

## Objectives

Receptor-Mediated Endocytosis Lecture

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If you can answer the following questions, you have mastered the objectives of this lecture and will do well on the exam. This also serves as a lecture outline.

List the major types of internalization events.

List types of molecules that enter by receptor mediated endocytosis.

## Endocytosis

Define the three steps that allow the ligand to enter the cell.

1. Receptor-ligand binding: what is its significance?
2. Concentration of the receptor-ligand complexes: Why is this important to the cell?
3. Movement of receptor-ligand to clathrin coated pits: What is the significance?
  - a. Can more than one type of ligand enter a clathrin coated pit?
  - b. How are pits organized on the membrane (what mechanism holds them in place?)
  - c. What guides the receptor-ligand complex to the clathrin coated pit and what keeps it there?

How does the clathrin coated pit become a vesicle?

Review the entire process, this time using the LDL proteins as the ligand (which carry cholesterol) and the LDL receptor? (see slide that illustrates this).

What happens if the LDL receptor is defective?

What is the result if we can't bring cholesterol into our cells? (relate this to Murphy family disease)

## Formation of early endosome

Describe the process by which the early endosome is formed.

What is the sorting signal (rab-GDP) that allows vesicle fusion?

Why are early endosomes sometimes called "recycling" or sorting endosomes? How would this be efficient for the cell?

### **Formation of late endosome and lysosomes**

What are the changes that allow the early endosome to form a late endosome?

What organelles communicate with the late endosome? The \_\_\_\_\_ and the \_\_\_\_\_

What is the role of the Golgi complex in late endosome function?

What is the sorting signal (rab-GDP) for communication with the late endosomes.

What is the eventual fate of late endosomes?

How might you distinguish a late endosome from a lysosome?

Why are these organelles important to the cell?

- 1) Distinguish mechanisms causing Nieman Pick A and B diseases from Nieman Pick C
- 2) Review Cholesterol trafficking from the late endosome.