

**Formation and utilization of ketone bodies; ketoacidosis**

**De novo synthesis of fatty acids (Palmitic acid)**

**Biological significance of cholesterol and conversion of cholesterol into bile acids, steroid hormone and vitamin D**

**Disorders of lipid metabolism: Hypercholesterolemia, atherosclerosis, fatty liver and obesity.**

[DEPTH OF BIOLOGY]

- **Amino acid metabolism**

**General reactions of amino acid metabolism: Transamination, deamination & decarboxylation, urea cycle and its disorders**

**Catabolism of phenylalanine and tyrosine and their metabolic disorders (Phenylketonuria, Albinism, alpeptonuria, tyrosinemia)**

**Synthesis and significance of biological substances; 5-HT, melatonin, dopamine, noradrenaline, adrenaline [DEPTH OF BIOLOGY]**

**Catabolism of heme; hyperbilirubinemia and jaundice**



# Disorders of Lipid Metabolism

## 1. Hypercholesterolemia

- Genetic disorder [DEPTH OF BIOLOGY]
- increased level of cholesterol in blood.

cholesterol



lipid molecule



- Normally helps in maintaining the structure of cell membrane.

- Precursor of steroid hormones



Bile acids

Vitamin D

There are 2 types of cholesterol

LDL

[DEPTH OF BIOLOGY]

low density lipoprotein



Bad Cholesterol



produce by liver

↳ carry cholesterol out of the rest of the body

HDL

high density lipoprotein



Good Cholesterol



remove cholesterol from cells and that can help reverse the process of Atherosclerosis

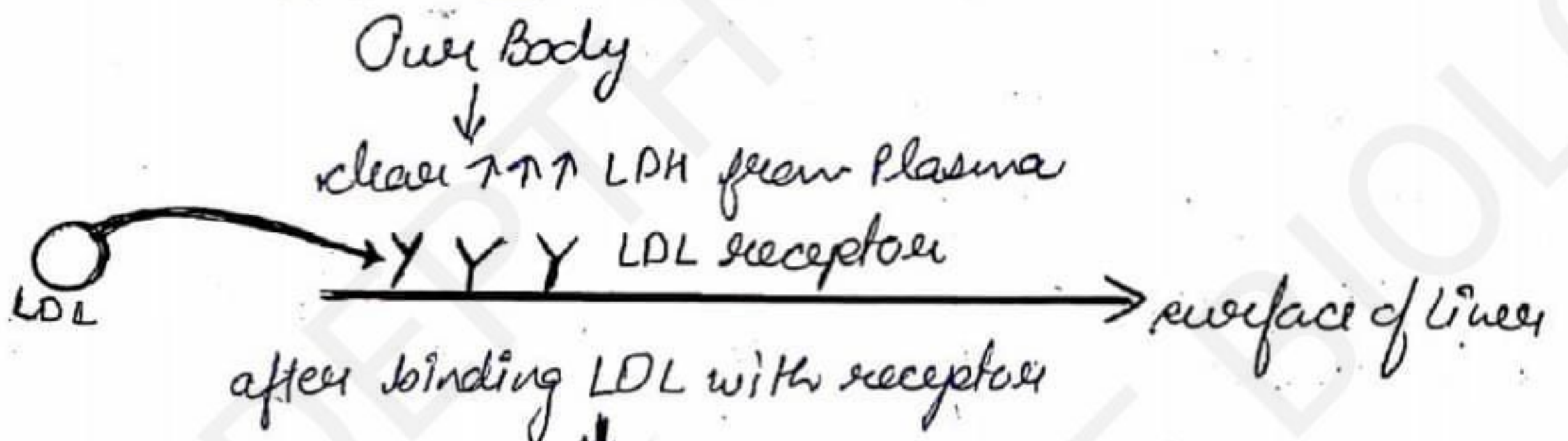
\* When high conc. of LDL in blood

it is ingested by macrophages that sits along the vessels wall and forming Atherosclerotic Plaques.

\* large atherosclerotic plaques leads to Myocardial Infarction, strokes and peripheral vascular diseases.

[DEPTH OF BIOLOGY]





after binding LDL with receptors  
 ↓  
 coated pits [DEPTH OF BIOLOGY]

Now  
 ↓  
 They form coated vesicle inside the cell.

LDL receptors release LDL in cytoplasm and back to the cell surface at a same time the coated vesicle fuses with an intracellular organelle (lysosome) [DEPTH OF BIOLOGY]

Now inside the lysosome LDL molecule are enzymatically degraded and free cholesterol molecules are released which then crosses the lysosomal memb. to enter the cytoplasm.

Now in cytoplasm free cholesterol is used for cell Membrane synthesis and other metabolic process [DEPTH OF BIOLOGY]

# 900 different types of Mutations

[DEPTH OF BIOLOGY]

- Class I
- Class II
- Class III
- Class IV
- Class V



# Mutation leads to decrease in clearance of LDL from plasma results in accumulation of LDL cholesterol in circulation

[DEPTH OF BIOLOGY]

↓  
excess cholesterol  
↓  
gets engulfed by macrophages  
↓  
sits along vascular walls.  
↓  
results in premature Atherosclerosis

# Symptoms

excess cholesterol deposit in different parts of body

↓  
related to xanthomas yellowish collection of cholesterol

eg:- Tendons of hand, elbow and knees, eyelids

# Deposit in arterial wall

↓  
Arterial wall Narrows

↓  
results Ischemia

↓  
If coronary artery blocks

↓  
Heart muscles blood flow stops or blocks.

↓  
chest pain

↓  
Angina Pectoris

[DEPTH OF BIOLOGY]



[DEPTH OF BIOLOGY]



# If cerebral arteries block,

↓  
Ischemic stroke

[DEPTH OF BIOLOGY]

↓  
slurring in speech, weakness of one side, loss of balance

Diagnosis :-

↳ lipid profile test — (Increase level of total cholesterol and LDL)

confirmatory diagnosis

↳ genetic testing — specific mutation in LDL Receptor gene

Treatment :- [DEPTH OF BIOLOGY]

↳ LDL ↓

↓  
cardiovascular disease

↓  
risk reduce

↳ No OH, No smoking, No saturated diet

↳ statin is used to treat.

[DEPTH OF BIOLOGY]