Name: **Date:** **Section:**

Molecule Mania Activity: Biological Macromolecules

Molecule Mania: Sorting Life's LEGO Blocks!

Phase 1: ENGAGE (5 minutes)

Getting Started:

Open peebedu.com and navigate to Biological Molecule Structure Organizer

You're entering a molecular sorting factory!

First Look:

1. Wow! How many molecules are there? _____
2. What's the smallest? _____

Fun Challenge:

If molecules were LEGO sets, which would be the easiest to build? _____

The hardest? _____

Big Question: 🤔

Why do living things need so many different types of molecules? _____

Phase 2: EXPLORE (18 minutes)

Game Level 1: Sugar Squad! 🍭

Find all the carbohydrates (sugars and starches).

Sugar Detective Clues:

- Made of C, H, and O
- Often have ring shapes
- Names often end in "-ose"

My Sugar Collection:

- ---------- Simple _____ Potatoes

Pattern Power: Sugars always have _____ hydrogen atoms for every carbon!

Game Level 2: Fat Finders! 🧈

Hunt for all the lipids (fats and oils).

Fat Facts to Find:

- Long chains or rings
- Mostly C and H
- Don't like water!

My Lipid List:

- --------- Solid Good _____

Cool Discovery: Fats have LOTS of _____ to store energy!

Game Level 3: Protein Power! 💪

Spot all the proteins and amino acids.

Protein Pointers:

- Made of amino acid chains
- Contain nitrogen (N)
- Twisted and folded shapes

My Protein Pile:

- ---------- Small building block Speeds reactions _____

Wow Factor: Just 20 amino acids make ALL proteins! Like 26 letters make all words!

Game Level 4: DNA Detectives! 🧬

Find nucleic acids and their parts.

DNA/RNA Radar:

- Have phosphate groups
- Contain bases (A,T,G,C,U)
- Store information

My Nucleic Acid Notes:

- DNA has _____ strand(s)
- Found in cell's _____

Mind Blown: 🤯 Your DNA instructions would fill 200 phone books!

Phase 3: EXPLAIN (12 minutes)

The Fantastic Four Molecule Types

1. **Carbohydrates = Quick Energy!** ⚡

Like: Gas for a car

Simple sugars: 🍬 Glucose, Fructose

- Instant energy
- Taste sweet

Complex carbs: 🍞 Starch, Cellulose

- Stored energy
- Structure (plant walls)

Remember: C-H-O in 1:2:1 ratio!

1. **Lipids = Energy Storage & Barriers!** 🛢️

Like: Battery pack + raincoat

Fats & Oils:

- Long-term energy
- 2x energy of carbs!

Special lipids:

- Cell membranes (phospholipids)
- Signals (hormones)

Remember: Mostly C and H, water-hating!

1. **Proteins = The Workers!** 👷

Like: Tools and machines

Jobs:

- 🅰️ Enzymes (speed up reactions)
- 💉 Antibodies (fight germs)
- 🏢 Structure (hair, muscles)
- 🚚 Transport (carry stuff)

Remember: Chains of amino acids, contain N!

1. **Nucleic Acids = Instructions!** 📚

Like: Recipe books

DNA: Master copy

- Double helix
- In nucleus

RNA: Working copy

- Single strand
- Makes proteins

Remember: A-T (or U) and G-C pairs!

Phase 4: ELABORATE (8 minutes)

Molecules in Your Life

1. **Your Lunch Molecules:**

Pizza Breakdown:

- Crust: _____ (molecule type)
- Tomato sauce: _____ and vitamins

All four types in one meal!

1. **Sports & Molecules:**

Before game: Eat _____ for quick energy

During game: Burn _____ and _____

After game: Need _____ to repair muscles

Always: DNA provides _____

1. **Molecule Mix-Up Game:**

What happens when molecules combine? _____

- Sugar + Sugar = _____ (bigger carb)
- Glycerol + Fatty acids = _____

Create Your Meal!

Design a balanced meal with all 4 molecule types:

- Breakfast: _____
- Dinner: _____

Draw your favorite meal: [Space for drawing]

Phase 5: EVALUATE (7 minutes)

Show What You Know!

1. **Molecule Match-Up:**

Draw lines to connect:

Glucose • • Lipid

DNA • • Carbohydrate

Enzyme • • Protein

Cholesterol • • Nucleic Acid

1. **True or False** (circle):

- T / F: All sugars taste sweet
- T / F: Proteins contain nitrogen
- T / F: Fats dissolve in water
- T / F: DNA is a protein

1. **Mystery Molecule:**

I have:

- Only C, H, and O
- Ring shape
- Give quick energy

I am a: _____

1. **Fill the Blanks:**

1. **Real-World Problem:**

An athlete needs long-lasting energy.

Should they eat:

Best choice because: _____

Super Challenge!

If you could invent a new molecule, what would it do? _____

- Name: _____
- Special power: _____

Reflection Corner: 💭

- Favorite molecule learned: _____
- Still wondering about: _____

Exit Ticket:

Rate your molecule knowledge: 🌟🌟🌟🌟🌟

Why are you made of molecules? _____

- --

Fun Molecule Facts:

- Your body has 37 trillion cells using these molecules! 🤯
- Spider silk (protein) is stronger than steel! 🕷️
- Your brain is 60% fat! 🧠
- DNA from one cell stretched out = 6 feet long! 📏
- You make 2 million red blood cells every second! ❤️

Key Vocabulary:

See activity for vocabulary specific to this topic.