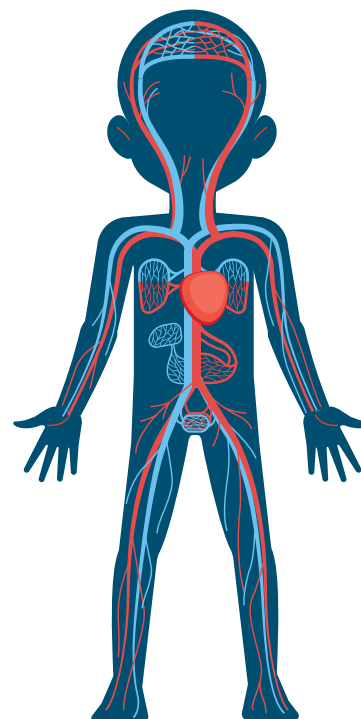
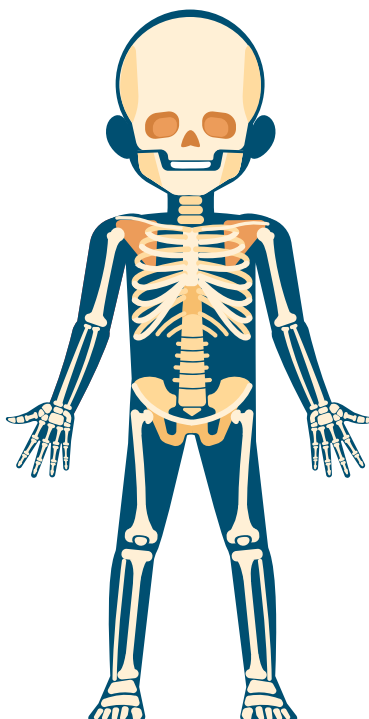
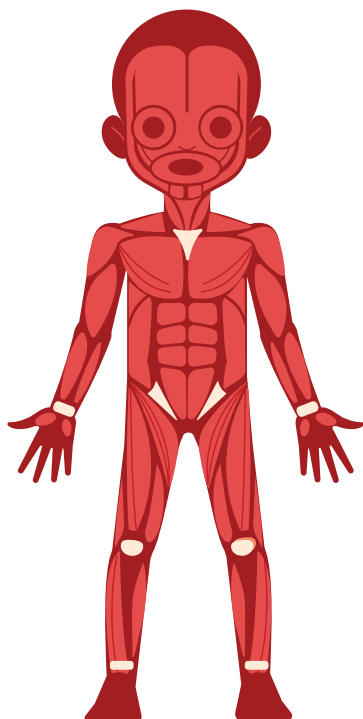


# To Donate or Not to Donate

Grade Levels: 8-12

Duration: 60 min

Students research and develop an argument for whether or not to donate their bodies to a future Body Worlds exhibition.



## Outline

Frame the Activity	5 min total
Activate Prior Knowledge	5 min
Activity	55 min total
Introduce the Activity	5 min
Research and Discuss	25 min
Develop Your Argument	10 min
Make Your Argument	10 min
Debrief	5 min

**Grade Levels:** 8-12

**Duration:** 60 min

### Concepts/Skills

Research, arguing one side of an issue, plastination, science ethics, debate

### Objectives

Students will:

- Research the pros and cons of donating a body to exhibitions like Body Worlds Decoded.
- Develop a pro or con argument.
- Share their argument with an opposing team.
- Reflect on how their opinions shifted throughout research and discussion.



**Lab Connection:**  
[Chemistry of Plastination](#)

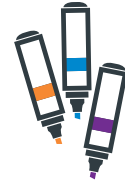


## Materials and Preparation

### Materials

Each team will need:

- Devices to conduct research
- Note taking tools (e.g., writing utensils, paper, chart paper and markers, or digital documents)
- Materials and resources to develop and present their argument



### Preparation

1. Be prepared for students to work in groups of 2-3.
  - Student groups will be determined by whether they choose to be pro or con donating their bodies.
2. Have devices available for each group to use for research.
  - Teams will also need a place to take notes such as a digital document, scratch paper, or even chart paper and sticky notes.
3. Determine the format and tools students will use to create their arguments.
  - *Options include:* written papers, slides, chart paper, or posters.
4. It may be useful to familiarize yourself with the Body Worlds exhibition and the different pros and cons that might come up in the student research and discussion.



### Body and Organ Donation

Body Worlds Decoded at The Tech Interactive showcases the scientific marvel of plastination. There are displays not only of organs, nerves, and muscles, but also whole-body specimens. This type of body donation can be invaluable for scientific communities to study and research the body. There are many other ways that one could choose to support the scientific community after their death. Familiarize yourself with different types of body or organ donation in order to support student research during the activity.

- ["Body Worlds Decoded Exhibit,"](#) The Tech Interactive website.
- ["Body Donation for Plastination,"](#) Body Donation website.
- ["Organ Donation,"](#) Organ Donor government website.



### Keep in Mind

There are many different reasons an individual might choose to donate or not to donate their body. Students may have strong personal, cultural, or religious experiences that impact their perception of this topic. Provide a safe space for students to share these experiences. If needed, remind students that when sharing opinions there is no "right answer."

## Frame the Activity

### Activate Prior Knowledge (5 min)

1. Begin by reviewing the purpose of the Body Worlds Exhibition at The Tech Interactive.
2. Encourage students to think about the value of the exhibition. Some discussion questions or prompts include:
  - *What are the benefits of exhibitions like Body Worlds Decoded?*
  - *Why do you think the people displayed in the exhibition donated their bodies for this purpose?*
  - *Do you think that the donors knew all about the entire plastination process before deciding to donate? Do you think knowing about the process would change their minds?*



### Lab Connection

This lesson builds on the understanding of Body Worlds Decoded that students explore in the [“Chemistry of Plastination Lab,”](#) The Tech Interactive website.

- If students attended the lab or visited The Tech Interactive and saw the Body Worlds Exhibition, have them discuss what they saw.
- Have them reflect on whether their assumptions and impressions of the exhibition changed after visiting.

## Activity

### Introduce the Activity (5 min)

1. After some initial discussion, let students know that they will be participating in small group discussions. They will be sharing their opinions on whether or not they would be willing or interested in donating their body to Body Worlds for plastination.
2. Provide students with the Guiding Question:

*Would you consider donating your body to an exhibition like Body Worlds Decoded after your death? Why or why not?*

3. Let students know their group will be researching a topic on or related to plastination. Each group will need to use evidence from their research to develop at least three supporting points for why they would choose to donate or not.
  - **Example:** Supporting points for pro and con arguments may include:
    - Pro: Plastinates are used to help first and second-year medical students understand the human body.
    - Con: I'd rather become an organ transplant donor than donate my body to a museum exhibit.
4. Let students know the format and tools they will be using to share their argument with each other. (See [Preparation](#) for more information on some options.)
5. Devise a quick system for determining which students are currently pro or con donating their bodies.
  - **Example:** Have students stand up and go to a different side of the room depending on whether they would say yes or no.

- Place students in groups of 2-3 based on their opinions.
  - Let them know that opinions can change, and they may find after conducting research that their impressions have shifted. If this happens, groups can be reformed for final arguments.



*Optional:* Have students share their opinions before visiting Body Worlds and then check-in afterwards and see if their impressions and ideas have changed.

## Research and Discuss (25 min)

- Set each group up with a device for conducting research.
  - Provide them with tools for taking notes such as chart paper and sticky notes or digital documents.
- While students research and discuss, travel around the room and ask open-ended questions.
  - What position did the members of your group take?*
  - What do you see in your research that supports your opinion?*
  - Did you see anything that altered or changed your perspective?*
- If needed, remind students that this is time for gathering information and discussing how it could potentially support their argument. Next, they will get time for developing their argument.



## Resources for Student Research

Students may have encountered inaccurate information about plastination in the past. Have them use best practices as they research the topic including checking and citing the source of any facts that they gather. The following links are resources that students can use to begin their research and help them form opinions on whether or not they would consider donating their bodies to Body Worlds.

### Ethics of posthumous donation:

- Bin, Paola et al. [“Plastination: ethical and medico-legal considerations.”](#) Open medicine, National Library of Medicine website.
- [“Origins of Exhibited Cadavers Questioned.”](#) National Public Radio website.
- Dalal, Aparna R. [“Philosophy of organ donation: Review of ethical facets.”](#) World journal of transplantation, National Library of Medicine website.
- [“9/11 rescue worker chooses to have her body preserved after death.”](#) WHYY Public Broadcasting Service website.

### Plastination as an educational tool:

- Riederer, Beat M. [“Plastination and its importance in teaching anatomy. Critical points for long-term preservation of human tissue.”](#) Journal of Anatomy, National Library of Medicine website.
- Dibal NI, Garba SH, Jacks TW. [“Plastinates: Possible tool for medical education in the near future: mini review.”](#) Research and Development in Medical Education, Semantics Scholar website.

### The donation process and posthumous donation:

- [“Donate Your Body to Science.”](#) Physicians Committee for Responsible Medicine website.
- [“Body Donation for Plastination.”](#) Body Worlds website.
- [“Donating your body to science in California.”](#) Science Care website.
- [“What Happens to your Body When it is Donated to Science?”](#) Health Line website.

## Develop Your Argument (10 min)

1. After the research time has ended, students should use what they discovered to develop their three supportive points.
  - Each point should be a few sentences or less so it can be presented to another team easily.
2. Check in with the class to see if there are any differing opinions within groups. If needed, rearrange teams to match students who share the same opinion.
  - If students changed their opinions, have them include this in their argument.
3. Let learners know that they will be paired with another group to present their arguments to each other.
  - Pair up opposing teams as much as possible.
  - If teams are unevenly distributed, teams with the same argument can be paired. They can compare their arguments and see if they found different information during the research phase.

## Make Your Argument (10 min)

1. Have each team share their argument with an opposing team following the structure below.

	Team Pro	Team Con
1 min	Present their argument.	Silently listen and take notes.
1 min	Silently listen and take notes.	Present their argument.
2 min	As a team, discuss a response to the argument or questions to ask.	As a team, discuss a response to the argument or questions to ask.
6 min	Discuss both arguments with the other team.	

2. Keep the sharing simple and focused. Before beginning discussion groups, review the guidelines for discussion.



### Sample Guidelines for Discussion:

Use these guidelines as a starting point and add any other discussion rules of your own.

- Be respectful of other people's opinions and reasoning.
- Only one person speaks at a time.
- There will be plenty of overlapping opinions; however, everyone will still need to engage in the discussion.



## Debrief (5 min)

1. After group discussion time is over, poll the class to see where everyone stands on the issue.
  - Ask if anyone else's discussion swayed their opinions on the matter.
  - Have teams share any arguments or supporting points that stood out to them.
2. Have students reflect on what they learned from the argument and research process, the concepts, and real-world application.
3. Lead a short debrief with some of these questions.
  - *What was it like to take a stance on a controversial topic?*
  - *How did your argument and opinion change throughout this process?*
    - *How was your perspective on the issue affected by research? By discussion?*
  - *Do you think debates can help people learn about topics in general?*
    - *Did you feel you benefitted by not only researching but also hearing another argument?*

### Standards Connections

#### Next Generation Science Standards

Grades	Standard
<b>Science and Engineering Practices</b>	Engaging in Argument from Evidence Obtaining, Evaluating, and Communicating Information
<b>Cross Cutting Concepts</b>	Cause and Effect

#### Common Core State Standards

Grades	Standard	Description
8-12	SL.1	[Initiate and participate] effectively in a range of collaborative discussions (one-on-one, in groups, and teacher-led) with diverse partners on grades 8-12 topics, texts, and issues, building on others' ideas and expressing their own clearly [and persuasively].
8	SL.4	Present claims and findings, emphasizing salient points in a focused, coherent manner with relevant evidence, sound valid reasoning, and well-chosen details; use appropriate eye contact, adequate volume, and clear pronunciation.
9-12	SL.4	Present information, findings, and supporting evidence, conveying a clear and [distinct perspective], such that listeners can follow the line of reasoning, [alternative or opposing perspectives are addressed], and the organization, development, substance, and style are appropriate to purpose, audience, and a [range of formal and informal] tasks.

#### Vocabulary

- **Consent:** Permission for something to happen or agreement to do something
- **Opinion:** A view or judgment formed about something, not necessarily based on fact or knowledge
- **Plastination:** A chemical preservation process of human remains that replaces all fat and fluids within the body with flexible polymer (plastic)
- **Posthumous:** Occurring, awarded, or appearing after the death of the originator