RAMAPO EXPLORERS-STEM CAMP

Cell, Genes & Adaptations
Session 1: July 6-17, 2015

Science is going to come ALIVE in this 2-week session where campers will be exploring different life science concepts through model-building, cooperative learning tasks, and hands-on inquiry activities. Kick off with investigations that solve problems related to cell size and function. Then branch out by collecting genetic-based data and create models that demonstrate how living things adapt to their surroundings and why certain traits are passed through generations. Students work in groups to solve problems and answer questions that today’s biologists, geneticists, and conservationists look to answer!

Day 1 - Introductions and Team Building
Students practice cooperative learning through team building games. Teacher and students introduce themselves and play name games to become familiar with each other. Session concludes with a team-building activity in which students will need to work cooperatively and efficiently simulate the cell transport process of endocytosis.

Day 2 - Cell Structure Webquest
Students identify the parts of a plant and animal cell and explain their functions using an online interactive. Students begin by trying to list as many parts of the cell and their function as they can remember, then head to the lab to complete an online interactive that explores the different parts of the cell. Students meet with their group to plan their model of a cell that they will be building the following day.

Day 3 - Building a Model of the Cell
Students create a model of a plant or animal cell using materials provided. Students investigate the scale and function of each part of the cell. Students display and present their models.

Days 4 and 5 - Cell City
Students design a city that contains buildings and people that represent a part of the cell. Students can construct a 3D city using construction paper or can draw their city. Each part of their city should represent a part of the cell and its function. Students present and display their cell cities.
Cells, Genes & Adaptations (continued)

**Day 6 - Genetics: Observing Human Traits**
Students survey their classmates to determine which common physical traits are dominant and recessive amongst our population. Students take a personal inventory of traits before interviewing classmates and creating a chart that displays their findings. Students will use this chart to determine which traits are recessive and dominant.

**Day 7 - The Reebop Genetic Activity**
Students use the process of meiosis to create a baby “Reebop” from two sets of parental genes. They examine the phenotypes (physical characteristics) of each gene and will create a model of what their baby “Reebop” would look like based off of its genetic makeup.

**Day 8 - Natural Selection Insect Lab**
Students model the term “survival of the fittest.” Students create cut-out insects that are placed throughout the classroom. Students “eat” their cut-out insects and compare the insects they chose to the ones still left around the classroom. Students investigate how the term “survival of the fittest” determines what traits get passed on to further generations.

**Day 9 - Adaptations**
Students investigate how organisms have evolved and adapted to survive in their environment. Students complete the Woolybooger Activity, which investigates how variations of the same species allow one type to survive and reproduce over another.

**Day 10 - Creature Feature**
Students design a creature that could adapt to a variety of surroundings. Students pick different traits for his or her creature and come up with adaptations that would allow their creature to adapt to those conditions. Students draw and design their creatures and present them to their classmates.