

**WHAT'S THIS PROJECT ALL ABOUT?****COMPELLING QUESTION**

How does cancer affect the cells?

**TARGET COMPETENCY**

Investigate through Inquiry

**INSTRUCTIONAL LEARNING TARGETS**

<b>Lesson Number</b>	<b>Instructional Learning Targets</b>
Lesson 1	<p>I can develop empathy by engaging in open conversation about how cancer affects the lives of others.</p> <p>I can explore careers related to cancer Child Life Specialists.</p> <p>I can verbalize the purpose and importance of the upcoming project.</p>
Lesson 2 *Teaching Artist Integration	<p>I can summarize the characteristics of a Stop-Motion Animation.</p> <p>I can generate ideas for my project's animation following self-paced tutorials and practice.</p>
Lesson 3	<p>I can explain the relationship between structure and function of the double helix of DNA and the single helix of RNA, including base pairings</p> <p>I can trace the path of mRNA as it travels from the nucleus into the cytoplasm, where it is translated into a protein through protein synthesis.</p>
Lesson 4	<p>I can identify the function and importance of cell division in the body.</p> <p>I can compare and contrast the phases of mitosis.</p> <p>I can argue for or against the ethics of HeLa cells.</p> <p>I can compare and contrast the three major types of gene mutations (insertion, deletion, and substitution) through charts, readings, and karyotypes.</p>
Lesson 5	<p>I can describe how the Cell Cycle and Cancer are related.</p> <p>I can compare and contrast the behavior of healthy cells and cancer cells.</p> <p>I can describe what cancer is and how it is formed.</p>
Lesson 6	<p>I can identify both risk factors and preventative methods for cancer that metastasizes through environmental causes</p> <p>I can identify risk factors and mutations for cancer that metastasizes through genetic/hereditary methods</p> <p>I can analyze and interpret data from reputable sources in the form of charts, graphs, and articles</p> <p>I can recognize that there are disparities in cancer health due to racial and socioeconomic influences and craft a public service announcement to negate one of these disparities.</p>
Lesson 7 *Teaching Artist Integration	<p>I can prioritize critical information, supporting information, and non-critical information to answer the essential question, "How does cancer affect the cells?"</p> <p>I can use the Engineering Design Process (EDP) to complete an industry-standard Storyboard.</p> <p>I can give and receive feedback on a Storyboard using the Critical Friends Protocol.</p>
Lesson 8 *Teaching Artist Integration	<p>I can design a Stop-Motion Animation that answers the essential question, "How does cancer affect the cells?"</p>

Lesson 9  
\*Optional Teaching Artist  
Integration

I can design an oral presentation and animation screening to an audience of classmates, community partners, and school faculty.

## TASK DESCRIPTION

Students will design an **animated presentation** centered around the central question, “How does cancer affect the cells?” Students will research cancer cells versus normal cells and clearly communicate the role of DNA, RNA, cell division, genetics, and biotechnology in order to answer the driving question and propose a solution. The target audience for this animated presentation is families affected by cancer and/or school cancer education programs. The presentation will provide an easy-to-grasp way for children and adults alike to gain an understanding of the cellular processes behind cancer.

## FINAL PRODUCT

**Animated presentation** detailing how cancer affects the cells to be used in Child Life Programs and/or Cancer Education programs.

## PROCESS GUIDE

FORMATIVE TASKS	DESCRIPTION	TIME FRAME
#1	<b>Project Introduction and Framing: Cancer Stories</b>	1 day/60 minutes
#2	<b>Introduction to Stop-Motion Animation</b>	1 day/60 minutes
#3	<b>Research Phase 1 + Ideas for Animation</b> (DNA/RNA Structure and Function, Protein Synthesis)	4 days/240 minutes
#4	<b>Research Phase 2 + Ideas for Animation</b> (DNA Replication, Cell Division, Gene Mutations)	4 days/180 minutes
#5	<b>Research Phase 3 + Ideas for Animation</b> (Cell Cycle and Cancer)	3 days/180 minutes
#6	<b>Research Phase 4 + Ideas for Animation</b> (Genetic and Environmental Factors of Cancer)	3 days/180 minutes
#7	<b>Storyboarding + Feedback</b>	4 days/240 minutes
#8	<b>Animation Creation + Feedback</b>	5-7 days
#9	<b>Animation Screening/Presentation/Reflection</b>	3-4 days