

ASSESSMENT

INTRODUCTION

At the beginning of *Lesson One*, students engaged in a silent Chalk Talk regarding their personal understandings and beliefs about animal research. By beginning successive lessons with students adding to these conversations, students are able to observe how these understandings and beliefs change and/or grow through the unit as they add to the “conversation.”

At the culmination of the unit, students engage in a whole class discussion about what they observed and how their understandings and beliefs about animal research have or have not changed as a result of the activities. This provides teachers with a formative assessment of student understanding of animal research and the use of animals in and by society.

As a summative assessment, students will create an Action Plan outlining how they will exercise their personal position on the use of animals in and by society based on background information and ethical principles.

KEY CONCEPTS

- The biomedical research process is driven by the future benefit to humans and animals.
- The biomedical research process has evolved due to analytical reflection by society and scientists on accepted practices, and continues to do so as our knowledge expands.
- The biomedical research process requires active participation by scientists, consumers, voters, and research participants.

LEARNING OBJECTIVES

Students will know:

- Each individual can take personal actions to exercise their personal position on the use of animals in research.

Students will be able to:

- Identify why scientists use animals.
- Explain the history of animal research and how it has shaped current research guidelines/regulations.
- Identify how they can be a participant in the use of animals in/by society.

CLASS TIME

One to two class periods of 50 minutes each.

MATERIALS

Materials	Quantity
Student Handout 6.1— <i>Chalk Talk Debrief and Reflection Form</i>	1 per student
Student Handout 6.2— <i>My Animal Use Action Plan</i>	1 per student
Student Handout 6.3— <i>Animal Use Action Plan Rubric</i>	1 per student
Student Handout 6.4— <i>Animal Use Position Paper Rubric</i>	1 per student (optional)

FRAMING THE LESSON

The *Assessment* is intended for use after the five lessons in this curriculum have been delivered, as a formative and summative means of assessing students understanding. It is important to have students participate in the Chalk Talk in *Lesson One*, and re-visit the Chalk Talk in *Lessons Three* and *Five*, before doing these assessments. The Chalk Talk Debrief and Reflection activity provides a formative assessment of student learning, while the Action Plan activity provides a summative assessment of student learning.

TEACHER PREPARATION

- Make copies of Student Handouts.

PROCEDURE

ACTIVITY ONE: CHALK TALK DEBRIEF

(Formative Assessment)

1. Give students ten to fifteen minutes to go around the room and add to the Chalk Talk conversations on the posters.
2. Engage students in a Think-Write-Pair-Share activity using Student Handout 6.1—*Chalk Talk Debrief and Reflection Form*.
3. Provide five to ten minutes for students to silently reflect and write about the debrief questions on the handout.
4. Ask students to choose one question and discuss it with a partner. Be sure that each student is discussing a different question, so each pair will discuss two questions.
5. Engage students in a whole class conversation regarding the debrief questions. Be sure to discuss each question, as well as other questions that students might raise.
6. [**Note:** It is important to discuss that it is good that there are still different opinions among students. The goal was not to make all students think the same way, or to change any student's opinion. The goal was to ensure that students were able to justify their opinions with information learned through the activities!]

ACTIVITY TWO: STUDENT PERSONAL ACTION PLAN

(Summative Assessment)

7. Ask students to refer back to the stakeholders from *Lesson Five* and to reflect on which stakeholder they most identified with before engaging them in a short conversation about their reasons for choosing those stakeholders. Tell students that they will be using this conversation to help them determine their own position on animal use and write up an action plan.
8. Review Student Handout 6.2—*My Animal Use Action Plan* and Student Handout 6.3—*Animal Use Action Plan Rubric* with students. Explain to students that they will be creating a product (the type of product can be determined by you or you can leave it open to student choice) that meets the following criteria:
 - Explains the factors that go into conducting animal research.
 - Describes the history of animal research and how it is an evolving process.

- Identifies how you will exercise your personal participation in the use of animals in/by society and the choices you will make to support your view.
- Justifies your choice according to stakeholders, ethical principles, and knowledge gained from *Lessons One* through *Five*.

9. Lead the class in a group brainstorm of potential behaviors and actions that could be included in students' Action Plans. Also, brainstorm a list of possible products.

Student behaviors and actions could include:

- Requesting dog or cat food to donate to a local animal shelter in lieu of birthday presents.
- Supporting organizations that work towards scientifically valid alternatives to animal testing, such as the Center for Alternatives to Animal Testing (CAAT) through Johns Hopkins University.
- Eating as a vegetarian (or vegan) one day a week, or more often.
- Volunteering time at a local animal shelter or veterinarian's office.
- Continuing with current behavior after thoughtful analysis and justification.

For students seriously interested in becoming a vegetarian, make sure that they know a vegetarian diet should be balanced, just like any healthy diet, with a variety of foods from all of the food groups. Information on healthy vegetarian diets can be found here:

<http://www.youngwomenshealth.org/vegetarian.html>

10. It is helpful to review the rubric on Student Handout 6.3 with students at this time to help them visualize what will be expected of them before they begin to work on the assignment.

11. Instruct students to refer back to the previous lessons to help them fill in the first part of the Student Handout 6.2—*My Animal Use Action Plan*. You may choose to have students complete one section and then share with a partner before moving on to the next section.

12. Before allowing students to move on to the second section of the handout, review the S.M.A.R.T. goals with them, as outlined on Student Handout 6.2—*My Animal Use Action Plan*. It is also helpful to review the example as a class to clarify any questions.

13. Be sure to explain to students that the worksheets **are not** their final product. They are merely tools to get them started.

14. Allow class time for students to create their Action Plan products (or assign them as homework). Students can use Student Handout 6.3—*Animal Use Action Plan Rubric* as a guide to help them develop and refine their products.

EXTENSION

- Students can be challenged to develop, write, and revise a position paper that outlines their personal position on the use of animals in research. A position paper can be a quality artifact for students' portfolios. Students can use Student Handout 6.4—*Animal Use Position Paper Rubric* to guide them in the process of writing and revising a position paper. The rubric on this handout can also be used to assess the quality of students' position papers.
- Having students re-visit their Action Plans can be a powerful reflective experience. After one month—or another suitable length of time—ask students to re-read their Action Plans and write a brief reflection paper about how they have or have not been able to meet their plan. The paper should also include an analysis of how their current views do or do not match the views expressed in their Action Plans.



STUDENT HANDOUT 6.1

Chalk Talk Debrief and Reflection Form

Name _____ Date _____ Period _____

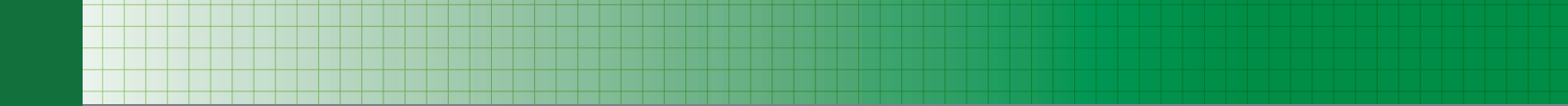
Over the past few days you and your classmates have engaged in a silent Chalk Talk conversation about the use of animals in and by our society. As you view the final posters, reflect on the conversations by answering the following questions:

What stood out most to you about the conversations?

Did you notice a trend in the evolution of thought over time?

What has your personal evolution of thought been since beginning this unit of study?

Has your personal opinion regarding animal research and/or the use of animals in and by our society changed? Why or why not?



STUDENT HANDOUT 6.2

My Animal Use Action Plan

Name _____ Date _____ Period _____

You will be creating a final product that meets the following criteria:

- Explains the factors that go into conducting animal research.
- Describes the history of animal research and how it is an evolving process.
- Identifies how you will exercise your personal participation in the use of animals in/by society and the choices you will make to support your view.
- Justifies your choice (even if it is to remain the same) according to stakeholders, ethical principles, and knowledge gained from the lessons in this unit.

Use the following worksheet to build your Action Plan. Remember – this is not your final product. You will be using this to develop a final product you will submit for assessment.

PART I

Animal Research	Why do researchers use animals?
	How do researchers determine what type of animal to use and how many to use?

Animal Research History	What events in history have led to the guidelines/regulations that we see now? (Be sure to consider all perspectives.)
	How are current events further shaping the way that animal research is conducted?

Your Position	Are there additional facts or background information that is important about the use of animals in/by society, regardless of personal position?
	What is your position on the use of animals in/by society?

Justification	What ethical principle(s) (outcomes-based, duties-based, benefits vs. harms) support your position? Why?
	What stakeholders in animal use would support your position and action? Why?
	What stakeholders in animal use would not support your position and action? Why?
	What are some alternative options to be considered?

PART II

Now that you have considered your position regarding animal use in/by society, it is important to set goals on how you will take action to support that position. To do this, it is important to set S.M.A.R.T. goals.

A “smart” goal fulfills the following criteria:

- **Specific:** The goal is straightforward and emphasizes what you will be doing.
- **Measurable:** There is a way to determine if the goal has been met.
- **Attainable:** The goal is something that can be met, *with effort*.
- **Relevant:** The goal is something that matters to you; it applies to your life.
- **Timely:** A timeframe is given to accomplish the goal.

Use the S.M.A.R.T. format to help you format two goals (short-term and long-term) about how you will exercise your personal participation in the use of animals in/by society.

	Specific	Measurable	Attainable	Relevant	Timely
Short-Term Goals (within three months)	What will you be doing?	How will you know you have accomplished your goal?	What will you need to do to meet your goal?	Why is this goal important to you?	When will you have this goal accomplished?
	How will you do it?				
Long-Term Goals (within two years)	What will you be doing?	How will you know that you have accomplished your goal?	What will you need to do to meet your goal?	Why is this goal important to you?	When will you have this goal accomplished?
	How will you do it?				
<i>Example</i>	<i>Donate food to the local animal shelter by setting up a collection at school.</i>	<i>I will have collected 100 cans or bags of dog/cat food.</i>	<i>Find a teacher to help, get boxes for collection, put up flyers to tell people about it.</i>	<i>There are a lot of animals in shelters that are not cared for but should be.</i>	<i>I will start the collection next month and will end it two weeks later.</i>
<i>Example goal in final format</i>	<i>To help support a local animal shelter in caring for animals, I will work with a teacher to set up a two-week dog and cat food drive at school to collect 100 cans/bags of food to be donated to the local animal shelter.</i>				

STUDENT HANDOUT 6.3

Animal Use Action Plan Rubric

Name _____ Date _____ Period _____

Part I

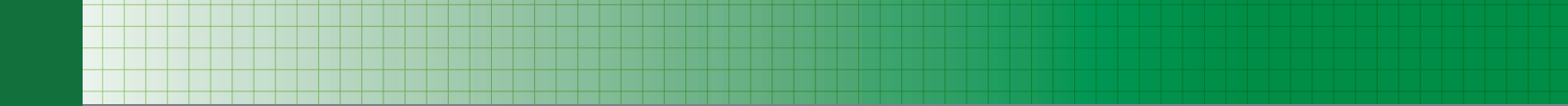
Dimension	Exemplary (5 points)	Proficient (3 Points)	Partially Proficient (1 Point)	Developing (0 Points)
Animal Research	<ul style="list-style-type: none"> Student includes substantial description of the reasons animals are used in research. Student identifies and discusses multiple (four or more) factors that researchers consider before, during, and after conducting animal research. Student discusses how these factors may allow for an increase or decrease in research. Student discusses the use of model organisms and the limitations of models. 	<ul style="list-style-type: none"> Student includes description of the reasons animals are used in research. Student identifies and discusses multiple (three to four) factors that researchers consider before, during, and after conducting animal research. Student mentions the use of model organisms. 	<ul style="list-style-type: none"> Student includes a basic description of the reasons animals are used in research. Student identifies but does not discuss two or fewer factors that researchers consider before, during, and after conducting animal research. 	<ul style="list-style-type: none"> Student only identifies animal research as an issue but does not offer a description of the reasons animals are used in research. Student identifies none or only one factor that researchers consider before, during, and after conducting animal research.
Animal Research History	<ul style="list-style-type: none"> Student identifies and substantially discusses multiple (three to four) events in history that have shaped animal research. Events in history come from multiple perspectives and student discusses how these multiple perspectives have shaped animal research history. Student identifies and substantially discusses how animal research is continually evolving. 	<ul style="list-style-type: none"> Student identifies and discusses multiple (three to four) events in history that have shaped animal research. Events in history come from multiple perspectives. Student identifies and discusses how animal research is continually evolving. 	<ul style="list-style-type: none"> Student identifies but does not discuss two events in history that have shaped animal research. Events in history come from multiple perspectives. Student identifies but does not discuss how animal research is continually evolving. 	<ul style="list-style-type: none"> Student identifies but does not discuss any or only one event in history that has shaped animal research. Events in history come from a single perspective. Student identifies but does not discuss how animal research is continually evolving.

Part I – continued

Dimension	Exemplary (5 points)	Proficient (3 Points)	Partially Proficient (1 Point)	Developing (0 Points)
Your Position	<ul style="list-style-type: none"> • Student identifies and substantially discusses three or more facts or background information important to the issue. • Student provides a clear, thoughtful, and fully developed personal position on 	<ul style="list-style-type: none"> • Student identifies and discusses three or more facts or background information important to the issue. • Student provides a personal position on the use of animals in/by society. 	<ul style="list-style-type: none"> • Student identifies and discusses one or two facts or background information important to the issue. • Student provides a personal position on the use of animals in/by society. 	<ul style="list-style-type: none"> • Student identifies but does not discuss facts or background information important to the issue. • Student position does not show a personal alignment.
Justification	<ul style="list-style-type: none"> • Student identifies and substantially explains the ethical principle(s) that support their position. • Student identifies and substantially explains which stakeholders would support their position. • Student identifies and substantially explains which stakeholders would not support their position. • Student identifies three or more reasonable and insightful alternative options. 	<ul style="list-style-type: none"> • Student identifies and explains the ethical principle(s) that support their position. • Student identifies and explains which stakeholders would support their position. • Student identifies and explains which stakeholders would not support their position. • Student identifies two reasonable and insightful alternative options. 	<ul style="list-style-type: none"> • Student identifies but does not explain the ethical principle(s) that support their position. • Student identifies but does not explain which stakeholders would support their position. • Student identifies but does not explain which stakeholders would not support their position. • Student identifies one reasonable and insightful alternative options. 	<ul style="list-style-type: none"> • Ethical principle(s) provided do not support student's position. • Stakeholders provided are not in alignment with student's position. • Alternative option provided is unreasonable and shows lack of analysis.

Part II

Dimension	Exemplary (5 points)	Proficient (3 Points)	Partially Proficient (1 Point)	Developing (0 Points)
Action Plan	<ul style="list-style-type: none"> • Student identifies three or more reasonable and insightful possible solutions/strategies to encourage change. • Student's action plan goals for change are S.M.A.R.T. goals (specific, measurable, attainable, relevant, timely). 	<ul style="list-style-type: none"> • Student identifies two reasonable and insightful possible solutions/strategies to encourage change. • Student's action plan goals for change are S.M.A.R.T. goals (specific, measurable, attainable, relevant, timely). 	<ul style="list-style-type: none"> • Student identifies one reasonable and insightful possible solution/strategy to encourage change. • Student's action plan goal for change is a S.M.A.R.T. goal (specific, measurable, attainable, relevant, timely). 	<ul style="list-style-type: none"> • Student identifies one possible solution/strategy to encourage change but it may not be reasonable or realistic. • Student's action plan goal for change is not a S.M.A.R.T. goal (specific, measurable, attainable, relevant, timely).
Justification of Action Plan	<ul style="list-style-type: none"> • Student identifies and discusses how their action plan goals support their clearly stated personal position on animal use. • Student supports their action plan goals using information from animal use history, current practice, and multiple ethical principles. • Student identifies and substantially discusses other stakeholders who would support their action plan goals. • Student identifies and substantially discusses other stakeholders who would not support their action plan goals. 	<ul style="list-style-type: none"> • Student identifies and discusses how their action plan goals support their clearly stated personal position on animal use. • Student supports their action plan goals using information from animal use history, current practice, and at least one ethical principle. • Student identifies and discusses other stakeholders who would support their action plan goals. • Student identifies and discusses other stakeholders who would not support their action plan goals. 	<ul style="list-style-type: none"> • Student identifies and discusses how their action plan goals support their personal position on animal use, but their position is not clearly stated. • Student supports their action plan goals using information from animal use history, current practice, or at least one ethical principle. • Student identifies but does not discuss other stakeholders who would support their action plan goals. • Student identifies but does not discuss other stakeholders who would not support their action plan goals. 	<ul style="list-style-type: none"> • Student identifies but does not discuss how their action plan goals support their personal position on animal use, but their position is not stated. • Student does not support their action plan goals using information from animal use history, current practice, or any ethical principles. • Student identifies but does not discuss other stakeholders who would support or stakeholders who would not support their action plan goals.



STUDENT HANDOUT 6.3

Animal Use Position Paper Rubric

Name _____ Date _____ Period _____

Dimension		Exemplary (5 points)	Proficient (3 Points)	Partially Proficient (1 Point)	Developing (0 Points)
Accuracy of models for complex systems COMPLEX MODELS	Animals in Research	<ul style="list-style-type: none"> Provides a detailed and accurate description of the reasons animals are used in research. Identifies and discusses multiple (three to four) factors that researchers consider before, during, and after conducting animal research. 	<ul style="list-style-type: none"> Provides a basic but accurate description of the reasons animals are used in research. Identifies but does not discuss multiple (three to four) factors that researchers consider before, during, and after conducting animal research. 	<ul style="list-style-type: none"> Provides an inaccurate description of the reasons animals are used in research. Identifies few (one or two) factors that researchers consider before, during, and after conducting animal research. 	<ul style="list-style-type: none"> Provides inaccurate description of the reasons animals are used in research. Provides inaccurate facts that researchers consider related to animal research.
	History of Animal Research	<ul style="list-style-type: none"> Identifies and discusses multiple (three to four) events in history that have shaped animal research. Events in history come from multiple perspectives. Identifies and discusses how animal research is continually evolving. 	<ul style="list-style-type: none"> Identifies but does not discuss multiple (three to four) events in history that have shaped animal research. Events in history come from multiple perspectives. Identifies but does not discuss how animal research is continually evolving. 	<ul style="list-style-type: none"> Identifies but does not discuss few (one or two) events in history that have shaped animal research. Events in history come from a single perspective. Identifies but does not discuss how animal research is continually evolving. 	<ul style="list-style-type: none"> Provides inaccurate historical events.
	Models for Complex Systems	<ul style="list-style-type: none"> Identifies and discusses how animal research history and current practice do or do not make animals accurate models for complex systems. 	<ul style="list-style-type: none"> Identifies but does not discuss how animal research history and current practice do or do not make animals accurate models for complex systems. 	<ul style="list-style-type: none"> Does not identify how animal research history and current practices do or do not make animals accurate models for complex systems. 	<ul style="list-style-type: none"> Does not identify how animal research history and current practices do or do not make animals accurate models for complex systems.

HANDOUT

Dimension		Exemplary (5 points)	Proficient (3 Points)	Partially Proficient (1 Point)	Developing (0 Points)
CRITICAL ISSUES Real world application	Your Position	<ul style="list-style-type: none"> Identifies a clear position on the guiding question and its application to society. Clearly supports position using information from animal use history, current practice, and at least one ethical principle. Identifies and discusses the pros and cons of their position. 	<ul style="list-style-type: none"> Identifies a clear position on the guiding question and its application to society. Supports position using information from animal use history, current practice, or at least one ethical principle. Identifies but does not discuss the pros and cons of their position. 	<ul style="list-style-type: none"> Does not identify a clear position on the guiding question and its application to society. Does not support position using information from animal use history, current practice, or any ethical principles. Identifies but does not discuss the pros and cons of their position. 	<ul style="list-style-type: none"> Provided position is not relevant to the guiding question and its applications to society. Position is not supported with evidence. Pros and cons of the position are not identified.
	Stakeholders	<ul style="list-style-type: none"> Identifies and discusses why other stakeholders would agree or disagree. 	<ul style="list-style-type: none"> Identifies but does not discuss why other stakeholders would agree or disagree. 	<ul style="list-style-type: none"> Identifies but does not discuss why other stakeholders would agree or disagree. 	<ul style="list-style-type: none"> Stakeholders are not identified.

Dimension		Exemplary (5 points)	Proficient (3 Points)	Partially Proficient (1 Point)	Developing (0 Points)
WRITING & COMMUNICATION	Ideas & Content	<ul style="list-style-type: none"> The writing is clear, focused and interesting. It holds the reader's attention. Main ideas stand out and are developed by supporting details suitable to audience and purpose. 	<ul style="list-style-type: none"> The writing is clear and focused. The reader can easily understand the main ideas. Support is present, although it may be limited or rather general. 	<ul style="list-style-type: none"> The reader can understand the main ideas, although they may be overly broad or simplistic, and the results may not be effective. Supporting detail is often limited, insubstantial, overly general, or occasionally slightly off-topic. 	<ul style="list-style-type: none"> The writing lacks a central idea or purpose.
	Organization	<ul style="list-style-type: none"> The organization enhances the central idea(s) and its development. The order and structure are strong and move the reader through the text. 	<ul style="list-style-type: none"> Organization is clear and coherent. Order and structure are present, but may seem formulaic. 	<ul style="list-style-type: none"> An attempt has been made to organize the writing; however, the overall structure is inconsistent or skeletal. 	<ul style="list-style-type: none"> The writing lacks coherence; organization seems haphazard and disjointed. Even after rereading, the reader remains confused.
	Voice	<ul style="list-style-type: none"> The writer has chosen a voice appropriate for the topic, purpose, and audience. The writer seems committed to the topic, and there is a sense of "writing to be read." The writing is expressive, engaging, or sincere. 	<ul style="list-style-type: none"> The writer's commitment to the topic seems inconsistent. A sense of the writer may emerge at times. 	<ul style="list-style-type: none"> The writing provides little sense of involvement or commitment. There is no evidence that the writer has chosen a suitable voice. 	<ul style="list-style-type: none"> The writing seems to lack a sense of involvement or commitment.
	Word Choice	<ul style="list-style-type: none"> Words convey the intended message in an interesting, precise, and natural way appropriate to audience and purpose. The writer employs a broad range of words that have been carefully chosen and thoughtfully placed for impact. 	<ul style="list-style-type: none"> Words effectively convey the intended message. The writer employs a variety of words that are functional and appropriate to audience and purpose. 	<ul style="list-style-type: none"> Language is quite ordinary, lacking interest and variety, or may be inappropriate to audience and purpose. The writer doesn't employ a variety of words, producing a sort of "generic" paper filled with familiar words and phrases. 	<ul style="list-style-type: none"> The writing shows an extremely limited vocabulary or is so filled with misuse of words that the meaning is obscured. Only the most general kind of message is communicated because of vague or imprecise language.

Writing scoring guide adapted from "Salem-Keizer Scoring Guide: Communicate through Writing."
<http://www.aforcemorepowerful.org/resources/docs/lesson1/writing-scoring-guide.xls>.

Biology scoring guide provided by Dawn Brown, Science Teacher, Career Academy at Truman High School, Tacoma, Washington.

