



# Neuroscience

6th-8th Grade, Week of: July 1st, 2024

## What We Did on...Monday: THE NERVOUS SYSTEM

### Introduction to the Neuron & Sculpting

- Campers learned about the neuron – its structure and function. Then, they modeled the neuron with clay and labeled their creation.

### Brain Introduction & Dissection

- After discussing the structures of the brain, students gained real exposure through dissecting and examining a sheep brain.

### Tissue Histology

- After the brain dissection, campers and volunteers cut samples from the brain. Using microscopes, kids examined the brain tissue.

### Spinal Cord Lecture & Modeling

- Campers learned about the different components of the spine. They modeled it using lifesaver gummies and pasta wheels.

### Seterra Brain Anatomy

- To review the structures of the brain, we ended the day with an online game labeling the brain.



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## What We Did on...Tuesday: SENSATION

### Ear Lecture & Labeling

- Campers learned about the ear and labeled large models.

### Eye Introduction & Dissection

- After a short lecture on the parts of the eye, we did a demonstration in which the kids investigated the blindspot of the eye. Then, we dissected an eye and identified its anatomy.

### Vinyl-Cutting Camp Shirts

- Campers used the vinyl cutter to print and cut custom designs for their Neuroscience Camp T-shirts.

### Short Sensation Demos

- Students assembled glasses with special frames that altered their vision.
- Campers did an experiment in which they put one hand in cold water and the other in warm water to demonstrate the relativity of sensation.

### Jelly Bean Tasting

- To demonstrate the importance of the nose in taste, campers guessed what flavor of jelly bean they were tasting while eating normally and while holding their nose and compared the results.



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## What We Did on...Wednesday:

### PSYCHOLOGY, PERSONALITY & DISORDERS

#### C. elegans Alcohol Experiment

- To learn about the neurological process and effects of addiction, we did an experiment in which campers used alcohols and microscopes to test the reaction of nematodes (microscopic worms) exposed to alcohol.

#### Case Studies & Prosopagnosia

- Campers learned about the medical definition of a case study and we discussed one called "The Man Who Mistook his Wife for a Hat," in which a patient had prosopagnosia (trouble recognizing faces).

#### Dream Meanings & Art

- We discussed the scientific debate of whether dreams have meaning. Then, campers created artwork inspired by a dream they had.

#### Prisoner's Dilemma Game & Decisions

- Students first played a classic round of prisoner's dilemma (a game in which they can collaborate for mutual benefit or act in self-interest). To explore what factors influence their decisions, we also played rounds in which the other prisoner was their friend or family member.

#### Personality Tests' Accuracy

- Campers did a personality test and then discussed if they believe it accurately reflects them.



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## What We Did on...Thursday: BRAIN DEVELOPMENT

### Genie: Isolated Human Development

- We learned about Genie, a child who experienced severe isolation, from a scientific perspective and noted how that affected her psychological and linguistic development.

### Stages of Brain Development Project

- Campers picked a phase of brain development to model with clay and research 5 facts about. They made posters and presented them.

### Alzheimer's Disease Protein Modeling

- We discussed what Alzheimer's disease is and the proteins (amyloid-beta and tau) that are characteristic of it. Then, students modeled these proteins in the neuron with edible items.

### Reflexes Lecture & Tests

- After learning about what reflexes are and how they change throughout an individual's lifespan, campers had an opportunity to test their reflexes by playing the dollar-drop game and testing their reaction times.

### Memory

- Kids learned about what parts of the brain control memory. Then, they did memory games online to test theirs.



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## What We Did on...Friday:

### TECHNOLOGY IN NEUROSCIENCE

#### Laser-Cutting Brain Keychains

- Campers used the laser-cutter to create custom keychains with a part of the brain on them.

#### Vacuum-Formed Brain

- Using the vacuum-former and 3D-printer, we created a realistically scaled model of the brain.
- Students identified parts of the print and painted it.

#### Vinyl-Printing CT Scans

- Kids learned about the types of medical imaging and used the vinyl printer to make stickers of CT scans.

#### Robots for Dementia Brainstorming

- After being introduced to the idea that robots can be used for human interaction purposes (including to socialize with patients of dementia), students generated prompts for a robot that would serve this purpose. They made a model of it.