Vesicular Transport

Bethany Beck, Tamia Johnson, and Wells Powell
*A highly organized system that allows cells to eat and secrete.

*It then travels to its final destination of endosomes and lysosomes.
Continual budding and fusion

- Transport from the ER to Golgi apparatus and from the Golgi apparatus to other compartments of the endomembrane system.

- This carried out by the continual budding and fusion of transport vesicles.

- The pathways extend out from the ER to the plasma membrane and inward from the plasma membrane to lysosomes.
Vesicles or coated vesicles?

*Vesicles have a distinctive protein coat on their cytosolic surface which is the reason they are called coated vesicles.

*After budding from organelles, vesicles shed their coat.
*Allowing their membrane to interact with the membrane to which it will fuse.
Cells produce several kinds of coated vesicles. Each vesicle has a distinctive protein coat serving two main functions:

* It shapes the membrane into a bud
* It helps to capture molecules for onward transport

So far the best studied vesicle are those that have their coats made largely of the protein **Clathrin**.
Rab Proteins and S.N.A.R.E.s

Rab Proteins:
Located on the surface of vesicles and are recognized by tethering proteins.

S.N.A.R.E.s:
Additional recognition that is provided by transmembrane proteins.

Rab proteins and S.N.A.R.E.s both help direct transport vesicles to their target membranes.
The SNARE proteins play a vital role in the fusion process: after pairing, v-SNAREs and t-SNAREs wrap around each other, and pulls the two membranes into a close vicinity.
Class for Vesicles

*Clathrin coated vesicles bud from the golgi apparatus.
*Another class of coated vesicles, are called COP-coated vesicles.
*The COP is short for “coat protein”
*It’s involved in transporting molecules between the ER and the golgi apparatus and to another golgi apparatus.
Vesicle Docking

- When transport vesicle has reached its target, it must then identify and dock with the organelle.

- Then the vesicle membrane is able to fuse with the target membrane and drop off the vehicle's cargo.


Functions?

* In order for the vesicular transport to function right it has to
* transport vesicles that buds from the membrane compartment
* Must take only proteins
* Must fuse only with the target membrane
Short Review Quiz!!
1.) 

How do vesicles shuttle proteins?
A major secretory pathway starts at the ER then travels to the Golgi apparatus.
2.)

What is carried out by continual budding and fusion of transport vesicles?
Endomembrane System
The coated vesicles serve two main functions. What are those functions?
*It shapes the membrane into a bud
*It helps to capture molecules for onward transport
4.) Why are vesicles called coated vesicles
Vesicles have a distinctive protein coat on their cytosolic surface which is the reason they are called coated vesicles.
5.)

What are RAB proteins and S.N.A.R.E.S? What do they both have in common?
RAB proteins:
Located on the surface of vesicles and are recognized by tethering proteins.

SNARES:
Additional recognition that is provided by transmembrane proteins.

Rab proteins and S.N.A.R.E.s both help direct transport vesicles to their target membranes.
6.) What must the vesicular transport do in order to function correctly?
*transport vesicles that buds from the membrane compartment

*Must take only proteins

*Must fuse only with the target membrane
End of brief quiz