CONCEPT: PEROXISOMES

● Peroxisomes are organelles that contain _____ chemical reactions

□ Uses oxygen to produce hydrogen peroxide (H_2O_2)

- **Catalase** is the enzyme that uses H_2O_2 is then used to oxidize other toxic molecules (ex: ethanol)

□ Around 50 enzymes function in various biochemical pathways

- Lipid synthesis including **plasmogens** (phospholipids with glycerol attached with a ether bond)

- In plants it is the place of the *glyoxylate cycle* which converts fatty acids to carbohydrates

- **Beta oxidation** (breakdown of fatty acids) occurs here

EXAMPLE: Oxidizing toxic molecules using hydrogen peroxide

$$\mathrm{H_2O_2 + R'H_2 \rightarrow R' + 2H_2O}$$

□ Peroxisomes are _____ in the ER

- Bud off and fuse with other buds to form new peroxisomes

□ **SKL sorting signal** exists on **peroxin** proteins that reside in the peroxisomes

- Defects in import of perixosomal proteins can cause severe diseases (Zellweger syndrome)

PRACTICE:

1. What is the function of a peroxisome?
    a. Maintain acidity of the cell
    b. Contain toxic reactions
    c. Protein synthesis
    d. Protein glycosylation