

# Molecule Mania Activity: Biological Macromolecules

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## Middle School (NGSS Aligned) Teacher Guide

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### Overview

This guide supports implementation of the Molecule Mania Activity: Biological Macromolecules using the 5E instructional model.

### Learning Objectives

- Students will sort biological molecules into categories
- Students will identify patterns in molecular structures
- Students will explain why different molecules have different jobs

### Standards Alignment

- **MS-LS1-7:** Develop models to describe how food molecules are rearranged
- **MS-PS1-1:** Develop models to describe atomic composition of molecules

### Prerequisites

- Basic understanding of atoms and molecules
- Knowledge that living things need food
- Awareness of nutrients

### Time Estimate

45 minutes

## Materials Needed

- Computer/tablet with internet access
- Student Activity Sheet
- Colored pencils/markers

## Teaching Tips by Phase

### Phase 1: ENGAGE (5-10 minutes)

- Start with the phenomenon or problem presented
- Elicit student predictions and prior knowledge
- Create cognitive dissonance if possible
- Build excitement for investigation

### Phase 2: EXPLORE (15-20 minutes)

- Allow students to investigate with minimal guidance
- Circulate and ask probing questions
- Encourage systematic data collection
- Note common discoveries and difficulties

### Phase 3: EXPLAIN (10-15 minutes)

- Have students share their findings first
- Build on their observations to introduce concepts
- Address misconceptions directly
- Connect to broader biological principles

### Phase 4: ELABORATE (10 minutes)

- Apply knowledge to new scenarios
- Make real-world connections
- Encourage deeper investigation
- Support transfer of learning

### Phase 5: EVALUATE (5-10 minutes)

- Use varied assessment strategies
- Focus on conceptual understanding
- Provide immediate feedback
- Plan follow-up based on results

#### **Remember:**

The goal is student discovery through guided inquiry. Resist the urge to explain concepts before students have explored them!

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