

Focus Group Discussion Guide
DRAFT AS OF 12-5-16

2016 ELI/New Harvest

INTRODUCTION AND WARM UP (5 minutes)

- Explain ground rules
- Let's go around the room and have everyone introduce themselves. Please tell me your first name, if you work outside the home and what you do, who else lives in your household, and what you like to do in your spare time.

1) Advancements in science (5 minutes)

What, if anything, do you recall hearing recently about any scientific or technological innovations or developments in the fields of agriculture or food?

Overall, are you more hopeful and optimistic about the application of scientific and technological innovations in the fields of agriculture and food, or are you more concerned and pessimistic? Why? What makes you feel that way?

2) Awareness of Cellular Agriculture/Cultured Meat (15 minutes)

(HANDOUT A) I would like to begin by having you write what comes to mind when you hear some terms.

First, under #1 on Handout A, please write down any words, images, or phrases that comes to mind when you hear the term "cellular agriculture" – whether you know what "cellular agriculture" is or not.

Second, under #2 on Handout A, please write down any words, images, or phrases that comes to mind when you hear the term "cultured meat" – whether you know what "cultured meat" is or not.

HAVE THEM COMPLETE HANDOUT AND LIGHTNING ROUND - WORDS AND PHRASES AND THEN DISCUSS.

- Have you ever heard of “cellular agriculture”? If so, what have you heard?
 - What images, thoughts, and phrases come to mind when you hear it?
 - Do positive or negative images come to mind? Tell me about them.
 - Do you have any sense of what cellular agriculture is?
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- Have you ever heard of “cultured meat”? If so, what have you heard?
 - What images, thoughts, and phrases come to mind when you hear it?
 - Do positive or negative images come to mind? Tell me about them.
 - Do you have any sense of what cultured meat is?

3) Introduction to Cellular Agriculture (20 minutes)

(HANDOUT B) This handout contains some background on cellular agriculture. Please read it, write down your reactions, and then we will discuss it.

WHAT IS CELLULAR AGRICULTURE?

Cellular agriculture is the production of agricultural products from cell cultures. Cellular agriculture allows the production of milk, eggs, meat, leather, fur, and other animal products from cell cultures rather than from animals. Cellular agriculture is possible by applying advances in engineering and biology to grow animal products in a lab.

Some animal products can be made without living material. For instance, milk can be made by inserting a cow’s genetic code into a microbe like yeast or bacteria, which then makes milk protein.

Other animal products can be made from living or once-living cells outside the body in a process called tissue engineering. Cells from a particular animal tissue are assembled on a scaffold to grow on with food for the cells to feed on while they grow. For example, “cultured beef” can be grown from a cell culture in a lab.

Tissue engineering is a relatively new scientific pursuit, with a focus on clinical applications such as growing skin for burn victims or organs for patients requiring organ transplantation. The focus is on making a tissue engineered organ that can function in a living person. The science behind growing tissue for an organ transplant is similar to growing muscle tissue for food, though the focus in producing food products is on nutritional value, taste, and mouthfeel.

- What is your reaction to what you just read about cellular agriculture?

- Overall, do you feel more positive, more negative, or neutral about it? Why? What specifically makes you feel that way?
- Do you recall seeing or hearing anything about this? Do you recall hearing about hamburger meat grown in a lab?
- What do you think are the benefits of cellular agriculture? Why would this development be a good thing? What, if anything, makes you feel hopeful and excited?
- What do you think are the drawbacks or risks of cellular agriculture? What, if anything, concerns you?
- Please look at HANDOUT B. Is there anything described here that you think is confusing or unclear?
- If you could talk to anyone about cellular agriculture to help inform your opinions about it, who would you want to hear from? Whose opinion matters and you would trust?
- How far off do you think we are from cultured meat being readily available for purchase at the grocery store or in major national restaurant chains? Is this something you think will happen in 20 years or that it will happen in the next few years?
- Another term for cultured meat is “clean meat.” How do you feel about calling this “clean meat” vs. “cultured meat”? Does one seem more accurate or just better than the other? Which one and why?
- Ok, now given what you know about it now, please WRITE DOWN AT THE BOTTOM OF HANDOUT B whether you think the benefits of cellular agriculture outweigh the risks, the risks outweigh the benefits, or you think they are about equal.
 - What did you write down, and why do you feel that way?
- If you think about the types of animal products that can be made using cellular agriculture, are there some that you find more acceptable than others? What about things you eat vs. other agricultural products you do not eat (e.g. leather and fur)? What about meat (beef, chicken, pork) vs. milk, eggs, or other food products?
- [IF DISCUSSION TURNS TO GMOs:] Cellular agriculture products are not GMOs. We mentioned earlier a milk protein produced from a genetically modified microbe. In this case, the milk is not genetically modified (because milk does not contain genes), but the microbe used to create the milk is. This microbe does not exist in the milk product that a consumer drinks. For meat produced in cell culture, no genetic engineering is required. Cells want to divide, and muscle cells are simply allowed to divide outside of an animal instead of inside. No genes need to be manipulated for this process to take place.

4) Cellular Agriculture Applications (15 minutes)

(HANDOUT C) This handout lists some specific applications for cellular agriculture – that is either how it has been or could be used. Please read through them. Below each one, please write down a few words, a phrase, or sentence or two about how the applications make you feel. I don't want a description of what it is, but rather please write down what emotions the information conjures up or how it makes you feel. Are these applications hopeful, worrisome, or something else, and why? After you write you're your thoughts, we'll discuss them.

1. *For the first 60 years of its use as a treatment for patients with diabetes, animal insulin was collected from the ground up pancreases of pigs and cattle. Today, it is made by microbes who produce the human form of insulin. In 1978, scientists inserted the gene carrying the blueprints for human insulin into a bacteria, so the bacteria could make insulin identical to the insulin that humans make. Today, the vast majority of insulin is made this way, making the insulin supply safer, more consistent, and identical to the insulin humans produce.*
 2. *Rennet is a mixture of enzymes that turns milk into curds and whey in the cheesemaking process. Traditionally, rennet is extracted from the inner lining of the fourth stomach of calves. In 1990, the FDA approved a bacteria that had been genetically engineered to produce rennet, making it the first genetically engineered product for food. Today, the majority of cheesemaking uses rennet enzymes from genetically engineered bacteria, fungi, or yeasts.*
 3. *Milk is usually made by mother cows kept in a lactating state in an industrial setting. Instead, we can make the exact same milk by brewing it, using a yeast culture that consumes simple sugars to make milk proteins. The yeast were altered by inserting in them the gene carrying the blueprints for milk protein. The yeast then makes milk protein identical to the protein cows make.*
 4. *In 2013, the first hamburger was made in a lab using cellular agriculture. First, stem cells, which have the power to turn into any other cell, were taken from a cow's muscle. Those stem cells were then grown into muscle fibers in the lab for six weeks to create cultured beef that was formed into a hamburger and cooked.*
- Overall, do these applications strike you as positive, negative, or neutral? What specifically makes you feel that way?
 - Do you feel differently about some of these uses of cellular agriculture versus others listed here? Please explain.
 - Are you more/less concerned about some of these uses of cellular agriculture compared to others?
 - Which ones? Why? What specifically are you thinking about?

- Ok, now given what you have heard, please WRITE DOWN AT THE BOTTOM OF HANDOUT B whether you think the benefits of cellular agriculture outweigh the risks, the risks outweigh the benefits, or you think they are about equal.
- Does anything here change your views on the benefits or risks of cellular agriculture? If so, what?

5) Reaction to Meat Culture Video (10 minutes)

Now, we would like to show you an animated video that describes cultured meat in more detail. As you watch them, please feel free to write down any notes. Once you have watched it, I will give you a minute to write down your thoughts and reactions.

SHOW VIDEO: Meat/Culture <https://vimeo.com/78403188>

- After watching this, what is your reaction?
- Did anything change your views on the benefits or risks of cellular agriculture? If so, what?

6) Benefits of Cellular Agriculture (20 minutes)

(HANDOUT D) Now I would like you to read some statements people have given about why encouraging further research in cellular agriculture is a GOOD thing. After you read them, please CIRCLE the two reasons that you think are the most important reasons to encourage the development of cellular agriculture.

1. *It is estimated that global demand for animal products will increase by 70% in 2050, to feed 9.6 billion people. Cellular agriculture has the potential to revolutionize the supply chain of animal products to provide affordable, safe, and sustainable food to meet the world's growing appetite for meat and other animal products.*
2. *The use of cellular agriculture to produce cultured meat would dramatically reduce the amount of land and water required to produce meat from livestock today, and it would produce less polluting greenhouse-gas emissions than is produced by cows, pigs, and poultry today.*
3. *Because cultured meats would be produced in sterile environments, cellular agriculture products would offer a safer, purer product than their traditional counterparts. They would be free of dangerous bacteria that the Centers for Disease Control and Prevention estimates are the most common sources of fatal food-related infections caused by the contamination of conventional meat.*

4. *The use of antibiotics in food-producing animals — to fight disease and help the animals grow faster — has been identified as a source of antibiotic-resistant bacteria that is dangerous to humans, and the FDA has reported steady increases in the use of antibiotics in livestock in recent years. Because cultured meats would be produced in sterile environments, these antibiotics would not need to be used.*
 5. *Because cellular agriculture involves producing food products in safe, sterile, controlled conditions, it can yield a more consistent supply than traditional agriculture which is greatly affected by drought, flooding, and other weather conditions.*
 6. *Cellular agriculture provides the ability to design and tune what is being made. For instance, it could be used to make meat with fewer saturated fats and more unsaturated fats, or to make milk without lactose, or eggs without cholesterol.*
 7. *In 2007, it is estimated that more than 56 billion land animals were raised and slaughtered for food, and a large proportion of these animals are raised in very poor welfare conditions. Cellular agriculture enables the production of meats without harming animals.*
 8. *Cellular agriculture enables the production of the food products that are in demand without wasting those parts that are left unused. For example, rather than raising and fattening live chickens for slaughter, only to discard the many parts of chickens that are not eaten or in demand, cellular agriculture will enable the production of just chicken meat itself without the other byproducts.*
 9. *Many recent studies indicate that people have developed allergies and food intolerances by creating an overly antiseptic environment for ourselves. We run the same risk with cultured meat that is made in a lab rather than through natural symbiosis.*
- Overall, how do these statements impact your feelings about cellular agriculture?
 - Which do you think are the most important or compelling reasons to encourage the development of cellular agriculture?
 - Which, if any, of these statements do you think are weak or do not effectively make the case for developing cellular agriculture?
 - Ok, now given what you have heard, please WRITE DOWN AT THE BOTTOM OF HANDOUT B whether you think the benefits of cellular agriculture outweigh the risks, the risks outweigh the benefits, or you think they are about equal.

7) Risks of Cellular Agriculture (10 minutes)

(HANDOUT E) Now I would like you to read some statements people have given about why encouraging further research in cellular agriculture is a BAD thing. After you read them, please CIRCLE the two reasons that you think are the most important reasons to DIScourage the development of cellular agriculture.

1. *Animal products that do not come from livestock raise moral, ethical or religious concerns.*
 2. *Animal products grown in a petri dish might behave in unpredictable and harmful ways that could harm people's health.*
 3. *The development of cellular agriculture could put traditional agriculture out of business, potentially harming our economy and leading to job losses Americans who work on farms.*
 4. *Animal products grown in a lab will be less natural than food that comes from livestock.*
 5. *Animal products grown in a lab will not have the same taste as those that are traditionally grown.*
 6. *Animal products grown in a lab will not have the same nutritional value as those that are traditionally grown.*
- Overall, how do these statements impact your feelings about cellular agriculture?
 - Which do you think are the most important or compelling reasons to DIScourage the development of cellular agriculture?
 - Which, if any, of these statements do you think are weak or do not effectively make the case against developing cellular agriculture?
 - Ok, now given what you have heard, please WRITE DOWN AT THE BOTTOM OF HANDOUT B whether you think the benefits of cellular agriculture outweigh the risks, the risks outweigh the benefits, or you think they are about equal?

8) Potential regulatory oversight (15 minutes)

- Who do you think is currently involved in the regulation or oversight of the development of cellular agriculture?
- Who do you think should be involved in these efforts to regulate or provide oversight of developments in this area? (**PROBE:** Federal or state government agencies? Companies? Industry groups? Universities? Nonprofit watchdog or consumer groups?)
- Who do you have the most confidence in, in terms of managing the potential risks associated with advancements and developments in cellular agriculture?
- (**HANDOUT F**) Listed on this next handout are several entities that could conceivably play a part in regulating advancements in cellular agriculture. Using a scale from 0 to 10, I'd like you to rate the degree to which you have confidence in each entity being given primary responsibility for determining and managing potential risks related to cellular agriculture. "0" means you have no confidence in the entity and "10" means you have complete confidence in the entity.

		Score (0-10)
A	<i>The U.S. Department of Agriculture</i>	
B	<i>The U.S. Food and Drug Administration</i>	
C	<i>Companies that are developing foods using cultural agriculture</i>	
D	<i>University scientists and researchers involved in developing advances in cultural agriculture</i>	
E	<i>Scientific bodies or panels such as the National Science Foundation</i>	
F	<i>NGOs and Consumer Watchdog groups such as Friends of the Earth, Union of Concerned Scientists or Consumers Union</i>	
G	<i>The U.S. Congress</i>	
H	<i>Popular or renowned chefs</i>	

CANVAS FOR RATINGS & DISCUSS.

FOR EACH AGENCY ASK:

Are there specific examples of past events that helped you in rating this entity?
What are those events and why did they influence your rating?

What are some of the pros/cons to giving regulatory responsibility to this entity?

FED GOV'T AGENCIES ASK:

From what you know, do you think the federal government has the resources and capacity to keep up with new technologies, such as cellular agriculture, that are developing and evolving so rapidly?

Without guidance from the experts involved in research and development in cellular agriculture, do you think the government can develop an effective regulatory structure that will protect the public from risks and potential harm?

FOR COMPANIES ASK:

What trust do you place in the steps that private companies would take to ensure the safety and quality of their products?

Without guidance from the government, do you think those involved in advancements in cellular agriculture can regulate themselves and ensure the safety and quality of the products they produce?

AFTER DISCUSSED EACH AGENCY ASK:

Do any of these entities bring something to the table that the others do not?

What about the prospect of creating a new body or federal agency to oversee all this?

9. WRAP UP (5 minutes)

- After everything we've talked about here tonight, where do you end up on the risks vs. the benefits of cellular agriculture.
- Before you leave, share with me a word or phrase that describes how you're feeling about everything we've discussed this evening.

Thank and dismiss.