Bio121
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Review Questions
Lectures 12 & 13

1. What are the **three general types** of intravesicular (intracellular vesicular) trafficking? Briefly describe each.

2. What are the critical functions of the ER discussed in this lecture?

3. What proteins are translated on bound ribosomes?

4. What proteins are translated on free ribosomes?

5. What predictions can you make about the mechanism of transport for newly translated peptides to their final destination based on the type of ribosome they were transported on? (Vesicle or protein-mediated transport?)

6. What is a signal sequence and why is it important? How is it different from a signal patch?

7. What is the N-terminal leader peptide? What cytosolic protein does it bind to? What happens after binding occurs? What membrane-bound protein on the ER surface is involved? What happens to the ribosome?

8. What would happen to a protein that had a mutation in its N-terminal leader peptide that prevented recognition/binding by SRP?

9. When a transmembrane protein is inserted into the ER, is its orientation with respect to cytosolic and non-cytosolic sided fixed, or can it turn around? And does it have any influence on the lipid components of the ER membrane?

respect to cytosolic and non-cytosolic sided fixed, or can it turn around? And does it have any influence on the lipid components of the ER membrane?

10. Where do vesicles that bud from the ER go next?

11. How do components of the vesicular (source) membrane aid in trafficking? List the components and describe what activities they contribute to.

12. What is the function of coat proteins? What are the three major families of coat proteins? What would happen if each of these coat proteins were mutated in a way that prevented them from functioning (i.e., where would transport be affected if COPII was not functioning properly, etc)?

13. How is dynamin involved in vesicle formation? What do different dynamin mutations do?

14. What is a vesicle protein signature? Why are signal patches on the cytosolic side of vesicles important for vesicular trafficking? What proteins do they associate with?

15. What is the functional difference between Rab and SNARE proteins?

16. A vesicular SNARE binds to a target SNARE. What happens next?

17. Can any lipid layer fuse with any other lipid layer?

18. Which of the following have different compositions depending on which face of the membrane they are located (cytosolic or non-cytosolic): Proteins, Lipids Explain how/why.

19. What happens to proteins in the Golgi? During outward flow, which direction do proteins move? Can proteins move in the reverse direction? Why might this happen?

20. Are glycosylating enzymes within the Golgi the same in each cisternae? How about from cell to cell - is there variation in the GA glycosylating enzymes? Why is this significant?

21. What is the difference between constitutive and regulated secretion (from Golgi to PM)?

22. What is the cellular mechanism for ensuring lysosomal hydrolases are specifically (and safely) delivered to the lysosome? Why is important for these lysosomal enzymes to have a special delivery mechanism?

23. What is the significance of signal patches on lysosomal hydrolases?

24. Where is the M6P Receptor located? What is its function after binding to M6P tagged proteins?

25. What are the different types of endocytosis?

26. How is vesicle formation during receptor-mediated endocytosis similar to vesicle formation during intravesicular trafficking?

27. Why are TOM and TIM proteins important for mitochondrial function? What type of ribosomes are the proteins that associate with TOM and TIM translated on?