

SNS COLLEGE OF ALLIED HEALTH SCIENCE
Affiliated to The Tamil Nadu Dr M.G.R Medical University, Chennai



DEPARTMENT OF CARDIAC TECHNOLOGY

COURSE NAME: BIOCHEMISTRY

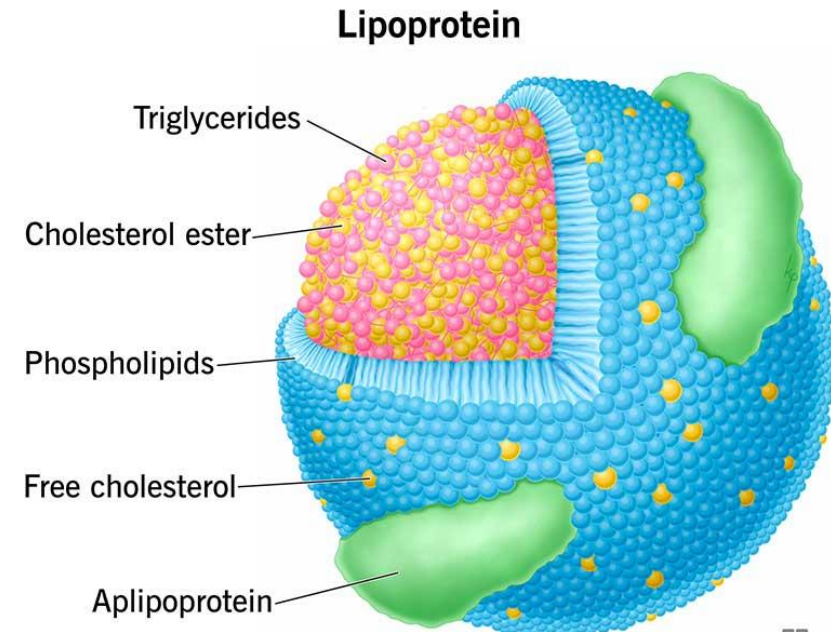
UNIT : 2

TOPIC : LIPOPROTEINS

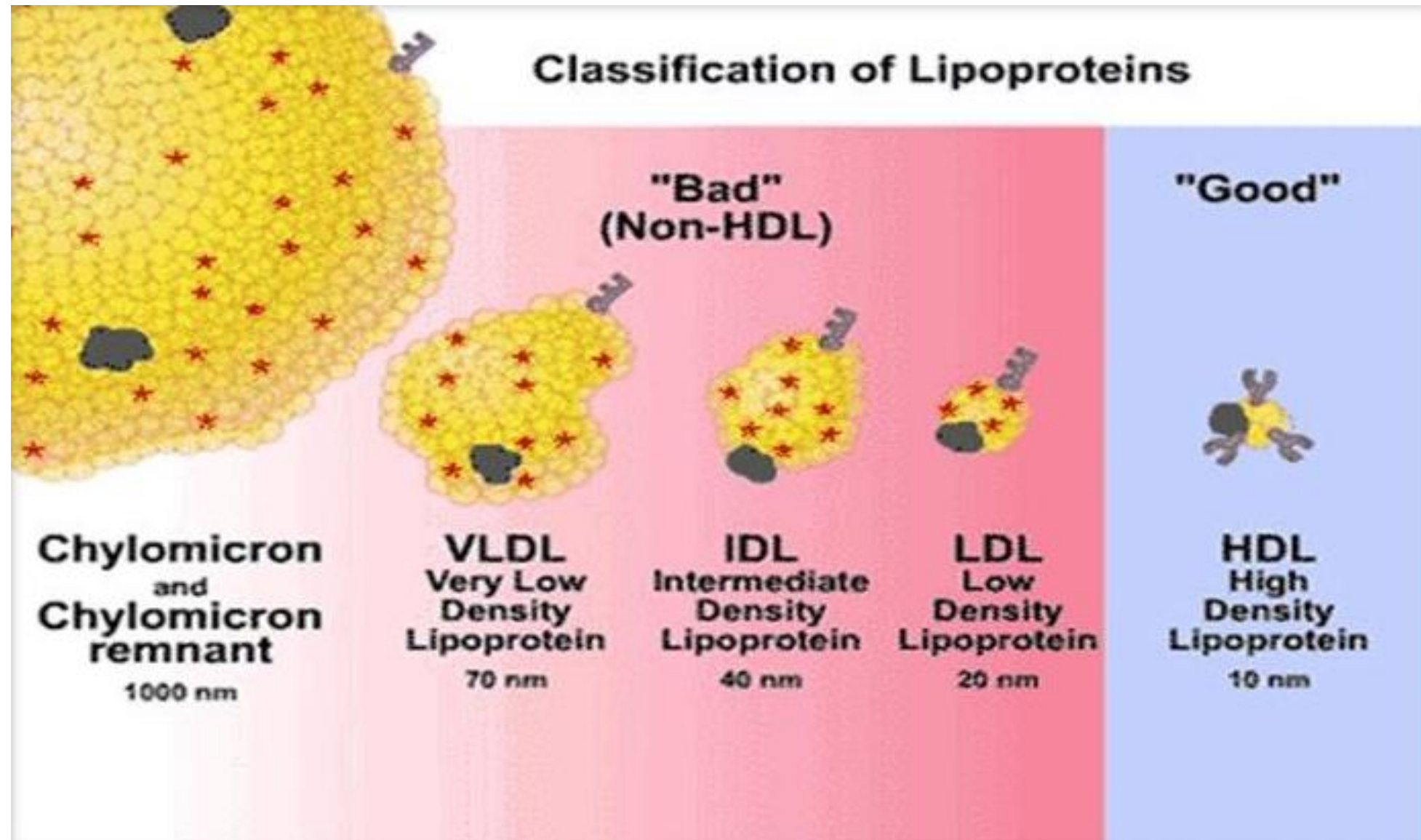
FACULTY NAME: MITHRA V

LIPOPROTEINS - DEFINE

- Small round (spherical) particles that **transport cholesterol & triglycerides** through bloodstream.
- Types of lipoproteins, including
- High-density lipoprotein (**HDL**),
- Low-density lipoprotein (**LDL**), and
- Very-low-density lipoprotein (**VLDL**).
- **Core:** Triglycerides + Cholesterol esters
- **Shell:** Phospholipids + Free cholesterol + Apolipoproteins

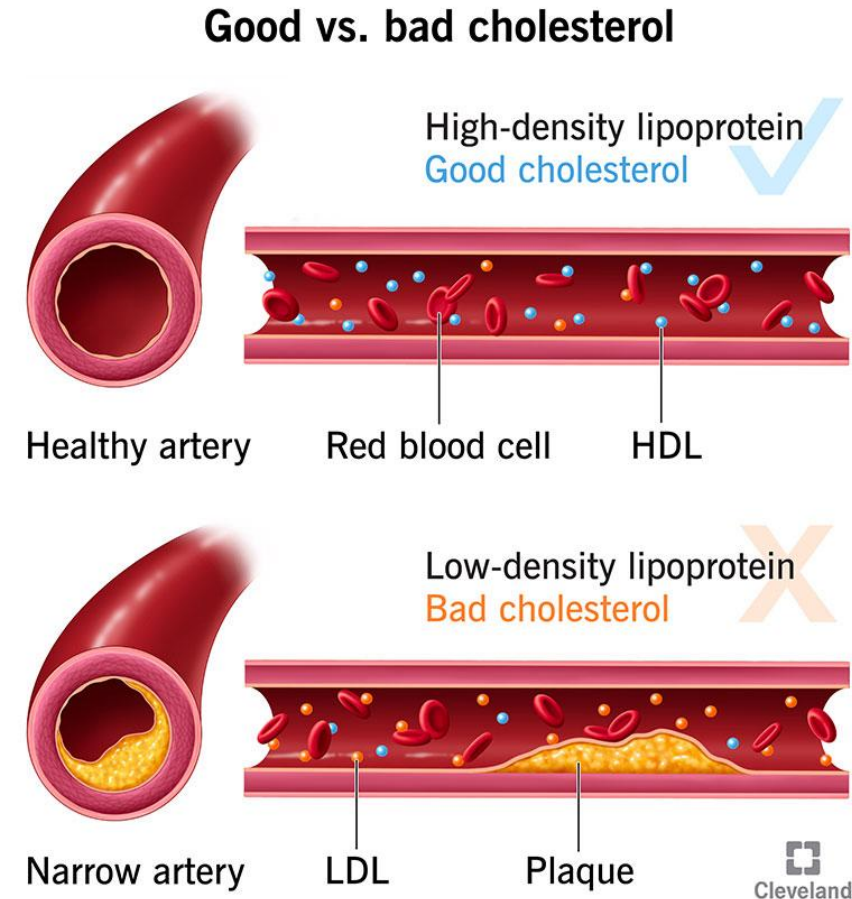


Classification of Lipoproteins



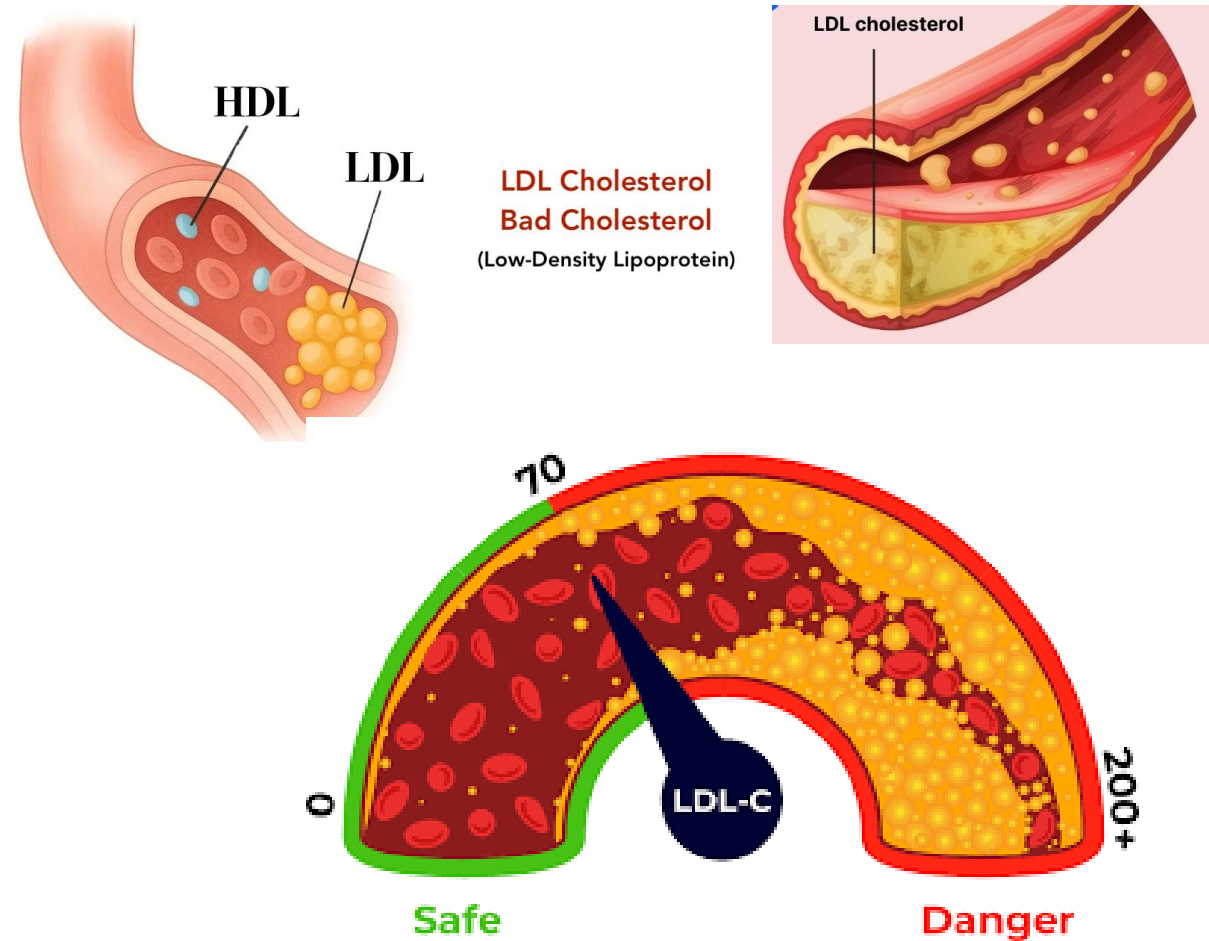
CHOLESTEROL

- Waxy substance needed for
 - Cell membranes
 - Hormones
 - Vitamin D
 - Digestion
- Transported by lipoproteins (**LDL** & **HDL**)



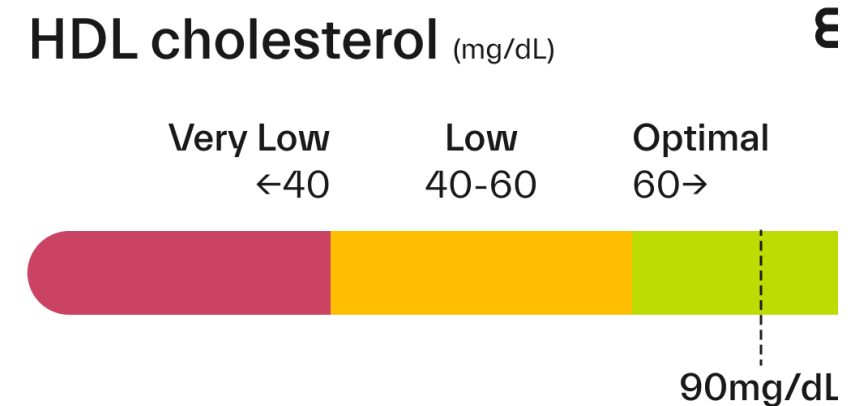
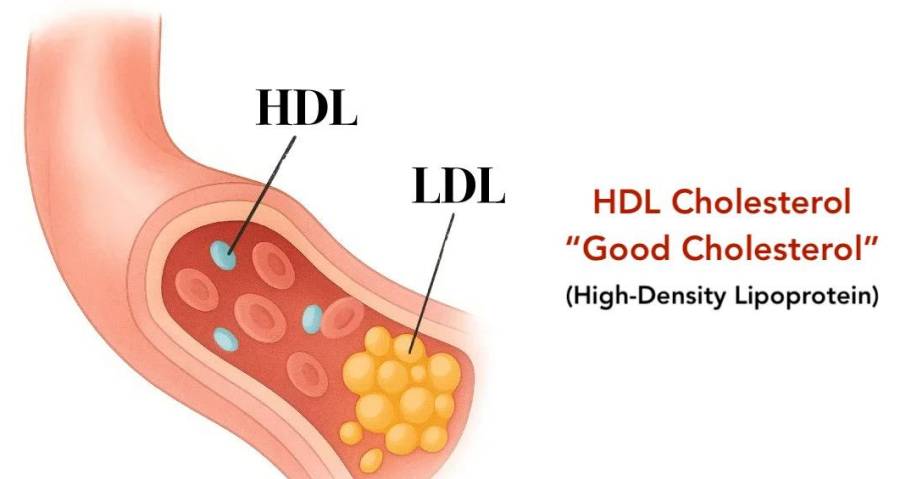
LOW DENSITY LIPOPROTEIN

- “Bad” cholesterol
- Causes plaque in arteries → **Atherosclerosis**
- Increases risk of heart disease, aneurysm
- Optimal LDL: ≤ 100 mg/dL
- Near optimal: 100–129 mg/dL
- Borderline high: 130–159 mg/dL
- High: 160–189 mg/dL
- Very high: ≥ 190 mg/dL



HIGH DENSITY LIPOPROTEIN

- “Good” cholesterol
- Removes excess cholesterol from arteries
- Low HDL (<40 men, <50 women) = risk factor
- High HDL (>60 mg/dL) = protective
- **Ways to increase HDL:**
 - Weight loss, Regular exercise, Quit smoking
- Heredity also affects HDL levels
- Target: >45 mg/dL (men), >55 mg/dL (women)

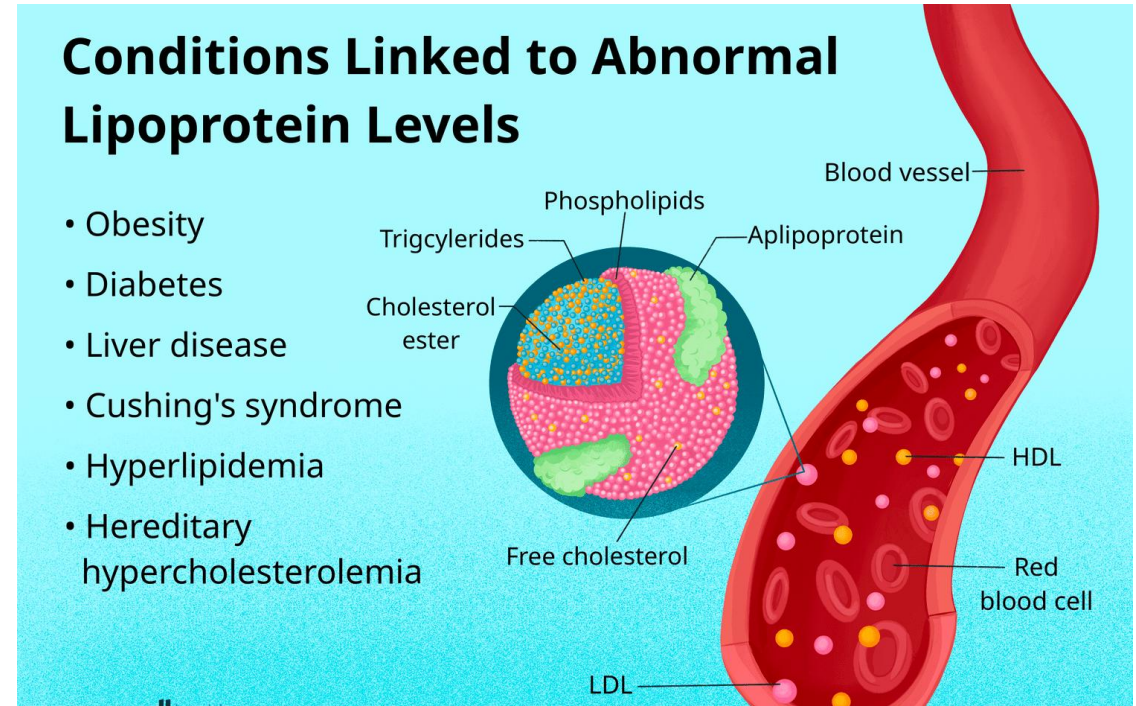


- **VLDL: (VERY LOW DENSITY LIPOPROTEIN)**

- Mainly carries triglycerides from liver to tissues
- Normal range: 2–30 mg/dL

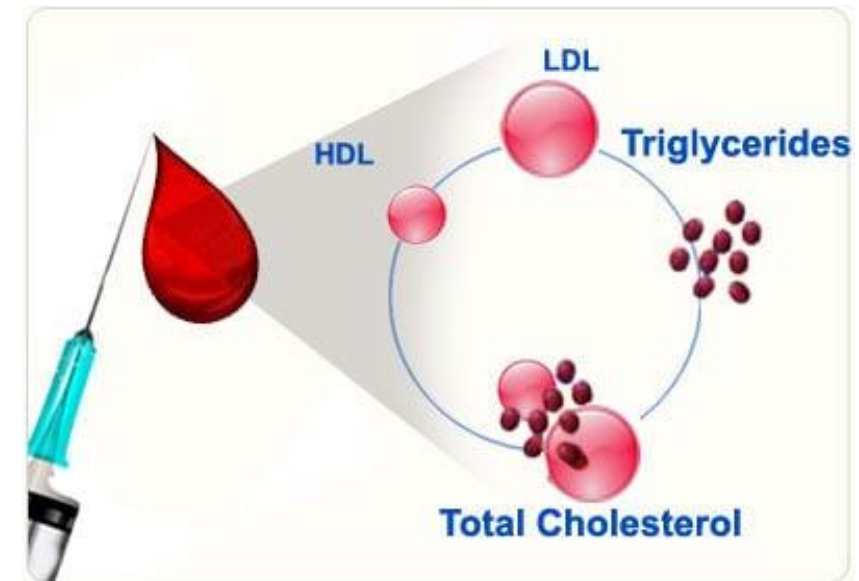
- **CHYLOMICRONS:**

- Carry dietary triglycerides from intestines after meals



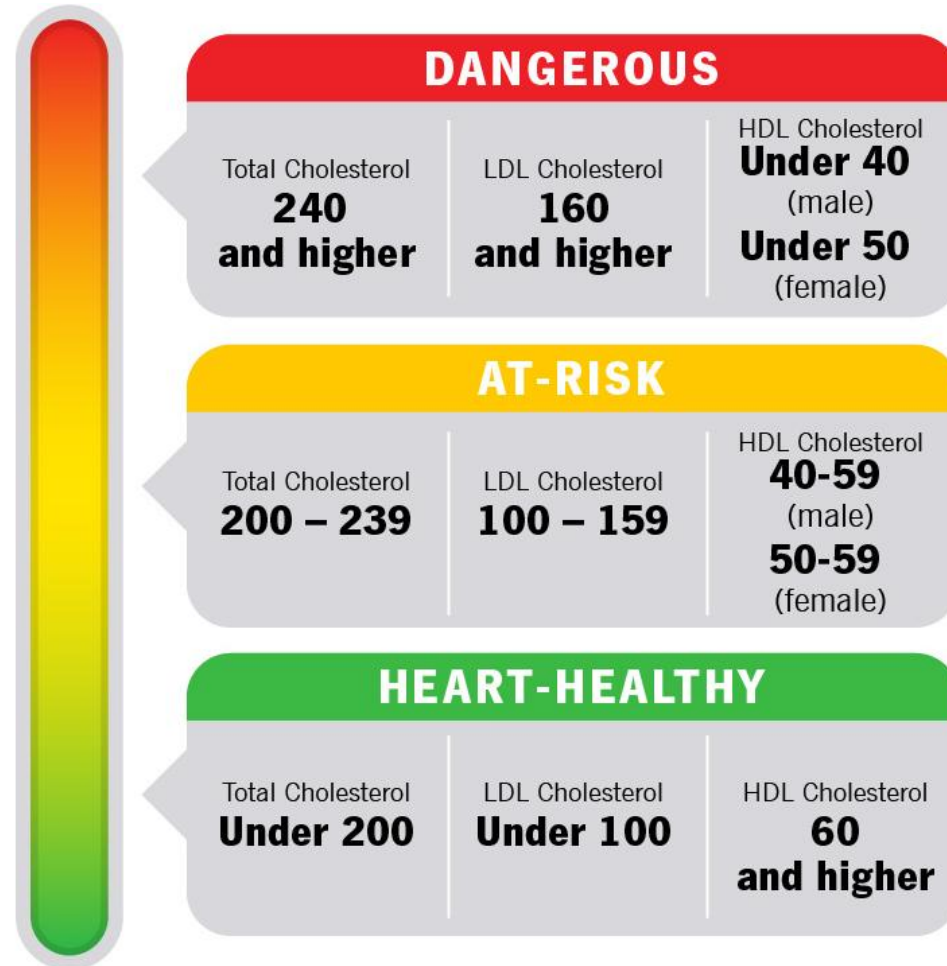
LIPID PANEL

- Blood test to **measure lipids**, used to assess risk of heart disease, heart attack, stroke.
- **Also called:** Lipid profile, Cholesterol panel, Fasting/Non-fasting lipid panel
- Lipid Panel measures:
 - Total cholesterol
 - LDL cholesterol (“bad”)
 - HDL cholesterol (“good”)
 - VLDL cholesterol
 - Triglycerides



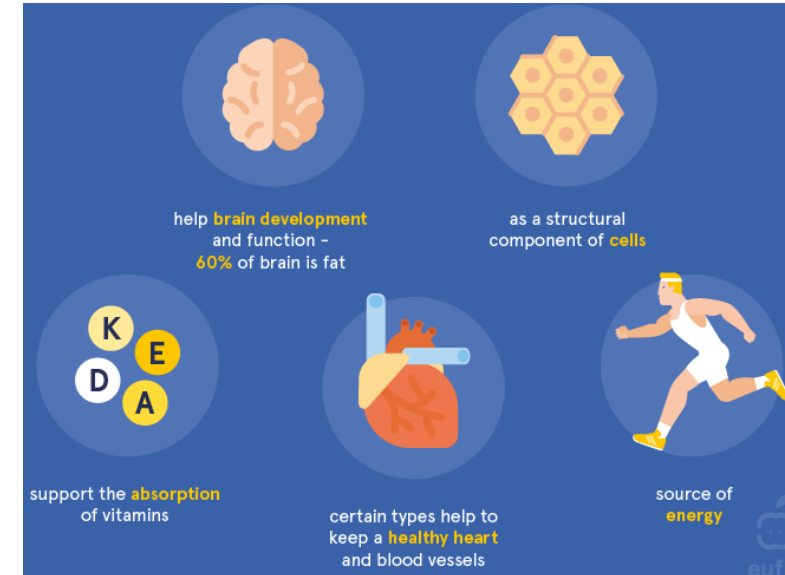
NORMAL LIPID PANEL VALUES

- Total cholesterol: **<200 mg/dL**
- HDL: **>60 mg/dL** (ideal)
- LDL: **<100 mg/dL** (<70 if diabetic)
- Triglycerides: **<150 mg/dL**



FATS/LIPIDS - FUNCTIONS

- Absorb fat-soluble vitamins
- Protect organs
- Energy source and storage
- Temperature & BP regulation
- Cell membrane structure
- Insulation & hormone production
- Hydrophobic barrier
- Give color to fruits/vegetables (carotenoids)



REFERENCES

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- Harper's Illustrated Biochemistry – Victor W., David A. Bender, et al., 31st Edition, 2018
- Textbook of Biochemistry with Clinical Correlations – Thomas M. Devlin, 7th Edition, 2010
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THANK YOU