

Week 1 (7/18)

Title	Gene, the tiny structure that decided who you are
Age group	6~12
Learning Objectives	<ol style="list-style-type: none"> 1. Understand the meaning of gene, what the role of gene playing in living creatures. 2. Understand the basic concepts about gel electrophoresis. 3. Learning the role of gene playing in human body, and the difference between a dominant and recessive trait.
Resources	<p>PowerPoint</p> <p>Straws, scissors, adhesive tape, color pen.</p>
Lesson Structure	<p>Introduction:</p> <ol style="list-style-type: none"> 1. Why we are human? Ask students to brainstorm the difference between humans and animals, and how gene involved. 2. Why we looks different? Introduce the concept of genetic traits by asking students to observe others and find out the difference (like Dimples) between others. Our traits was decided by the Dominant gene and recessive gene. We described two genes as a older brother and younger brother to illustrated the idea that dominant gene will priority express when we have dominant and recessive gene at the same time, just like the bigger brother always more powerful than younger brother. 3. Who is the parent? Simply introducing the concept of gene heredity Ask students to identify children and parents by discriminating the appearance. Next, we introduced another way, electrophoresis, to identify the relationship of two genes. We analogy the electrophoresis as taking picture of gene, and the process of running a gel is linked to a tug-of-war competition. <p>Hands-on activities:</p> <ol style="list-style-type: none"> 1. Hand-made double helix DNA model Depicting the structure of DNA. Let students in small

groups to construct DNA model by using adhesive tapes and four different colored straws to symbolize four nitrogenous bases, A.T.C.G, in DNA.

2. **My unique Dinosaurs**

Ask students to draw little dinosaurs to convey the concept of Biobrick. Use three different designed features including color, tail and claws, which are represent three different biobricks. Ask them to draw different descriptions of the three features on the dinosaur.

Week 2 (8/8)

Title	Invisible Killer-Virus
Age group	6~12
Learning Objectives	<ol style="list-style-type: none"> 1. Understand what is virus (structure, classification, appearance) 2. Discussion combining current issue: COVID-19 and identify four types of viruses. 3. Understand the basic concepts of health education knowledge about virus.
Resources	<p>PowerPoint</p> <p>Wool roots, scissors.</p>
Lesson Structure	<ol style="list-style-type: none"> 1. Introduction of Virus Put on the picture of COVID-19 and ask students what's the picture on the PowerPoint slides (Virus). Then Introduce the virus size, how to observe the virus and the structure of virus. We use analogy to described the capsid of virus as clothes, that students have to wear in daily life. 2. Virus Family Introduce the four viruses including bacteriophage, tobacco mosaic virus, influenza virus, adenovirus, and the appearance as well as characteristics of them. Ask students to recognize pictures of that four viruses. And we ask students to brainstorm whether the virus is good or bad. 3. How does the tiny-killer work? Play the video clips to present what are the routes of virus spreading. Meanwhile, tell students the correct health education knowledge. Tell them how the vaccine works by using example, like people who didn't know each other before, and after meeting each other, when they meet the same person again, they will wave and interact with them. <p>Hands-on activities:</p> <p>Ask students to make wool root of bacteriophage.</p>