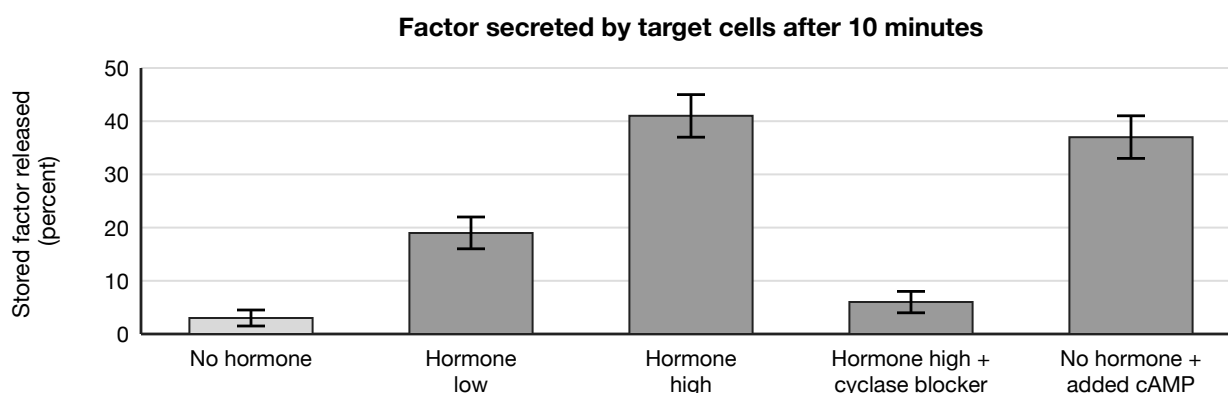


Name: _____ Period: _____ Date: _____

Open [peedu.com](https://www.peedu.com) and navigate to **Signal Rally**. Choose the **Protein hormone** or **Steroid hormone** course, then **1 player** or **2 players**, and tap any molecule for its note.

Question 1: Analyze Data

Experiment: Researchers treated dishes of target cells that store a secreted factor in vesicles as shown in the graph, then measured the percent of stored factor released after 10 minutes. The blocker stops adenylyl cyclase; the added cAMP enters cells. Bars are means of 8 dishes; error bars show 95% confidence intervals.



(A) (1 pt) **Describe** the relationship between hormone concentration and the percent of factor released.

(B) (1 pt) **Describe** the effect of the adenylyl cyclase blocker at the high hormone concentration.

(C) (1 pt) **Evaluate** the hypothesis that the hormone triggers secretion through cAMP, using the data.

(D) (1 pt) **Explain** how the protein hormone causes the target cell to release a factor stored in vesicles.

Question 2: Analyze Model / Visual Representation

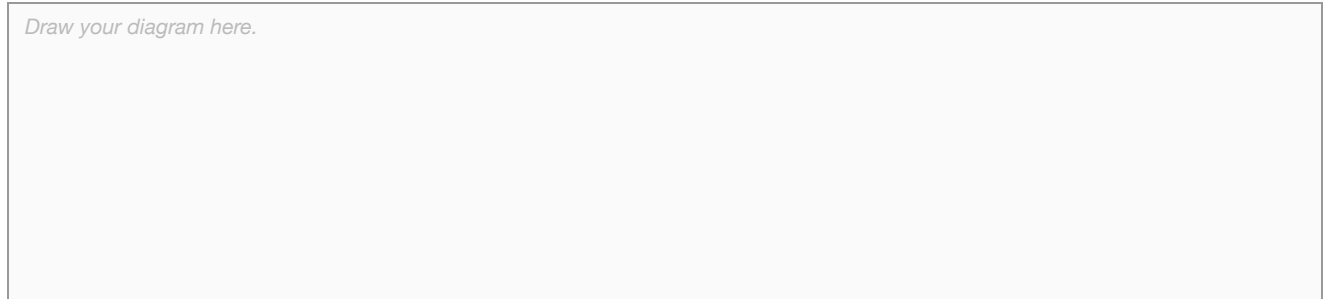
Game Task: Play the Protein hormone course until the stored vesicle is released, then the Steroid hormone course until the factor is secreted. Compare where each receptor is and how the cell makes the factor it releases.

(A) (1 pt) **Describe** the relationship between the location of a receptor protein and the type of signaling molecule it recognizes.

(B) (1 pt) **Explain** why a steroid hormone can alter gene expression without a second messenger cascade, whereas a peptide hormone binding at the cell surface requires an intracellular signaling cascade to produce a response.

(C) (1 pt) **Represent** the path of a lipid-soluble signaling molecule from outside the cell to the activation of transcription in the nucleus by drawing a labeled diagram that includes the phospholipid bilayer, the signaling molecule, the receptor, the nuclear envelope, DNA, and mRNA.

Draw your diagram here.



(D) (1 pt) **Explain** how a change in the amino acid sequence of a receptor protein could reduce its function.

4.2.B.1, 1.7.A.3