**INSTRUCTOR GUIDE**

**ACTIVITY TITLE: Intro to the brain**

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| \***Theme**: | Science and Neuroscience, Comparative Neuroanatomy  |
| \***Objective**(s):*(What key learning do you want students to come away with?)*  | What is it like to be a scientist on a day to day?What does a scientist do?How does neuroscience work?  |

 **LESSON OUTLINE:**

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| **1. Introduction:***Plan a script of what you will say to start.**- What will this be about? Why’s it interesting?* *(Hook)* | Hi everyone! Today, we’re going to talk about being a scientist. What is it like to be a scientist? Do you have any ideas?  |

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| **2. Building Background:***List questions you can use to immediately engage your audience and prepare their thinking for your activity.**-What prior knowledge might they have about/related to your topic?* *-What prior knowledge (background) do they need for your activity?* | What does a scientist look like? Take some ideas, use as a transition into dressing up. What tools does a scientist use? Think about concrete tools, but also reasoning tools: it may be nice to pair this with the jelly bean taste test, as this gives a sense for the rationale behind genetic “Knock Down/Knock Out” methods. How about a neuroscientist? Does anybody know what they do? What do they study? How could you study a brain? What questions would you ask? What has a brain?  |

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| **3. Lesson & Activity:***Outline the key components of your lesson.***Plan/Note**:- key ideas/ vocabulary- scaffolds - images/media- extension questions\*Consider how to best deliver your content! \*Plan interactive components that encourage active thinking in your students. | This lesson has multiple parts:With powerpoint slides: 1. Introduction to science:
	1. Ask what a scientist looks like, what they do for a living, what it means to “do science”, and how science works in their day-to-day. Ask if anyone has done activities that we consider to be science: cooking, fixing something, observing an animal that they like, fixing their toy/fixing a computer (everyone shoul have their hands raised)
	2. Ask for a volunteer to put on the PPE outfit, and go through (interactively) why scientists would need everything that the student has on.
2. Introduction to neuroscience:
	1. Start a conversation of what neuroscience is; what you study, and what animals we use to study brains (discuss what has a brain).
	2. Discuss some aspects of neuroanatomy (as is appropriate to the class level), and the functions that we attribute to the different parts of the brain (visual cortex, frontal cortex, cerebellum). Think about what would happen if you got rid of certain parts of the brain, what it would be like. Parallel this to the PPE activity, thinking about why we would need certain things in the brains of different organisms.
	3. Drill down: Get to the point that all brain areas are made of individual neurons, the fact that these neurons looks similar despite all of the differences in the brain areas we see.
3. Activity: Pipe Cleaner neurons
	1. Use the image of the neuron on screen as a rough template, and encourage kids to make their own neurons. Note that they should be creative, try to make ties with the diversity that you see: pyramidal, pseudounipolar, purkinje, granule, basket; describe how different shapes of neurons can help confer different communication activities, useful for different sorts of functions.
	2. At the end, “wire” the neurons together to build a class brain.
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| **4. Wrap Up:***- Review key ideas**- Share takeaways and final thoughts**- Discuss connections to other questions and ideas. Extensions.**- Ask: Who could you teach what you learned here today?**- Ask/Suggest: What can I do to learn more?* | Emphasize that the role of the scientist is to figure out how things work, that science is everywhere in all of our lives.Discuss what it’s like to study brains: why we study the brains of other animals, what we can learn from them, and what we can’t.Note the structure of the brains that we’ve introduced; how they all simplify into neurons, individual units that communicate with one another, and come together in a way that reflects the needs of the animal.  |

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| **MATERIALS NEEDED: *\*\*(please list all items and quantities necessary for preparation)*** |
| Powerpoint slide of animal brains and/or brain specimens and gloves; pipe cleaner neurons, optional: disposable lab gear / PPE (gowns, booties, masks, hair nets, gloves) |

\*\*attach any printouts to end of document here

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| **Other Notes**  |
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**Extra Resources:**