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| **Lesson Title : Human Body Systems** | **Unit #:**  **1** | **Lesson #:**  **1** | **Activity #:**  **3** |
| **Activity Title: Essential Questions to Challenge** |

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| **Estimated Lesson Duration:** | **4 days** |
| **Estimated Activity Duration:** | **1 day** |

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| **Setting:** | **Rm 2610, Scott High School** |

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| **Activity Objectives:** |

Students will be able to:

1. Give examples of health-related careers,
2. focus an application of learning the components of the human body to organ donation, and
3. begin to use what they know to create a new organ donation system.

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| **Activity Guiding Questions:** |

* What are careers related to the human body, specifically organ transplantation?
* Who gets organ transplants?
* What is important to know about the organ transplant process?

| **Next Generation Science Standards (NGSS)** | |
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| **Science and Engineering Practices (Check all that apply)** | **Crosscutting Concepts (Check all that apply)** |
| Asking questions (for science) and defining problems (for engineering) | Patterns |
| Developing and using models | Cause and effect |
| Planning and carrying out investigations | Scale, proportion, and quantity |
| Analyzing and interpreting data | Systems and system models |
| Using mathematics and computational thinking | Energy and matter: Flows, cycles, and conservation |
| Constructing explanations (for science) and designing solutions (for engineering) | Structure and function. |
| Engaging in argument from evidence | Stability and change. |
| Obtaining, evaluating, and communicating information |  |

| **Ohio’s Learning Standards for Science (OLS)** |
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| **Expectations for Learning - Cognitive Demands (Check all that apply)** |
| Designing Technological/Engineering Solutions Using Science concepts **(T)** |
| Demonstrating Science Knowledge **(D)** |
| Interpreting and Communicating Science Concepts **(C)** |
| Recalling Accurate Science **(R)** |

| **Ohio’s Learning Standards for Math (OLS) and/or**  **Common Core State Standards -- Mathematics (CCSS)** | |
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| **Standards for Mathematical Practice (Check all that apply)** | |
| Make sense of problems and persevere in solving them | Useappropriate tools strategically |
| Reason abstractly and quantitatively | Attendto precision |
| Construct viable arguments and critique the reasoning of others | Look for and make use of structure |
| Model with mathematics | Look for and express regularity in repeated reasoning |

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| **Unit Academic Standards (NGSS, OLS and/or CCSS):** |

LS 1-2 - Develop and use a model to illustrate the hierarchical organization of interacting systems that provide specific functions within multicellular organisms.

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| **Materials**: (Link Handouts, Power Points, Resources, Websites, Supplies) |

Summer poster, Hook video: <https://www.youtube.com/watch?v=HuKx2a5HkIM>

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| **Teacher Advance Preparation:** |

None

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| **Activity Procedures:** |

Introducing the Challenge

1. What careers are linked - how are they connected? What patterns are there?
   1. Hook video: <https://www.youtube.com/watch?v=HuKx2a5HkIM>
      1. How does this video relate to the human body?
      2. How does this video relate to our careers?
   2. Who knows someone famous who has donated/received an organ for transplant? Share information about the process. Record information on board.
   3. Who knows someone who has donated/received an organ for transplant? What do you know about the process? Record information on board
   4. What do you know about organ transplants? What do you think is important to know about organ transplants?
      1. 5 min: brainstorm a list in your notebook (include facts, questions, vocab, etc.)
      2. Pick the 4 most important points in your list.
      3. 3 min: Share your 4 points with a partner - combine your lists. Choose the 2 most important from the combination list.
      4. 5 min: Share your 2 points with a group - combine your lists. Choose the 1 most important from the combination list.
      5. Share with class - create a master list
      6. As a class, do you think we are missing information?
   5. What do we need to know - generate 3-5 essential questions
      1. Try to get to: “**How do we effectively and efficiently get the donor organs to the people waiting for a transplant?**”
   6. Introduce the summer poster from RET
   7. Introduce the challenge
      1. Optimization scheme for organ donation
      2. Pool of 15 donors, 15 recipients
      3. Living donors only - what types of organs/tissues?
      4. Treat 12-15 recipients
   8. Now that we know the challenge, what else do we need to know?
2. **Exit Slip:**Write one sentence about what you did today. Write one sentence explaining why it was important (relate this back to your essential questions!). Write one sentence about where you could use what you did today again. Write one sentence about how well you worked today in class. Write one sentence about what you think the next step should be. Please turn your exit slips to the homework bin.

**Formative Assessments:** Link the items in the Activities that will be used as formative assessments.

Listen to student responses, gauge discussion based on responses

**Summative Assessments:** These are optional; there may be summative assessments at the end of a set of Activities or only at the end of the entire Unit.

Unit test at the completion of this unit and the subsequent unit.

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| **Differentiation:** Describe how you modified parts of the Lesson to support the needs of different learners.  Refer to Activity Template for details. |

No differentiation – class discussion.

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| **Reflection:** Reflect upon the successes and shortcomings of the lesson. |

This was the most difficult activity for me. It was easy to get the students “hooked” on the idea, but it was difficult to guide them to where I needed them to go, while having them develop guided questions and essential questions. One trick that I found worked well was to just talk about organ donation, and I did a 5-minute write with the students to get them to tell me what they know and write down any and all questions they have. Once I had compiled all their questions, we answered as many questions as possible with google, and then we used the rest to direct our challenge. I could definitely use more practice on this activity.