

Student Activity Sheet

Name: _____ Date: _____ Period: _____

Protein Modification Practice

Phase 1: ENGAGE (5 minutes)

Getting Started: Open peebedu.com and navigate to Protein Modification and Shipping Visualizer

First Impressions:

What five things can you do to proteins in this app?

1. _____
2. _____
3. _____
4. _____
5. _____

Essential Question: What modifications can be applied to proteins and where do they go?

Phase 2: EXPLORE (20 minutes)

Mission 1: Try Glycosylation Use the app to add sugar groups to proteins.

How many proteins were you able to modify with glycosylation?

What effect did adding sugar groups have on the proteins?

Mission 2: Try Phosphorylation

Use the app to add phosphate groups to proteins.

How many proteins were you able to modify with phosphorylation?

Can phosphorylation be reversed? Explain what you observed.

Mission 3: Try Protein Cleavage Use the app to cut proteins.

What happened to the proteins when you performed cleavage?

Why might protein cleavage be useful for cells?

Mission 4: Protein Delivery Practice sending proteins to different places in the cell.

Where can proteins be delivered in this app?

Which destinations did you successfully try?

Exit Reflection:

Which modification was most interesting to you and why?

Key Vocabulary:

- **Glycosylation:** Adding sugar groups to proteins
- **Phosphorylation:** Adding phosphate groups to proteins
- **Protein cleavage:** Cutting proteins
- **Cell membrane:** Outer boundary of cell
- **Lysosome:** Cell's recycling center