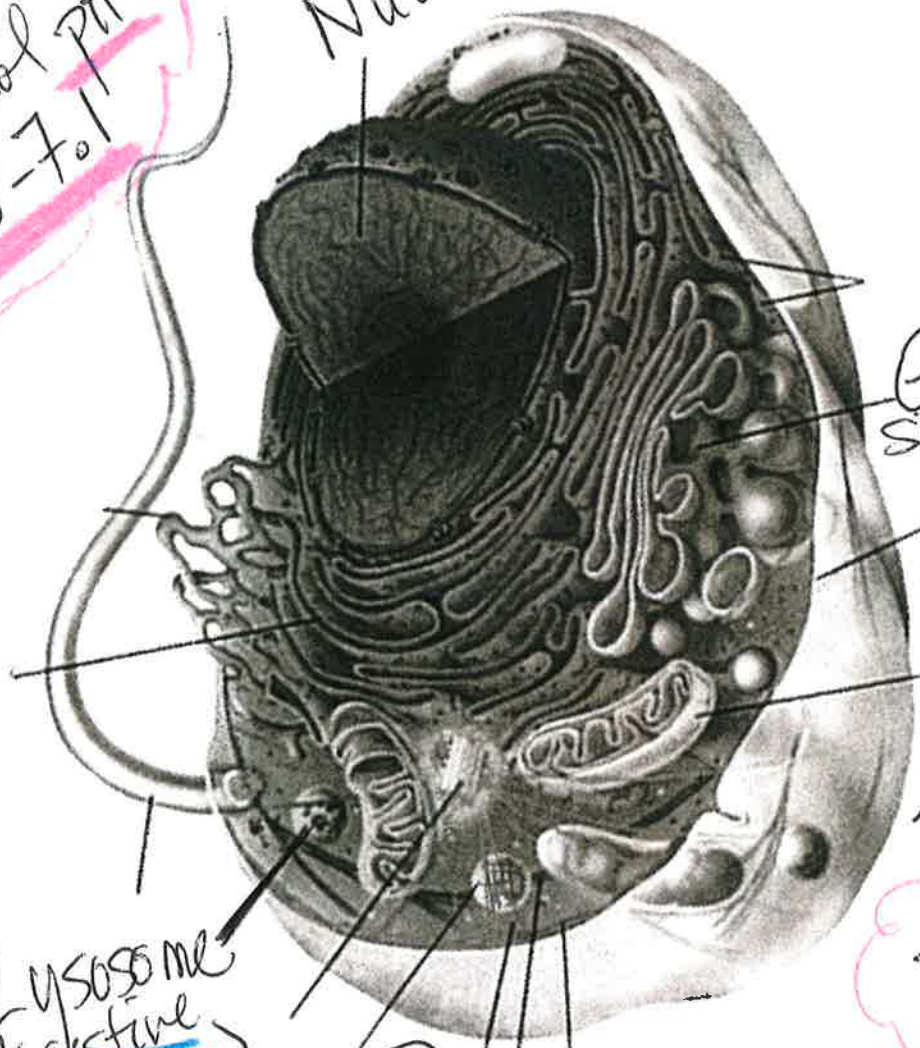
Eukaryotic Compartmentalization Diagram



Overall Cytosol pH ≈ 6.8 – 7.1

pH ≈ 4.5 – 5.0

pH ≈ 6.9 – 7.1

pH ≈ 8.0 in Matrix (goo)

pH ≈ 6.9 – 7.1 in intermembrane space

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3Q's

Eukaryotic Cells & Compartmentalization

Summary/reflection

Eukaryotic Cells & Compartmentalization

I. Compartmentalization:
   A. What is compartmentalization?
      1. internal space of eukaryotic cells are divided up by partitions into compartments (separate spaces)
   B. What forms to cause partitions/separations of space?
      1. single or double membranes
   C. What are the end result of these partitions/separations?
      1. specialized membrane bound organelles

II. Benefits/Advantages of Compartmentalization:
   A. Enzymes & other substances for a particular process can be concentrated in a specific region (more concentrated than spread throughout the cytosol)
      - ex. RuBP Carboxylase (enzyme) needed for light-independent reaction found in the stroma of the chloropast
   B. Substances that could cause damage to the cell can be kept inside a membrane
      - ex. digestive enzymes that could easily digest the cell kept in lysosome
      - ex. H_2O_2 that could damage cell contents kept inside peroxisome
   C. Specific environmental conditions can be more easily maintained inside a membrane
      - ex. pH levels can be specific to a chemical process, which may be damaging or slow down other chemical processes
   D. Organelles with their contents can be moved around within the cell along cytoskeleton tracks
      - mitochondria, chloroplasts, etc.