HOW ARE GMOS MADE?

Directions: Work with a partner to analyze the diagram "How to Build a Better Plant." Use evidence from the diagram to answer the questions below.

Part 1: Compare the Methods

1. What are the key differences between conventional crossbreeding and genetic modification?

2. Which method appears to take more time? Explain using evidence from the diagram.

Part 2: Trace the Process

3. How does DNA move from one organism to another in genetic modification?
    - Describe the role of:
        - *Agrobacterium method:*

        - *DNA Particle gun (a.k.a Gene gun) method:*

Part 3: Cause and Effect

4. How do these methods lead to changes in plant traits (ex: disease resistance or fruit quality)?

5. What role does **DNA** play in determining traits?

Part 4: Scale of Change

6. Which method changes **many genes**? Which changes **specific genes**? How do you know?

Part 5: Advantages and Limitations

7. Identify one advantage and one limitation of each method:

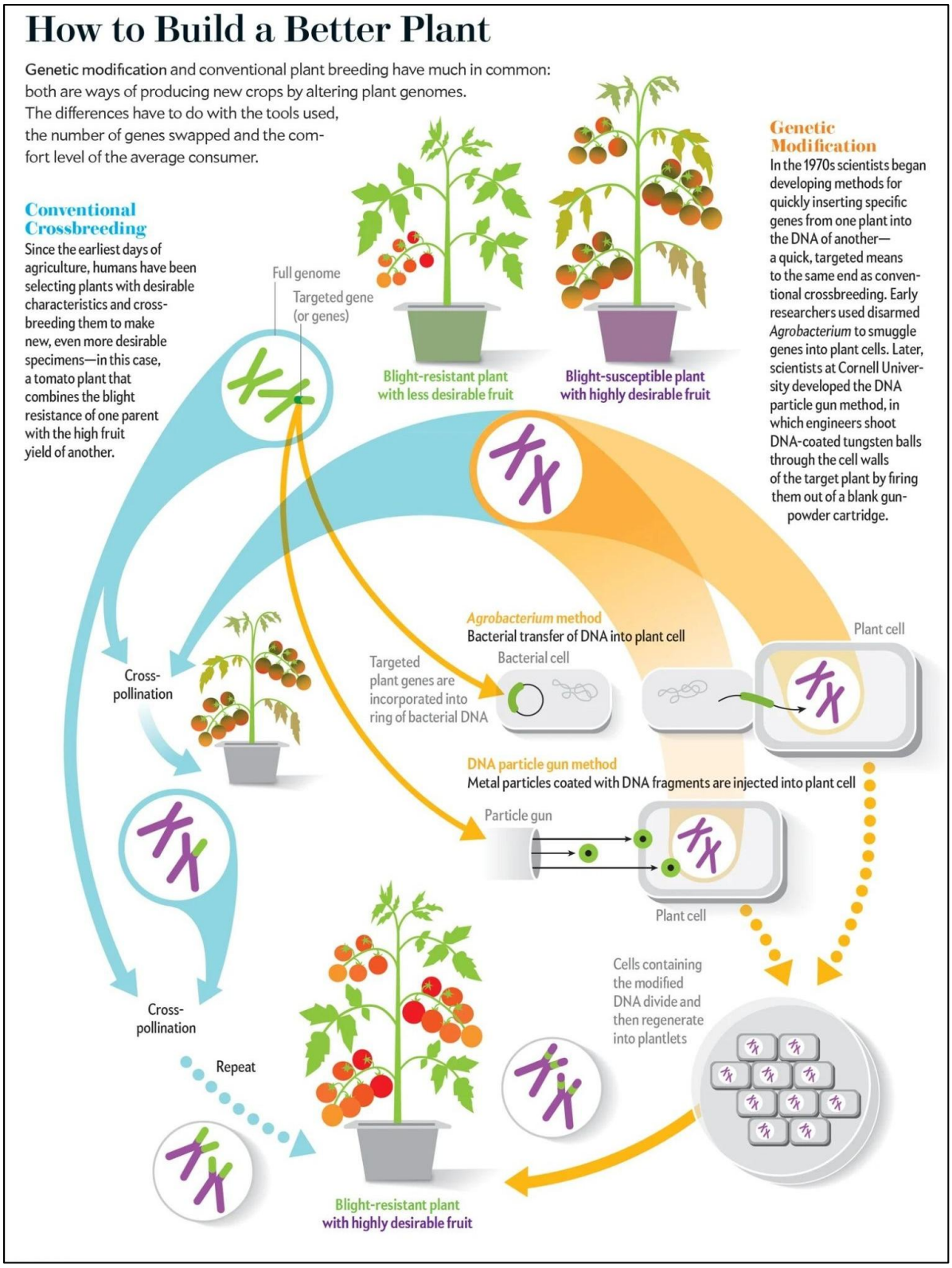
Method	Advantage	Limitation
Crossbreeding		
Genetic Modification		

Part 6: Think Like a Scientist

8. Which method seems more **controlled**? Why?

9. Which method seems more **natural**? Why?

10. If you were a farmer, which method would you trust more? Explain your reasoning.



Source: Christiansen, J. (2013). How to Build a Better Plant. [Image]. Scientific American. https://www.scientificamerican.com/article/the-truth-about-genetically-modified-food/