**Researcher Bio**

**Name & Preferred Pronouns: Kendall Clay (she/her/hers)**

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**Lesson Plan Title, Grade Level, and Keywords: Neuroscience: What is a Neuron and What Does it Do?, 9th – 10th, neuron, brain, cells, neuroscience**

**Brief Description of Research Interests: Neuroscience, regeneration, genetics, and disease**

**Lesson Plan Information Sheet**

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| Author(s): | Kendall Clay |
| Author Affiliation and Location (e.g. UGA, Athens, GA) | UGA, Athens GA |
| Author Contact Information (e.g. email) | Kendall.clay@uga.edu |
| Introduction/Abstract to Lesson Plan (max. 100 Words)  Include aspects of the lesson that are unique and innovative. | **This lesson aims to teach students about biological diversity in cells and how form relates to function. They will learn the components of a neuron with a hands-on activity and learn about how neurons communicate.** |
| List of Standards Addressed  (This should be list of all full standards addressed by the lesson.) | SSPBf: Explain the development, structure, and function of biological systems and their role in behavior, cognition, and emotion   1. Identify the components and function of a neuron. 2. Explain the process of neurotransmission, include: action potentials and synaptic transmission   Constructing explanations (for science)  Developing and using models |
| Learning Objectives using Measurable Verbs (what students will be able to do) | Goal: recite 5 parts of a neuron and tell how each part relates to a function of the neuron |
| Appropriate Grade Levels | **9th – 10th** |
| Group Size/# of students activities are designed for | **20-30** |
| Setting (e.g. indoors, outdoors, lab, etc.) | **Indoors** |
| Approximate Time of Lesson (Break down into 20-50 minute periods) | **40 mins** |
| Resources Needed for Students (e.g. scissors, paper, pencils, glue, etc.) | Paper and pencil |
| Resources Needed for Educators (e.g. blackboard, Powerpoint capabilities, etc.) | Paper, play dough, googly eye, pipe cleaners, pom poms, (tape and glue optional) – given to students in Ziplock baggies – see premade kit  If you need to make your own kit, here’s the materials needed for each student (all pipecleaners should be different colors):  small container of play dough (1 oz - see 15 pack party bags)  half piece of pipecleaner  five small pieces of pipecleaner (about ⅛)  two medium pieces of pipecleaner (about ¼)  two small pom poms  Google slides/PowerPoint capabilities |
| Apps/Websites Needed | <https://youtu.be/6qS83wD29PY> - link is in slideshow  [**https://drive.google.com/file/d/1UEKCIkc0U-Ifv2wzdbDgkHGtjEh5vD-9/view?usp=sharing**](https://drive.google.com/file/d/1UEKCIkc0U-Ifv2wzdbDgkHGtjEh5vD-9/view?usp=sharing) |
| Lesson Activity (step by step description of activity) | Introduction  Teacher throws a paper ball across the room – kids either duck or catch. That almost instant response is an example of how quick your brain can process stimuli coming from the environment and generate an appropriate response |
| Background  Give students materials and let them build a neuron (without guidance, like a pretest)  Not all cells look the same! Brains have developed these special cells to carry out important functions in the nervous system.  Brains are made of specialized cells called neurons which can transmit electrical and chemical signals to communicate about sensory input and motor output. |
| Step by Step Activity  Now make a model of a neuron using pipe cleaners, play dough, and pom poms.  Play dough represents the soma; the googly eye is the nucleus (with the black circle representing the nucleolus), short pipe cleaners represent dendrites, a long pipe cleaner is the axon; the medium length pieces are axon collaterals; the little pom poms represent terminal buttons.  What do neurons do?  Neurons send electrical and chemical signals to transmit information. The axon sends electrical signals down and the terminal buttons release chemical signals to communicate with the next cell. |
| Reflection/Assessment  Exit ticket: 3 things learned, 2 things they liked, 1 question they still have |
| Final Product/Assessment (e.g. quiz, presentation, essay, etc.) | **Presentation of the neuron model. Optional: Write a short paragraph on what a neuron is and name a function of what they do – give an example!** |