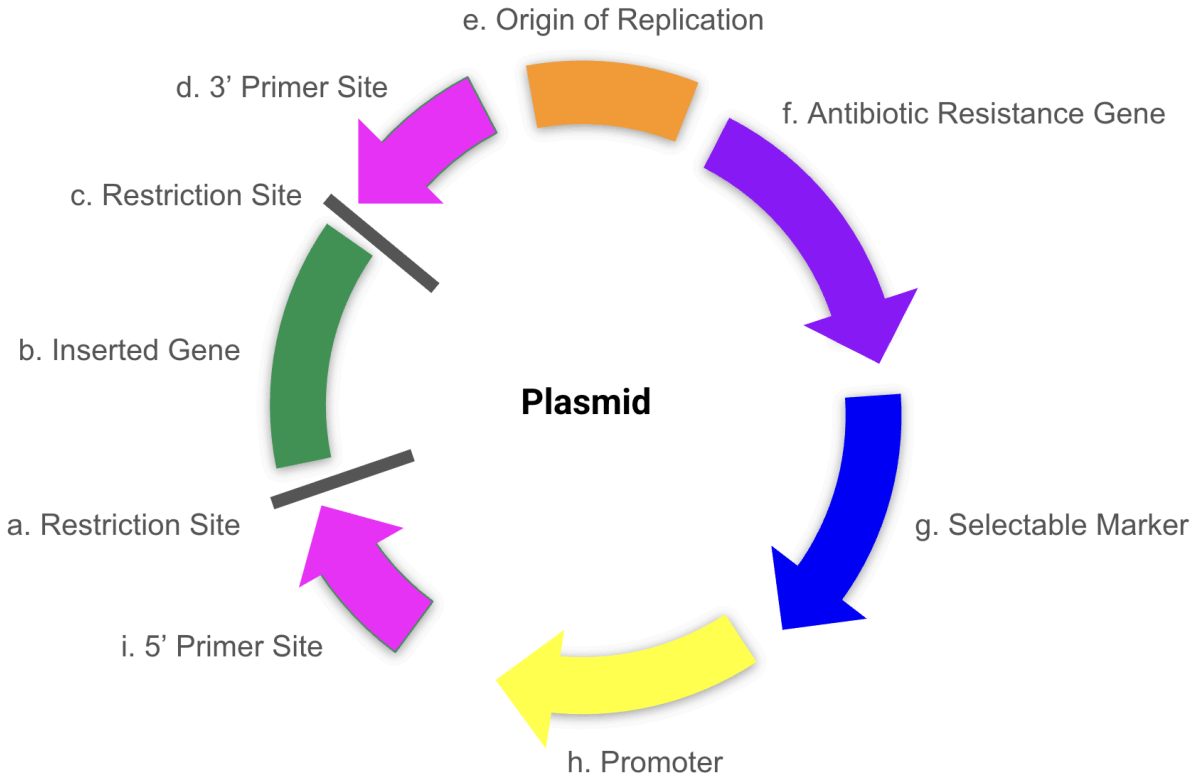
Plasmid Puzzle
Ages: 5 - 11

Duration: 10 minutes
Format: One-on-one learning

Description: This activity is designed for students to interact with synthetic biology in a hands-on approach. The goal is for students to use and match definitions of sections of a plasmid to order and correctly place the pieces of the plasmid puzzle together. For younger students this activity can be used as a matching activity where students are given an image of the completed plasmid and have to place the puzzle pieces in the correct way that matches the image.

Example:



Materials:

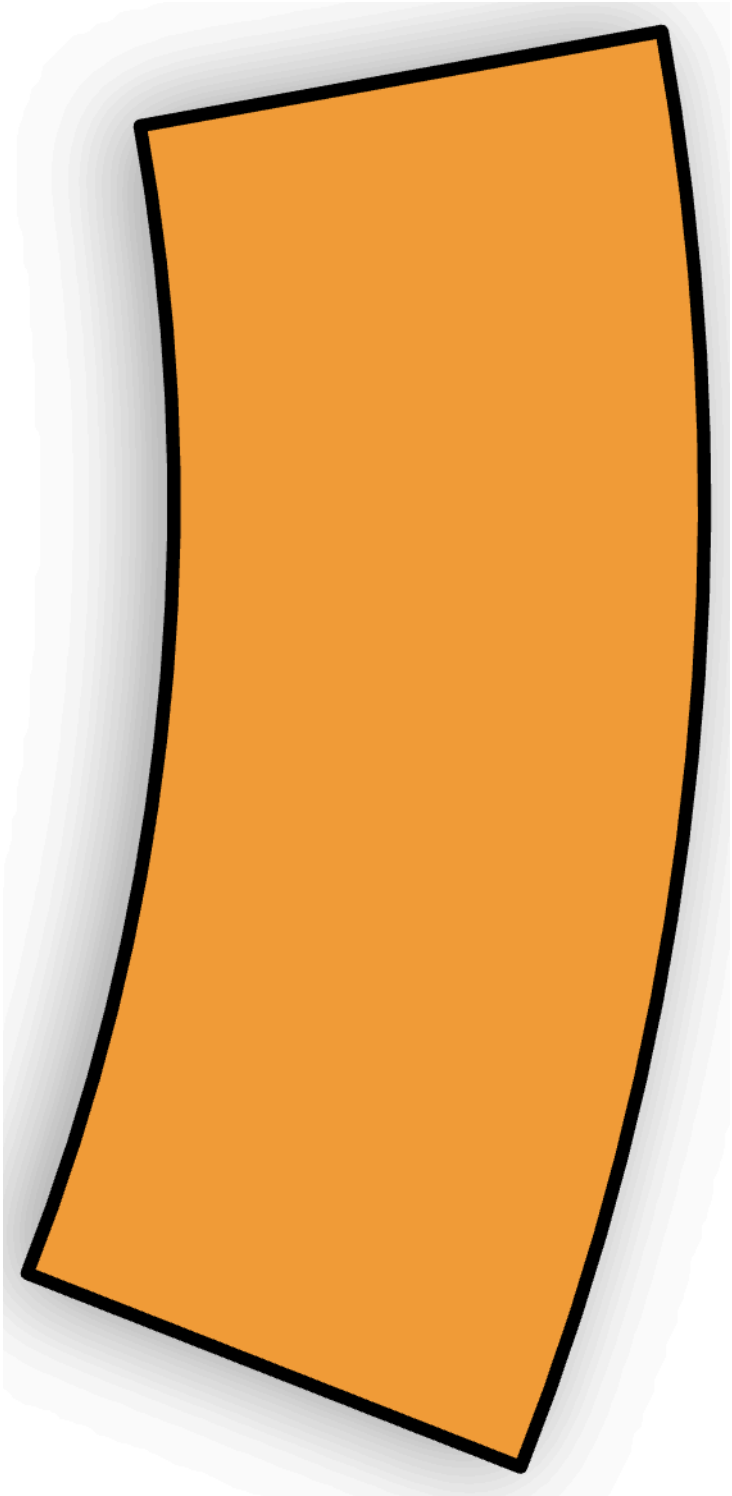
- White board
- Printed out plasmid pieces(see below)
- Plasmid definition worksheet(see below)
- Magnets
- Adhesive

Instructions:

1. Print out each of the plasmid puzzle pieces and the plasmid definition worksheet.
2. Cut out the puzzle pieces. For additional structure the puzzle pieces may be laminated.
3. Use the adhesive to secure a magnet to the back of each puzzle piece.
4. Place puzzle pieces on a whiteboard and work through the activity with students!

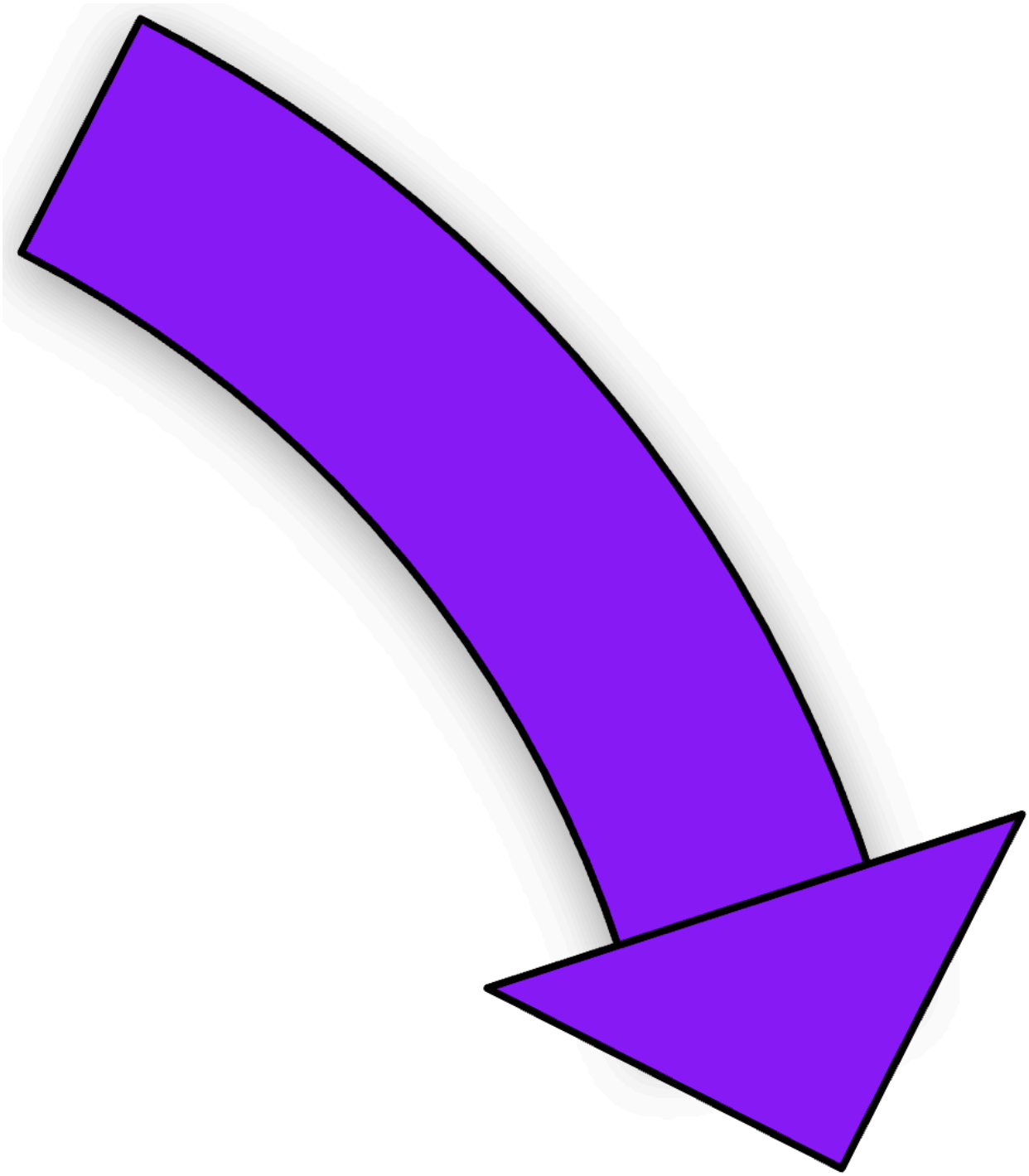
Plasmid Puzzle
Ages: 5 - 11

ASHBLOOM
IGEM UALBERTA 2025



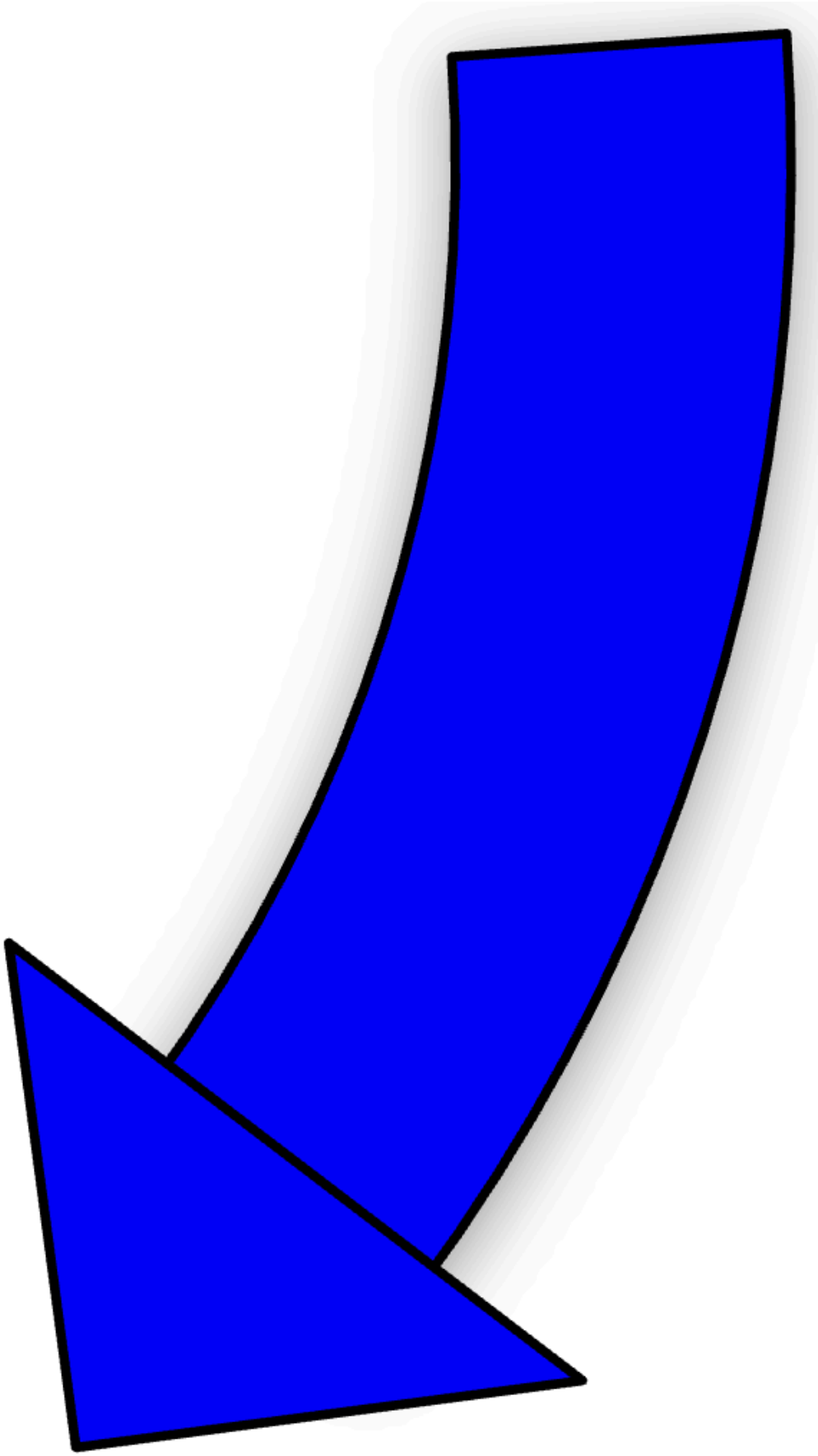
Plasmid Puzzle
Ages: 5 - 11

ASHBLOOM
IGEM UALBERTA 2025



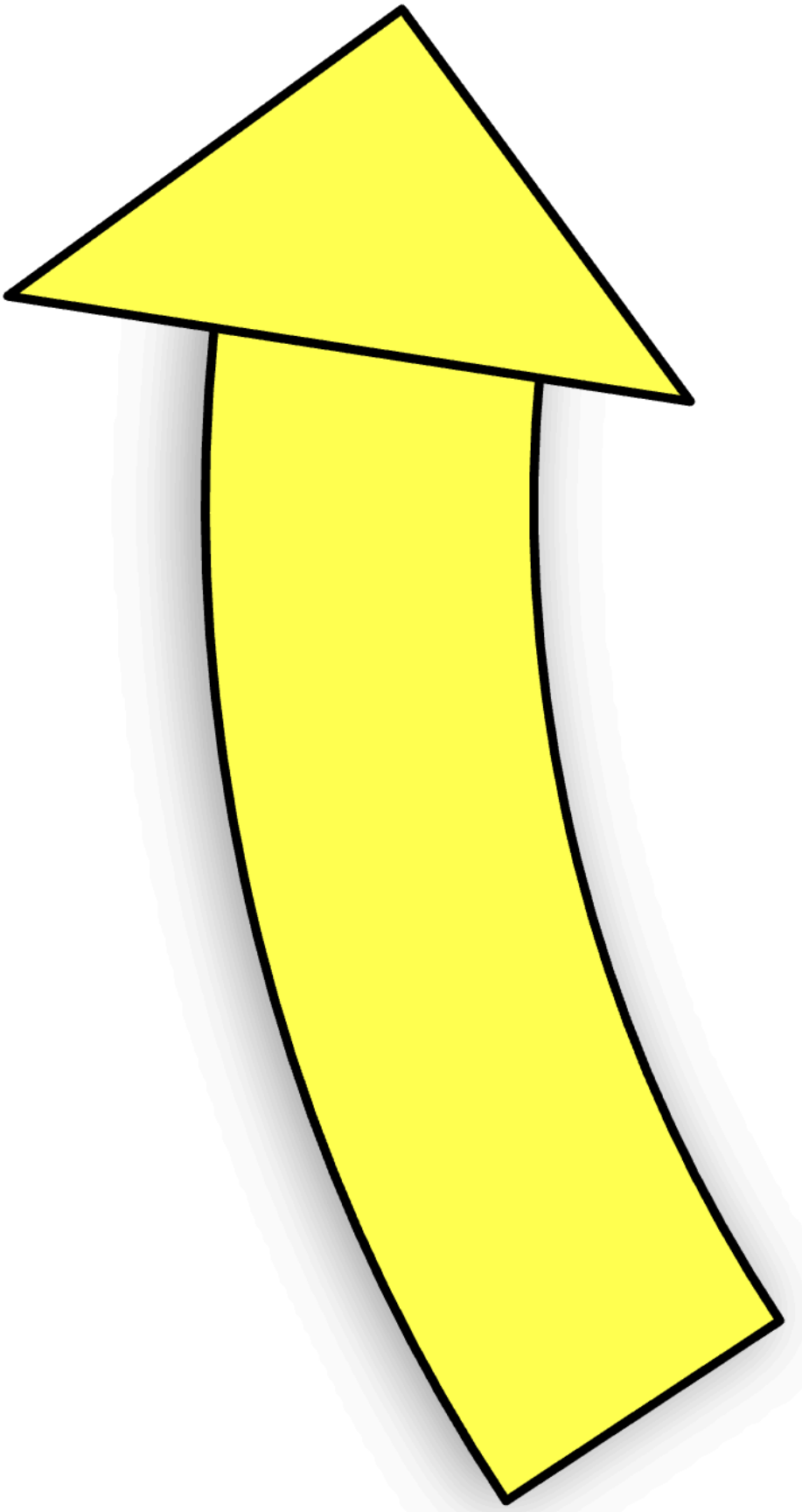
Plasmid Puzzle
Ages: 5 - 11

ASHBLOOM
IGEM UALBERTA 2025



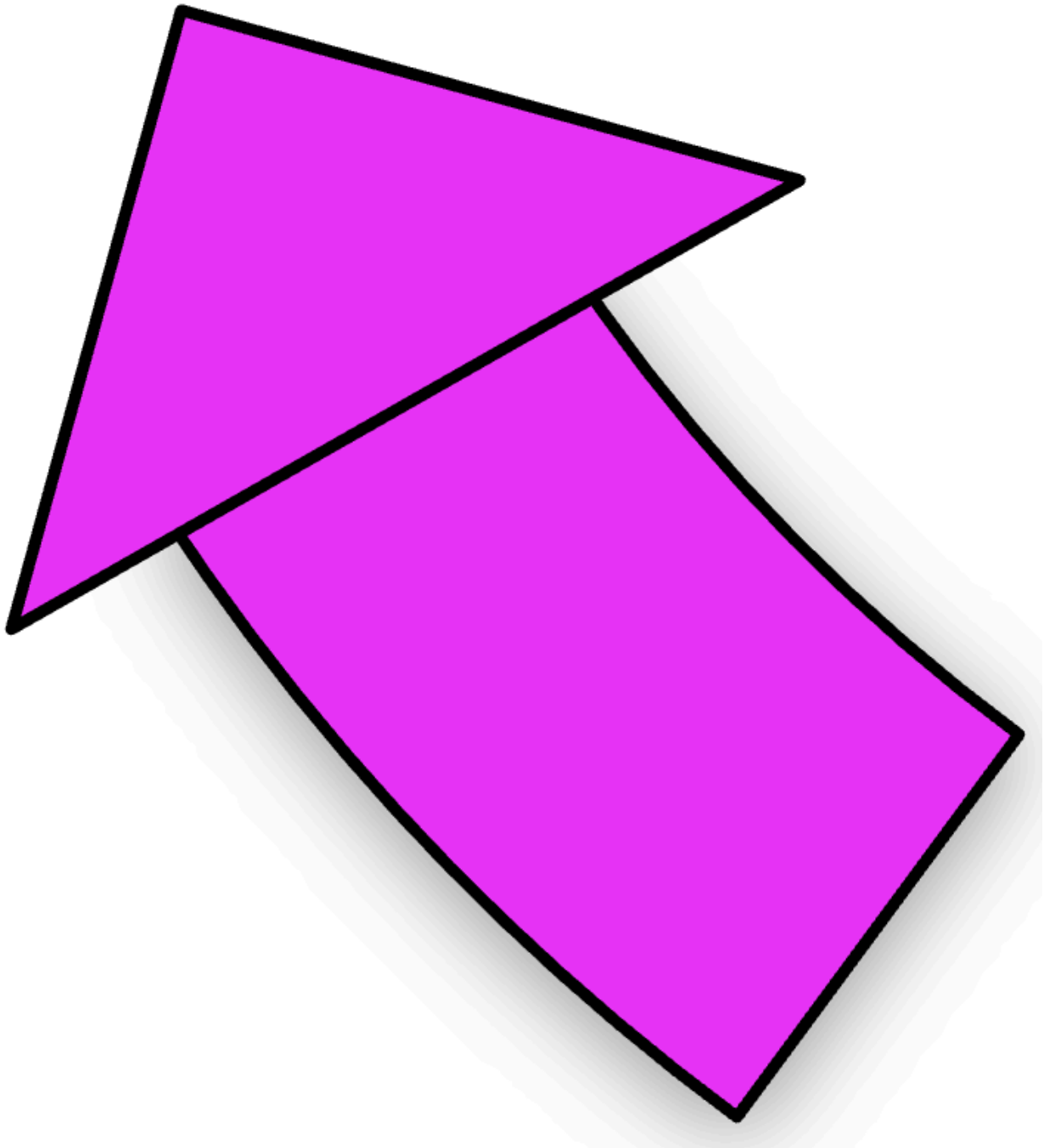
Plasmid Puzzle
Ages: 5 - 11

ASHBLOOM
IGEM UALBERTA 2025



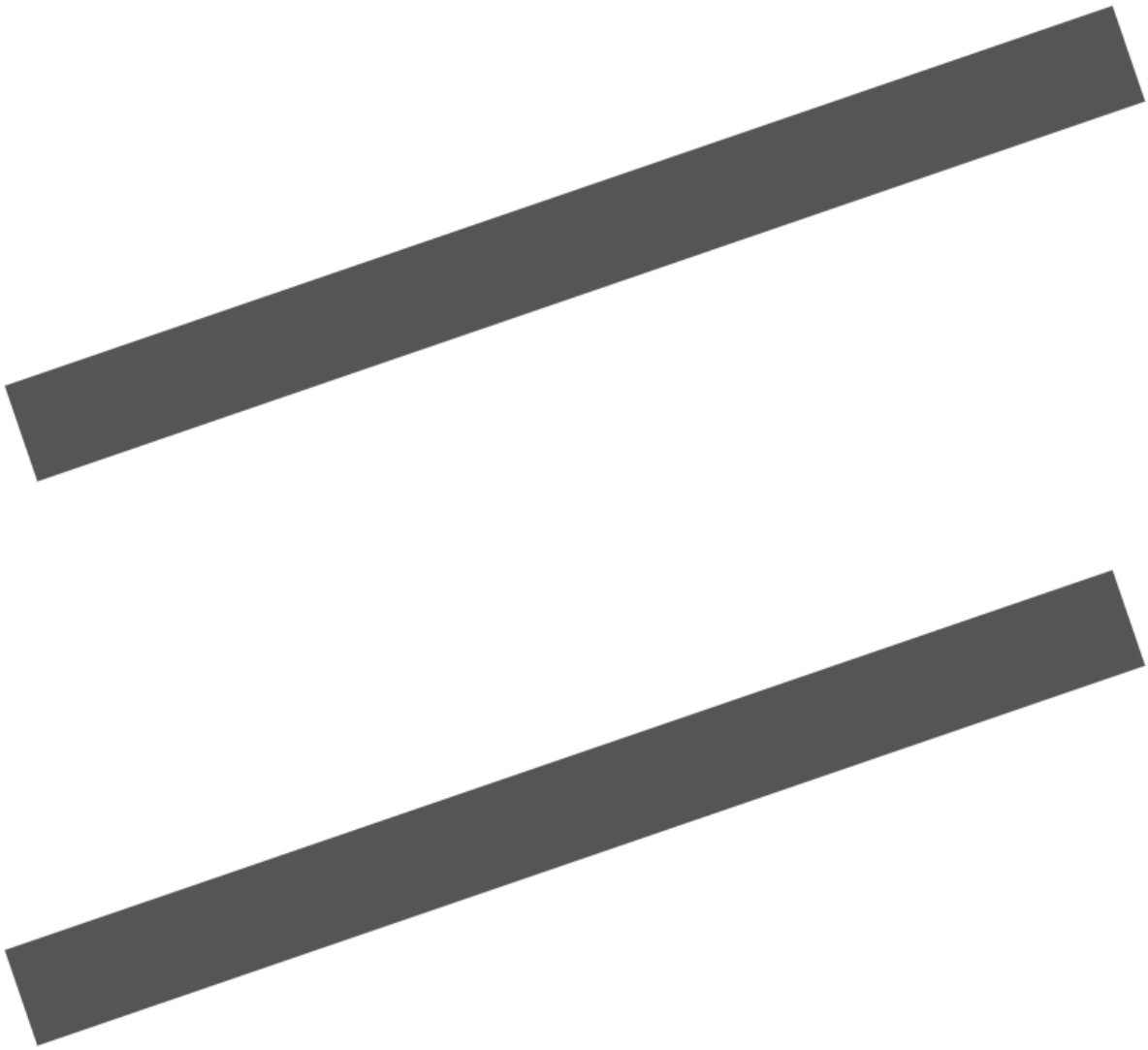
Plasmid Puzzle
Ages: 5 - 11

ASHBLOOM
IGEM UALBERTA 2025



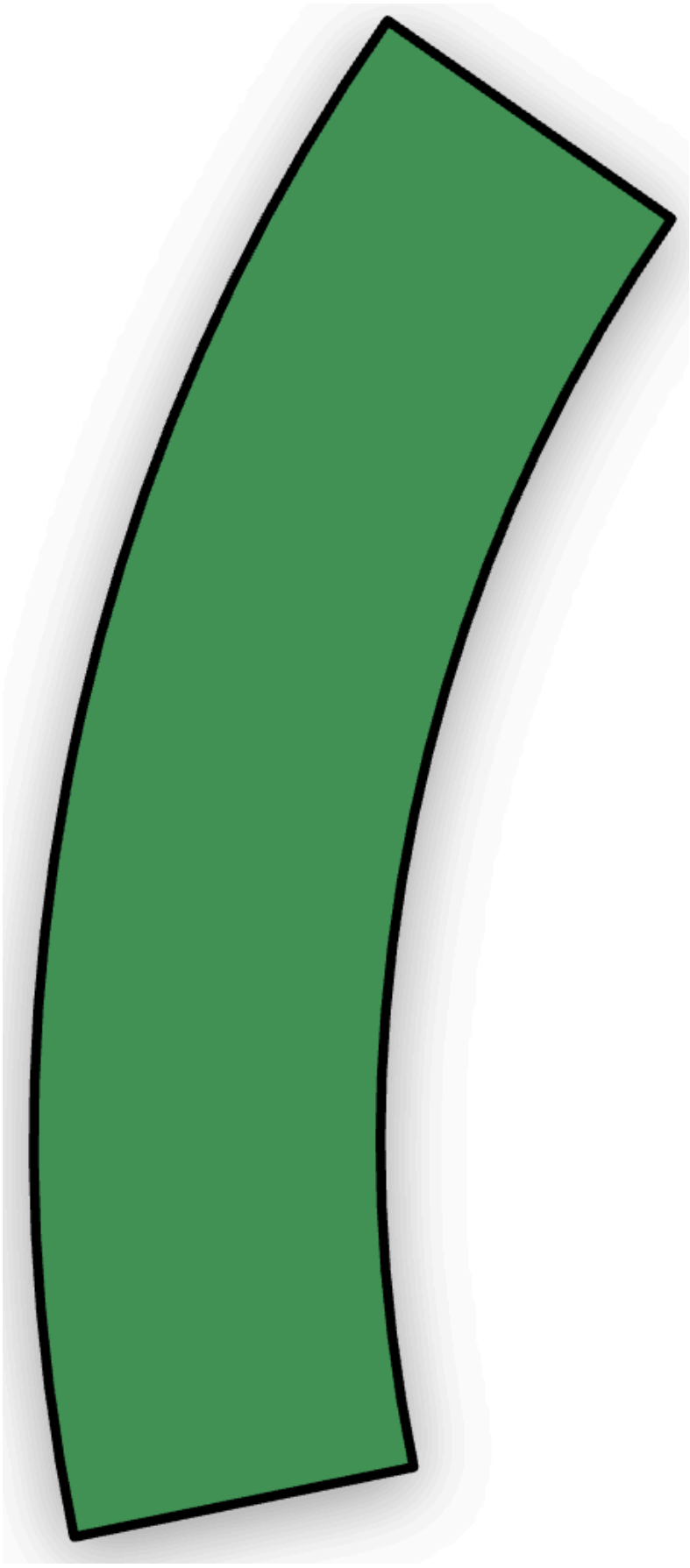
Plasmid Puzzle
Ages: 5 - 11

ASHBLOOM
IGEM UALBERTA 2025



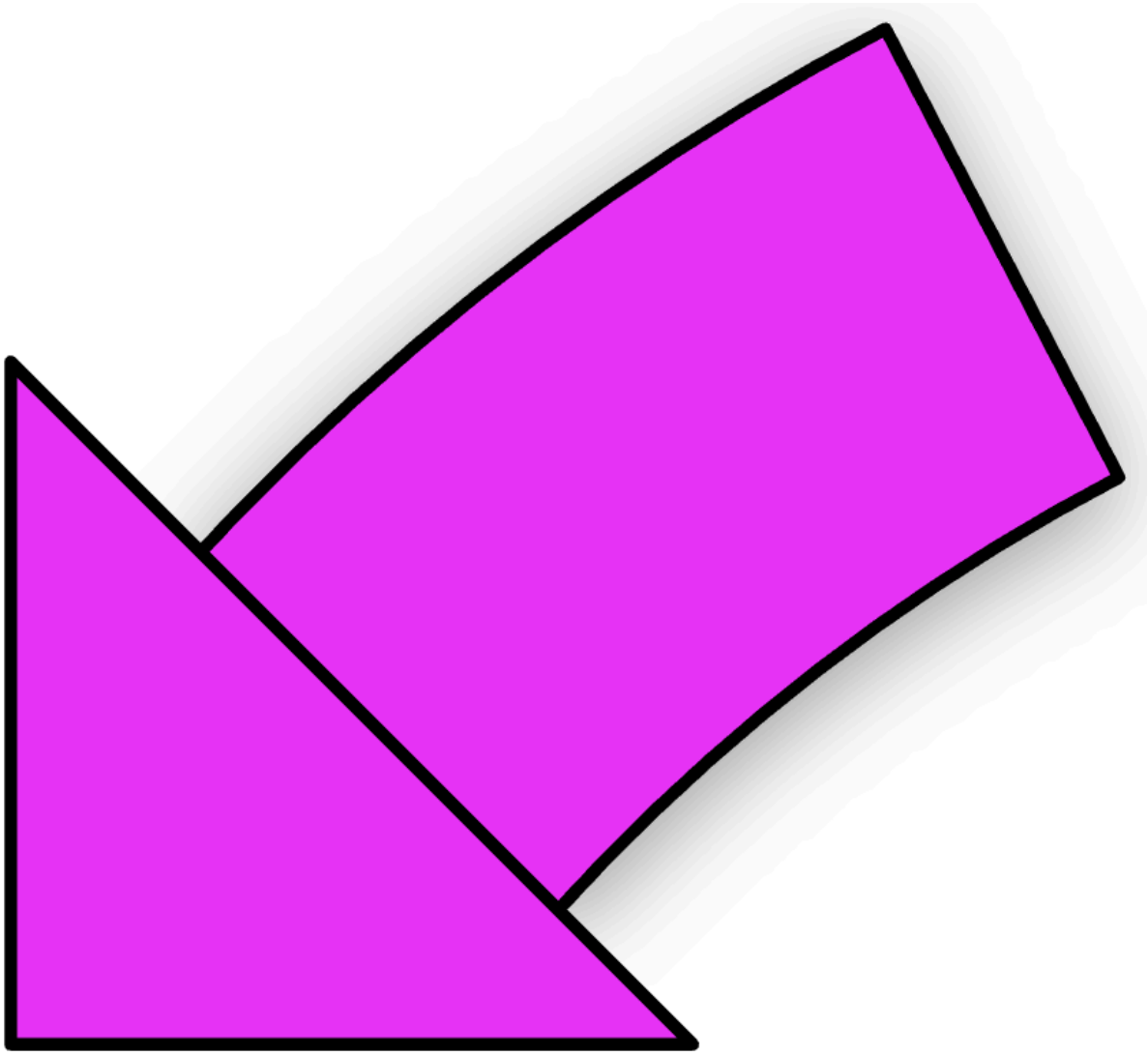
Plasmid Puzzle
Ages: 5 - 11

ASHBLOOM
IGEM UALBERTA 2025



Plasmid Puzzle
Ages: 5 - 11

ASHBLOOM
IGEM UALBERTA 2025



ASHBLOOM
IGEM UALBERTA 2025

Plasmid Definition Matching Activity

A. DNA section that begins replication of the plasmid.

B. A gene that gives the bacteria protection against antibiotics.

C. A section of DNA on the plasmid that is used to differentiate bacteria that have the inserted gene from ones that don't.

D. A section of DNA that appears right before a specific gene and allows the cell to read and follow the gene's instructions.

E. A section of DNA that allows the plasmid to be mass replicated, specifically in a lab with techniques like PCR (Polymerase Chain Reaction).

F. Markers for where the original gene will be cut out and where the new gene will be put in.

G. A new gene, not originally from the bacteria, that will be added to the plasmid.

_____ Antibiotic Resistance Gene(Purple)
_____ Primer Sites(Pink)
_____ Origin of Replication(Orange)
_____ Promoter(Yellow)
_____ Inserted Gene(Green)
_____ Selectable Marker(Blue)
_____ Restriction Sites(Grey)

Plasmid Puzzle
Ages: 5 - 11

ASHBLOOM
IGEM UALBERTA 2025