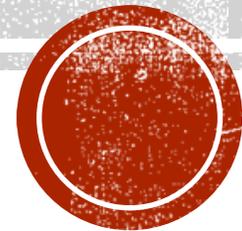


MICROBODIES

B.Sc. Part II, Paper I, Group A

By- Dr. Vandana Kumari, Department of Zoology, R.C.S. College,
Manjhaul

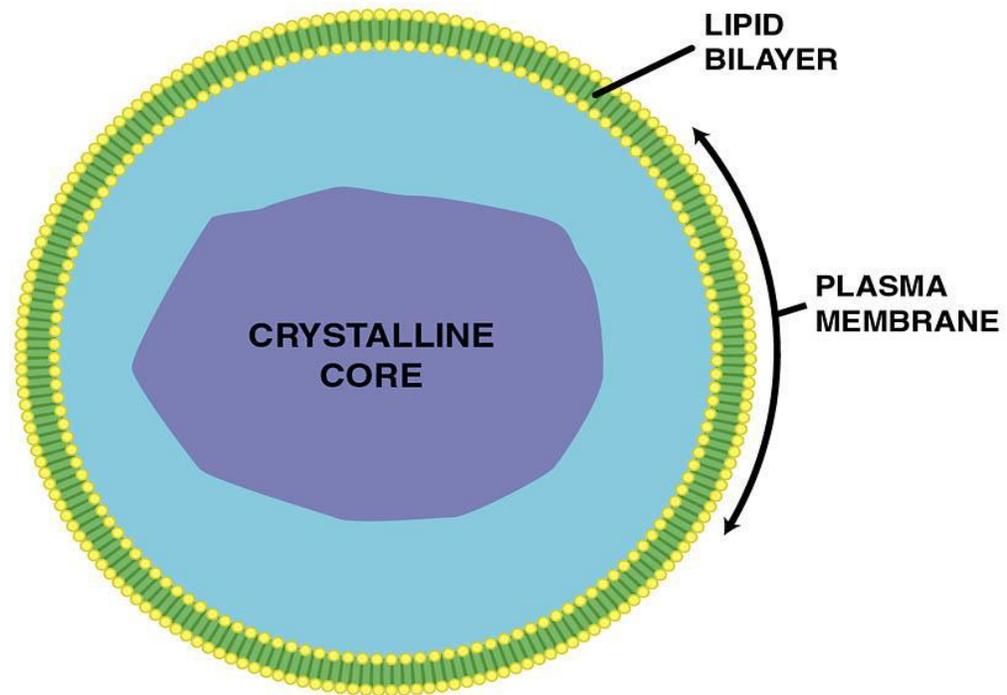


INTRODUCTION

- A microbody is type of organelle that is found in the cells of plants and animals.
- It is usually a vesicle with a spherical shape, ranging from 0.2-1.5 micrometers in diameter. The microbodies are found in the cytoplasm of a cell, but they are only visible with the help of an electron microscope.
- They are surrounded by a single phospholipid bilayer membrane and they contain a matrix of intracellular material including enzymes and other proteins, but they do not seem to contain any genetic material to allow them to self-replicate.
- Some of the microbodies present in different cells are peroxisomes, glyoxysomes, glycosomes, spherosomes and hydrogenases.
- In vertebrates these are especially prevalent in the liver and kidney.



STRUCTURE



Microbody Structure- A Peroxisome



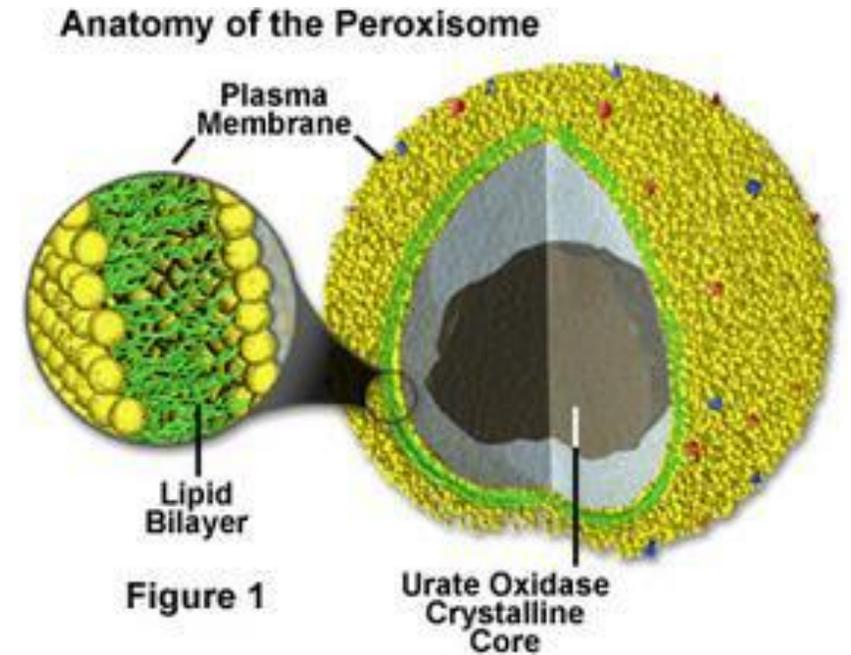
FUNCTION

- Microbodies contain enzymes that participate in the preparatory or intermediate stage of biochemical reactions within the cell.
- This facilitates the breakdown of fat, alcohols and amino acids.
- Generally microbodies are involved in detoxification of peroxidase and in photo respiration in plants.
- Different types of microbodies have different function.



PEROXISOMES

- These are the microbodies found in many animal cells and also in plant cells.
- Variable in shape and size but usually appear circular in cross section



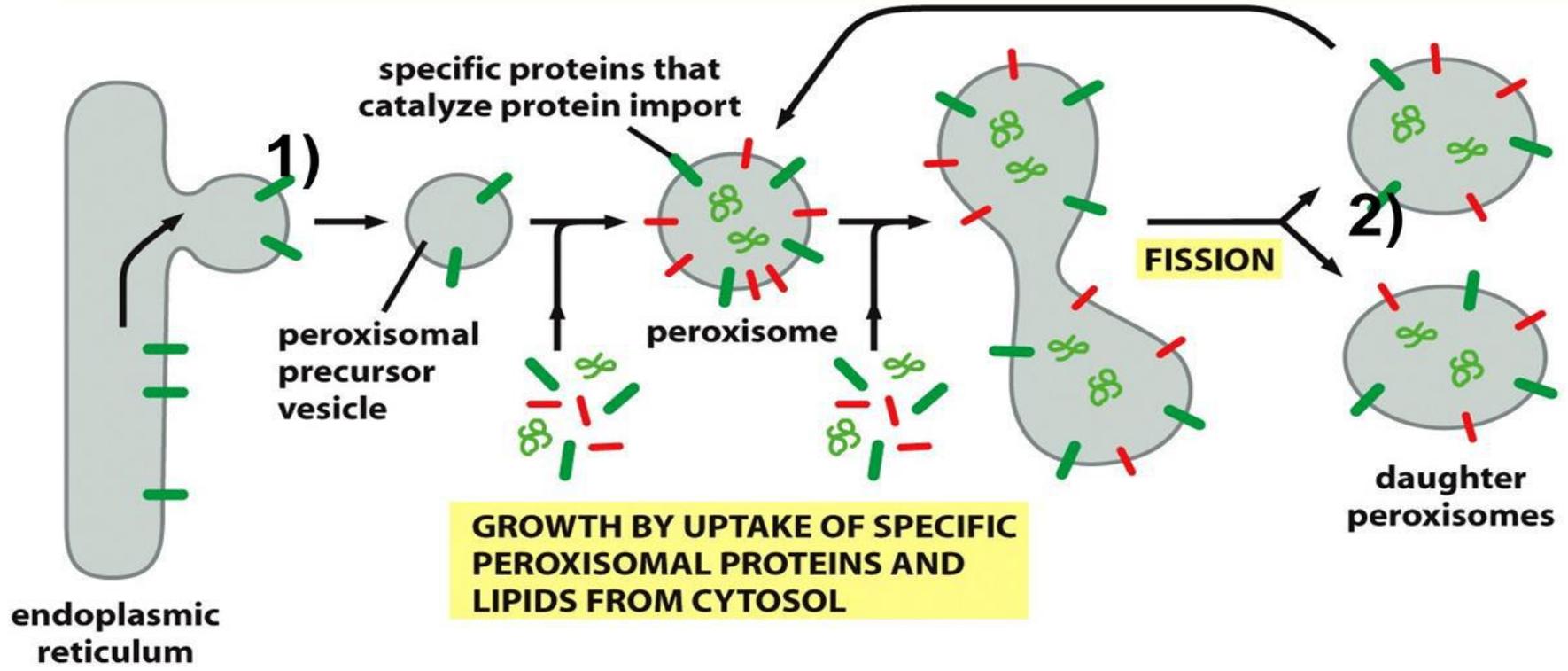
STRUCTURE

- These are small spherical bodies
- Single membrane bound structure
- Contains inner dense matrix
- Made up of lipid and protein molecules
- Peroxisomes have a lipid bilayer membranes which regulates entry and exit of substances
- It has a urate oxidase crystalline core with 32 peroxisomal proteins, which perform peroxisomal functions inside cell organelles
- Contains catalases and oxidases
- Enzyme catalases, catalyse the decomposition of hydrogen peroxide (H_2O_2) to water
-

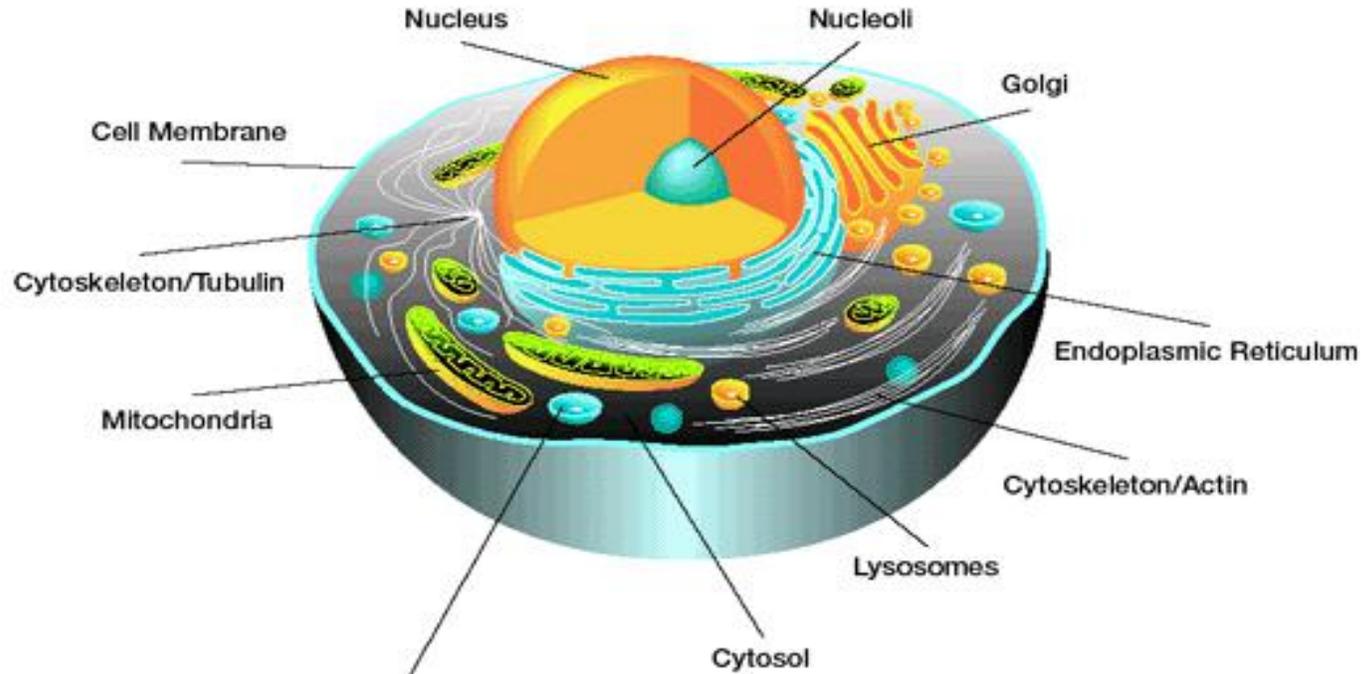


PEROXISOME FORMATION

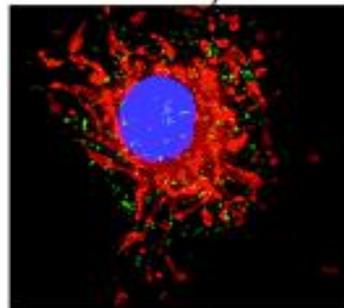
New Peroxisomes Can Arise One Of Two Ways



POSITION INSIDE ANIMAL CELL



Peroxisome



Peroxisomes — Human cells contain several hundred peroxisomes, depicted in this photo as green spheres. Photo courtesy of Molecular Probes.



SPHEROSOMES

- Small spherical bodies with a single unit membrane.
- Spherical in shape, about 0.5 to 2.5 μm in size
- Present in almost all plant cells especially in endosperm cells of oilseeds.
- Single membrane bound organelles
- Contains hydrolytic enzymes such as hydrolases, proteases, ribonucleases, phosphatases and esterase etc.



GLYOXYSOMES

- These are specialised peroxisomes found in plants and mold.
- It helps to convert stored lipid into carbohydrates to be used in plant growth.
- In glyoxysomes the fatty acids are hydrolyzed to acetyl Co-A by peroxisomal beta oxidation enzymes.
- Glyoxysomes possess the key enzymes of the glyoxylate cycle.

