UNIVERSITETET I OSLO

Det matematisk-naturvitenskapelige fakultet

Exam in: MBV 4240, Biochemical mechanisms in intracellular transport

Day of exam: December 6th, 2005 Exam hours: 14.30 – 17.30 (2:30 pm)

This examination paper consists of 1 page:

Appendices: None Permitted materials: None

Make sure that your copy of this examination paper is complete before answering

1. Different types of endocytosis:
   - A. Give a brief definition of endocytosis?
   - B. The different types of endocytosis: Mention some cellular components involved in formation of endocytic vesicles and the roles of these components (if known).
   - C. Mention ligands known to be taken up by a given endocytic mechanism.
   - D. To which compartment do the different types of endocytosis transfer the internalized ligand?

2. Adaptors and coats on membranes:
   - A. What is the general structure of the adaptors AP1 to AP4?
   - B. Where in the cell do you find AP1 to AP4 and what are their functions (if known)?
   - C. Where in the cell do you find COPI and COPII coated structures and what is known about their function(s)?
   - D. Ubiquitin can be covalently added to a protein and mediate sorting. What sorting step(s) in a cell can be dependent on ubiquitin?
   - E. Sorting nexins: How can these molecules contribute to intracellular sorting?

3. Lipid rafts:
   - A. What is meant by a lipid raft, and what are the types of lipids found in these rafts?
   - B. How are rafts isolated?
   - C. What can their function(s) be?

4. Rab-proteins and other small GTP-binding proteins: How is their activation and inactivation regulated?

5. ER-associated degradation (ERAD):
   - A. Mention some criteria that seem to be important for determining whether a protein is going to be degraded after arrival in the ER.
   - B. What happens to a protein destined for degradation, and how is it degraded?

6. Golgi transport:
   Describe different models for how macromolecules are transported from the *cis*-Golgi to the *trans*-Golgi in the secretory pathway?