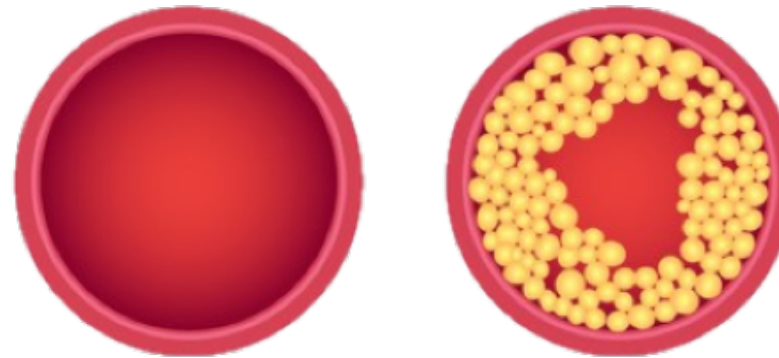


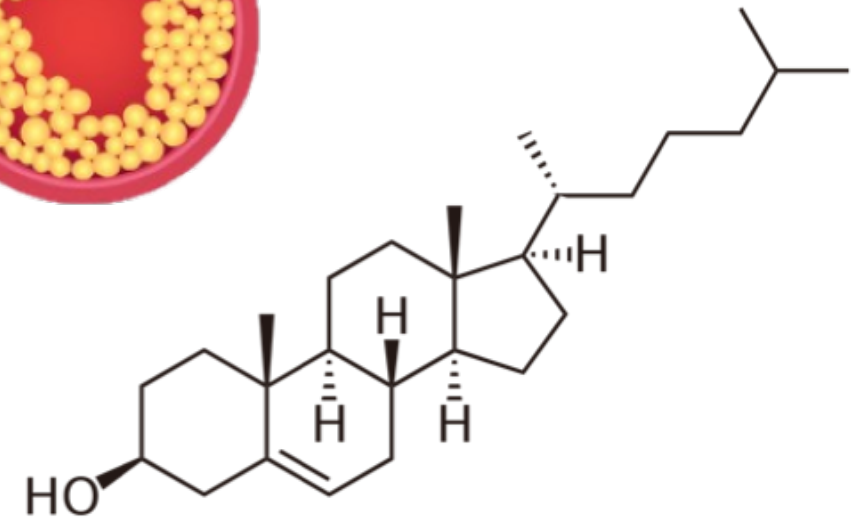
Cholesterol








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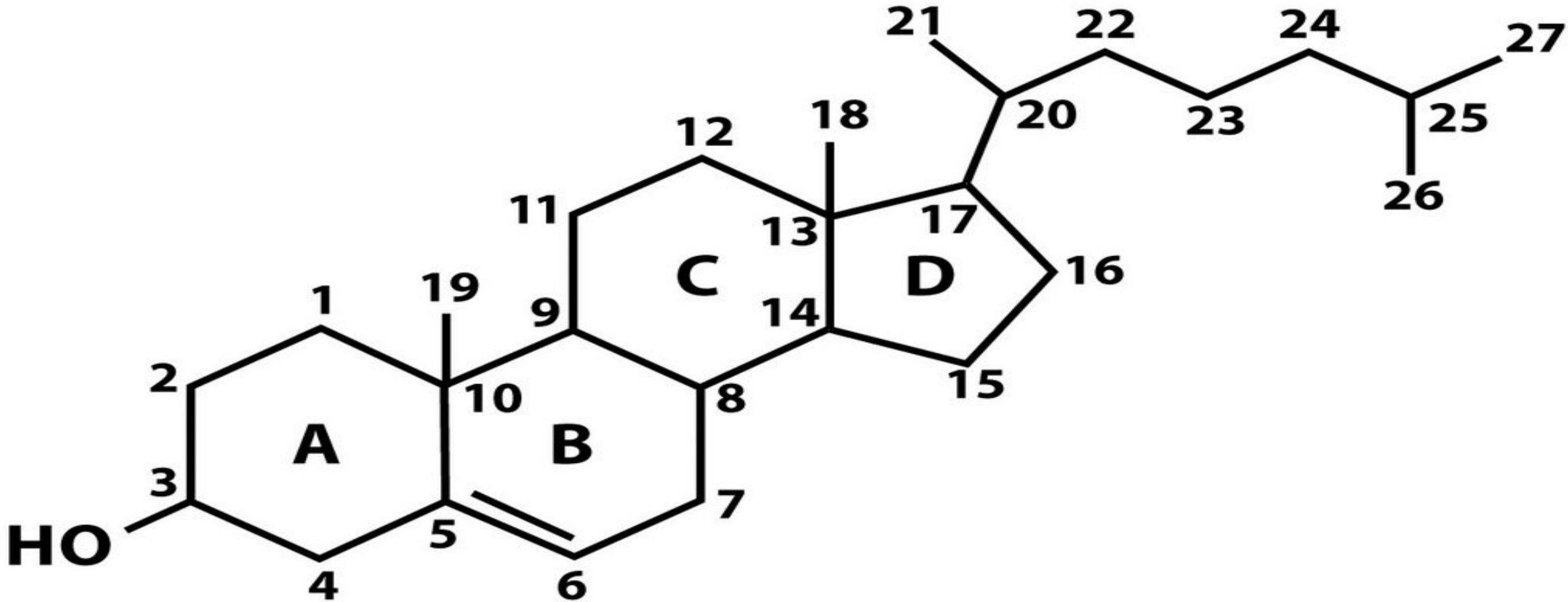
Objectives

-  Overview cholesterol
-  Identify structure of cholesterol
-  Identify biosynthesis of cholesterol
-  Explain functions of cholesterol
-  List diseases related to cholesterol

Overview on cholesterol

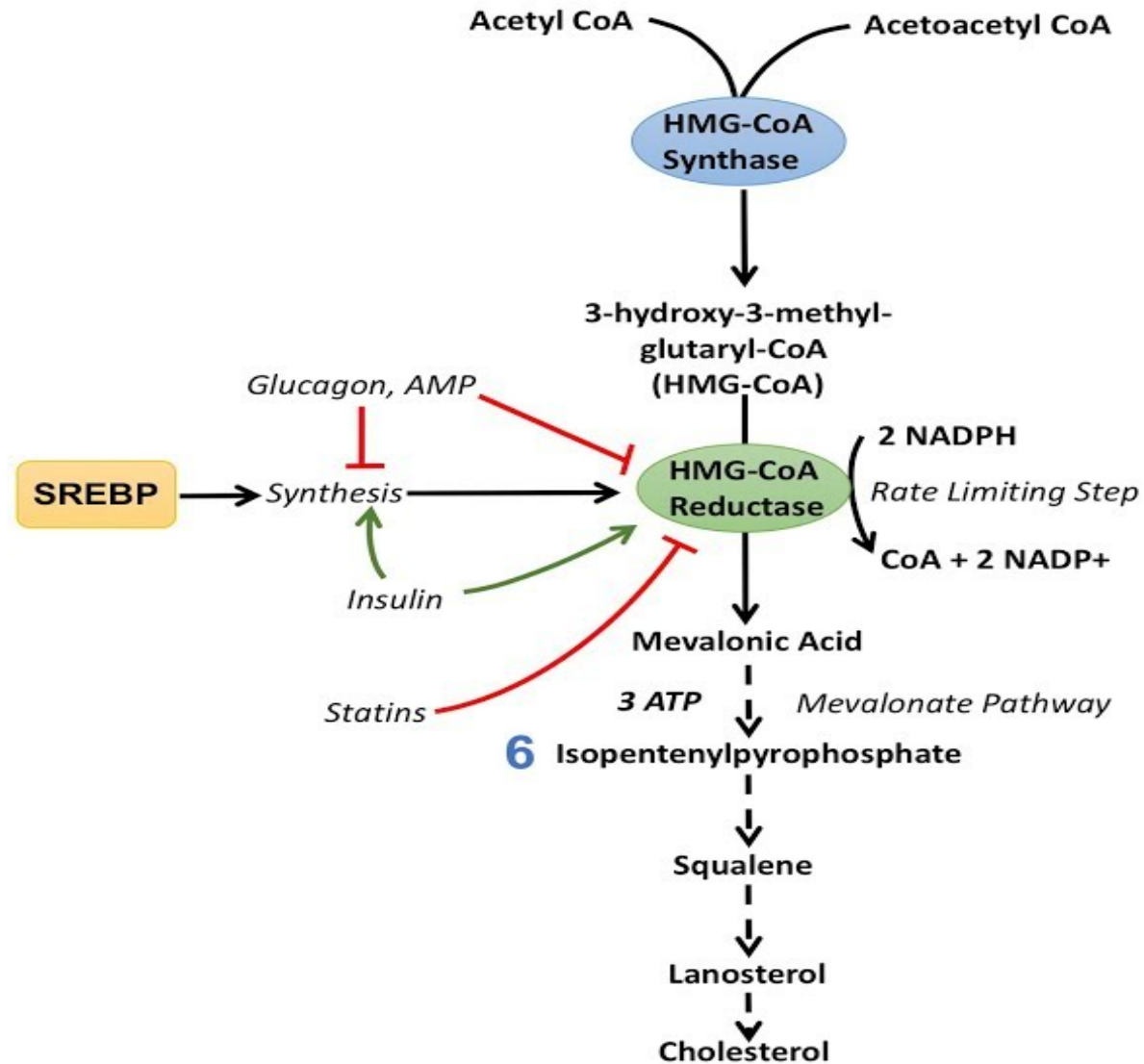
- The word cholesterol is derived from Greek words, chole = bile; steros = solid; ol = alcohol.
- Almost all nucleated cells can synthesise cholesterol.
- It is widely distributed in the body.
- Cholesterol is a light yellow crystalline solid.
- It is the most important animal steroid from which other steroid compounds are formed.

Identify structure of cholesterol



Cholesterol

Identify biosynthesis of cholesterol



Explain functions of cholesterol

- 1. Cell membranes:** Cholesterol is a component of membranes and has a modulating effect on the fluid state of the membrane.
- 2. Nerve conduction:** Cholesterol has an insulating effect on nerve fibers.
- 3. Bile acids and bile salts** are derived from cholesterol. Bile salts are important for fat absorption.

Explain functions of cholesterol

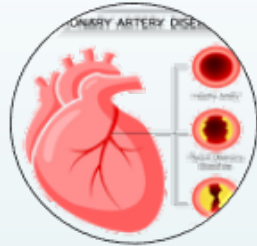
4. Steroid hormones: Glucocorticoids, androgens and estrogens are from cholesterol.

5. Vitamin D3 is from 7-dehydro-cholesterol.

6. Esterification: The OH group of cholesterol is esterified to fatty acids to form cholesterol esters. This esterification occurs in the body by transfer of a PUFA moiety by lecithin cholesterol acyl transferase.

List diseases that related to cholesterol

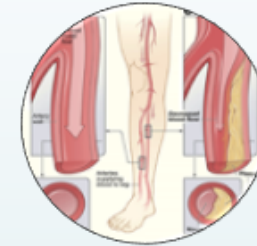
High cholesterol increases the risk of other conditions, depending on which blood vessels are narrowed or blocked. Some of these diseases include:



Coronary heart disease



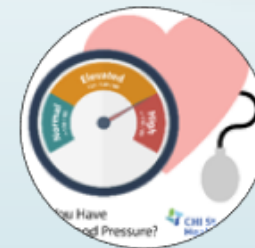
Stroke



Peripheral arterial disease



Type 2 diabetes



High blood pressure

Summary

- Almost all nucleated cells can synthesise cholesterol.
- The total carbon atoms in cholesterol is 27 carbon.
- The major sites of synthesis of cholesterol are liver, adrenal cortex, testes, ovaries and intestine.
- Bile acids and bile salts are derived from cholesterol. Bile salts are important for fat absorption.

Reference

- Textbook of biochemistry chapter 12 / page 146
- <https://my.clevelandclinic.org/health/articles/11918-cholesterol-high-cholesterol-diseases>
- <https://sandwalk.blogspot.com/2006/11/recording-lectures.html>
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thank
you