Name: _____ **Date:** _____

Section: _____

Glycogen Hydrolysis Activity

Sugar Storage: Breaking Down Glycogen!

Phase 1: ENGAGE (5 minutes)

Getting Started: Open peebedu.com and navigate to Glycogen Hydrolysis Lab

Watch the tutorial - it's like a video game for molecules!

The Big Idea: Your body stores extra sugar (glucose) as glycogen - like a savings account for energy!

First Look: What shape do you see? _____ Count the yellow hexagons (glucose): _____ What connects them? _____ Where do you see branches? _____

Fun Fact: One glycogen molecule can have 30,000 glucose units! That's a lot of energy!

Phase 2: EXPLORE (18 minutes)

Activity 1: Breaking It Down!

Use the Hydrolyze tool (water drop) to break 5 bonds.

What Happens?

- ——— 75 _____ _____

Cool Challenge: Use the simulation to show what happens when you: Eat a big meal: _____ Run a race: _____ Skip breakfast: _____

Phase 5: EVALUATE (7 minutes)

Show What You Know!

Vocabulary Match: Draw lines to connect:

Glycogen • • Using water to break Glucose • • Stored sugar chains Hydrolysis • • Making bonds Dehydration • • Single sugar unit

True or False (circle):

- T / F: Breaking bonds uses water
- T / F: Glycogen = many glucose
- T / F: Branches make breakdown slower
- T / F: Your muscles store glycogen

Problem Solving: You have 30 water molecules.

- Maximum bonds you can break: _____

- Show your work: _____

Big Picture: Why doesn't your body store pure glucose?

Think about:

- A jar of sugar cubes vs. a sugar sculpture

Design Challenge:

Draw the BEST glycogen for:

- A sprinter (fast energy): _____

Explain your designs: _____

Super Science Question: If you ate only candy (pure glucose), what would happen? _____

- Good things: _____
- Why glycogen is better: _____

Exit Ticket: Rate this lab!

- Fun factor:
- Learned new things:
- –

Molecule Meanings:

- **Glycogen:** Your body's energy savings account
- **Glucose:** Quick energy money
- **Hydrolysis:** Breaking with water
- **Bond:** Molecular connection
- **Enzyme:** Molecular scissors (mentioned in challenges)

Key Vocabulary

See activity for vocabulary specific to this topic.