect their research topics back to agriculture, animal health and the food system.

5. **Optional – Extended Learning Opportunities (Not factored into time requirement):**
    a. Encourage students to explore how their research topic could connect to an SAE.

6. **Exit Ticket:** What is one SAE you could do that connects to today's lesson?

Name: _____

Lights, Camera, Science!

Aligned to the following standards:
FFA.PL-A1; FFA.PL-A3; FFA.PL-A4; FFA.PL-C2; FFA.PL-F5; FFA.PL-I5; FFA.PL-J1; FFA.PL-N1; CCSS.ELA-RI.9-10.4; CCSS.ELA-RI.11-12.7; CCSS.ELA-W.9-10.2; CCSS.ELA-W.9-10.4; CCSS.ELA-SL.9-10.2; CCSS.ELA-L.9-10.1; CCSS.ELA-L.9-10.2; CRP.02; CRP.04; CRP.06; CRP.08

Part 1

Directions: Answer the questions below as you watch the video "Poultry Science SAE," available at https://vimeo.com/1148062258.

1. What FFA chapter does Ruby represent?

2. What state is Ruby from? Draw it here:

3. What is Ruby's SAE? Explain it in two or three sentences.

4. What are five responsibilities that Ruby has in the lab?
   -
   -
   -
   -
   -

5. What safety measures does Ruby have to take?

6. How did Ruby get started in her SAE?

7. How does Ruby's SAE affect the agriculture industry?

8. What has Ruby learned through her SAE?

9. According to Ruby, why should other students join FFA?

Name: _____

Part 2

Directions: You will research a real biomedical research project that is currently happening. This should be something scientists, universities, hospitals or government agencies are actively studying right now. Fill in the activity sheet below as you research.

Approved research topics could include:

- Disease detection and diagnostics
- Vaccine or immune system research
- Genetics and precision medicine
- Microbiome (gut health) research
- Environmental health and disease
- Biosecurity and disease prevention
- Technology (AI, data, imaging) in medicine

1. Research Topic Title:

2. Who is conducting this research? (University, hospital, research center, agency, etc.)

3. What problem is this research trying to solve?

4. What are scientists doing in this research? (What are they studying or testing?)

5. How is biotechnology used?

(Check all that apply and explain one.)

☐ Lab testing
☐ Genetic analysis
☐ Data collection or analysis
☐ Disease detection
☐ Medical technology
☐ Other: _____

Explanation:

6. Why does this research matter? (Health, agriculture, food safety, disease prevention, society, etc.)

7. Safety or ethics consideration (Example: PPE, biosecurity, data privacy, animal welfare, human safety)

Name: _____

Part 3

Directions: Your goal: You will create a 60- to 90-second educational video explaining this research to other students.

Video Must Include:

- The problem
- The research being done
- How biotechnology is involved
- Why it matters
- One career or SAE connection

VIDEO RUBRIC

Area	4 Points	3 Points	2 Points	1 Point
Content	All content is accurate. There are no factual errors.	Most of the content is accurate, but there is one piece of information that seems inaccurate.	The content is generally accurate, but one piece of information is clearly inaccurate.	Content is confusing or contains more than one factual error.
Clarity and Creativity	The video is easy to understand, and all elements are clearly written or spoken. Creativity was used.	The video is easy to understand, and most elements are clearly written or spoken. Some creativity was used.	The video is hard to understand with very quiet speaking or very hard to read writing. Little creativity was used.	The video is hard to understand, and one cannot follow the thought process. No creativity was used.
Narration and Preparedness	The video is clearly rehearsed and presented with no mistakes.	One mistake is heard in the video.	Two mistakes are heard in the video.	Three or more mistakes are heard in the video.
Time	Student stayed in the 60- to 90-second time frame.			Student was either under or over the allotted time frame.

Total: _____

Reflection Questions:

1. Why is research important to the agriculture industry?

2. How does biomedical research connect to the food system, even if it's not directly agricultural?

Name: _____

KEY: Lights, Camera, Science!

Aligned to the following standards:
FFA.PL-A1; FFA.PL-A3; FFA.PL-A4; FFA.PL-C2; FFA.PL-F5; FFA.PL-I5; FFA.PL-J1; FFA.PL-N1; CCSS.ELA-RI.9-10.4; CCSS.ELA-RI.11-12.7; CCSS.ELA-W.9-10.2; CCSS.ELA-W.9-10.4; CCSS.ELA-SL.9-10.2; CCSS.ELA-L.9-10.1; CCSS.ELA-L.9-10.2; CRP.02; CRP.04; CRP.06; CRP.08

Part 1

Directions: Answer the questions below as you watch the video "Poultry Science SAE," available at https://vimeo.com/1148062258.

1. What FFA chapter does Ruby represent?
   Har-Ber

2. What state is Ruby from? Draw it here:
   Arkansas

3. What is Ruby's SAE? Explain it in two or three sentences.
   She works at the University of Arkansas Immunology Lab. She helps conduct research using chickens. She also helps care for the chickens.

4. What are five responsibilities that Ruby has in the lab?

   - Feeding the chickens
   - Keeping the lab areas organized
   - Preparing blood smears
   - Inputting data
   - Organizing data

5. What safety measures does Ruby have to take?
   Wearing long pants and gloves

6. How did Ruby get started in her SAE?
   She joined the FFA poultry team and received third place. A professor at the university offered her a position.

7. How does Ruby's SAE affect the agriculture industry?
   By bringing valuable knowledge to the medical world
   Her research helps people with autoimmune diseases.

8. What has Ruby learned through her SAE?
   Putting yourself outside of your comfort zone is what is going to help you learn the most.

9. According to Ruby, why should other students join FFA?
   It is a great opportunity to learn more about yourself and your interests.

Name: _____

Part 2

Directions: You will research a real biomedical research project that is currently happening. This should be something scientists, universities, hospitals or government agencies are actively studying right now. Fill in the activity sheet below as you research.

Approved research topics could include:

- Disease detection and diagnostics
- Vaccine or immune system research
- Genetics and precision medicine
- Microbiome (gut health) research
- Environmental health and disease
- Biosecurity and disease prevention
- Technology (AI, data, imaging) in medicine

1. Research Topic Title: Answers will vary.

2. Who is conducting this research? (University, hospital, research center, agency, etc.)
   Answers will vary.

3. What problem is this research trying to solve?
   Answers will vary.

4. What are scientists doing in this research? (What are they studying or testing?)
   Answers will vary.

5. How is biotechnology used?

(Check all that apply and explain one.)

☐ Lab testing
☐ Genetic analysis
☐ Data collection or analysis
☐ Disease detection
☐ Medical technology
☐ Other: _____

Explanation: Answers will vary.

6. Why does this research matter? (Health, agriculture, food safety, disease prevention, society, etc.)
   Answers will vary.

7. Safety or ethics consideration (Example: PPE, biosecurity, data privacy, animal welfare, human safety)
   Answers will vary.

Name: _____

Part 3

Directions: Your goal: You will create a 60- to 90-second educational video explaining this research to other students.

Video Must Include:

- The problem
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Time	Student stayed in the 60- to 90-second time frame.			Student was either under or over the allotted time frame.

Total: _____

Reflection Questions:

1. Why is research important to the agriculture industry?

   Research is important to the agriculture industry because it helps farmers and producers find better ways to grow food, take care of animals and prevent problems like disease.

2. How does biomedical research connect to the food system, even if it's not directly agricultural?

   When scientists study diseases, vaccines or testing methods, it can protect livestock and poultry, which are part of our food supply. Even if the research focuses on human health, it can still improve food safety and help stop diseases from spreading through animals, workers and consumers.