

# BIOCHEMISTRY NOTES

Based on YouTube videos by Pass The Dental Boards + some online/book research + DO = THIS IS ALL YOU NEED TO KNOW ABOUT BIOCHEM!

Watch these videos & compare to the notes (not available in full anymore, but they might still help):

<https://www.youtube.com/watch?v=5Uc347uLwQ8&list=PLK0Uy0200>

Abbreviations: E = enzyme, [X] = concentration of substance X, e = electrons, MC = most common

There are some really stupid mnemonics, but whatever helps, right? ☹ Please, don't feel offended. Print it out, I added important pictures at the end, it helps if you are reading the notes and having a picture right next to you to compare different processes (for example, Krebs cycle picture with the notes). You have to read the file MULTIPLE times, I don't know how to do magic by remembering things after one read :) I left some space at the end for your own notes, under the pictures.

Keep working hard, you got this!

Paulina

## LIPIDS

### 1. Types

- Fatty acids (FA)
- Triglycerides (TG) = Triacylglycerols (TAG)
- Phospholipids
- Lipoproteins
- Sphingolipids



### 2. FATTY ACIDS

- 2 essential FA:
  - **Linoleic acid (18:2)**
  - **$\alpha$ -linolenic acid (18:3)**
  - Both can lead to production of: **arachidonic acid (20:4)** → prostaglandins (PG)
- Names:
  - 12C lauric acid
  - 14C myristic acid
  - 16C palmitic acid (palmitate)
  - 18C stearic acid → 18:1 oleic acid (oleate) → 18:2 linoleic acid (linoleate) → 20:4 arachidonic acid
  - 20C arachidic acid (often as a distractor!)
- MNEUMONIC for saturated FA (the ones "18:X" are unsaturated): **Lauri, driving with MyWrist, change to palms to steer, spider attacks!**
  - A girl named Lauri is driving a car with "my wrists" (her wrists), then changes to palms to steer the wheels and all of the sudden a spider attacks = lauric, myristic, palmitic, stearic, arachidic

### 3. TAG

- Ester linkage; lipase via hydrolysis → FA + glycerol
- Adipose tissue

### 4. SPHINGOLIPIDS (glycolipids)

- Ceramide: simplest, parent molecule, X = H
- Cerebroside: X = glucose (glycolipid)
- Ganglioside: X = a bunch of sugars (glycolipid)
- Sphingo**myelin**: X = **choline**

**Gang of sugars**

accumulated in Niemann-Pick; yields sphingosine, choline, FA, phosphoric acid

### 5. PHOSPHOLIPIDS

- 2 major types
  - **Lecithins = phosphatidyl**choline** (PC)**
  - **Cephalins = phosphatidyl**etanolaine** (PE)**
- Lecithins: most common (MC) phospholipid in bilayer membranes; yields 1 glycerol, 1 phosphate group, 1 choline, 2 FA
- **Choline:**
  1. Sphingolipid → sphingo**myelin**
  2. Phospholipid → phos**PHAT**idyl**choline** (PHAT = fat)Both ↑↑↑ in outer leaf membrane
  - Choline has a **lipotropic effect** on fatty liver (helps metabolizing fat by exporting fat from the liver)
  - Choline → **betaine** (metabolite) = important in **methylation**

# Lecture Notes Clinical Biochemistry

**Peter Rae, Mike Crane, Rebecca  
Pattenden**

A decorative graphic consisting of a semi-transparent red circle with a gradient, positioned on the right side of the slide, partially overlapping the grey bar.

## **Lecture Notes Clinical Biochemistry:**

Clinical Biochemistry Peter Rae, Mike Crane, Rebecca Pattenden, 2017-07-13 Clinical Biochemistry Lecture Notes presents the fundamental science behind common biochemical investigations used in clinical practice Taking a system based approach it explores the underlying physiological rationale for tests with each test explained within the context of disruption by disease It also explores the value and limitations of biochemical investigations while helping readers to quickly develop the knowledge and skills required to select the appropriate investigations for diagnosis and management and to correctly interpret test results Case studies throughout chapters place the information within a clinical context to further assist readers in the development of test selection and interpretation skills Key features include A comprehensive yet concise overview of the science behind common biochemical investigations Helps readers rapidly acquire a fully integrated practical understanding of biochemical diagnostics Full colour flowcharts and algorithms detailing the rationale for tests the biochemical processes involved and test procedures for quick comprehension and reference More clinical cases demonstrating application to practice Now in its tenth edition this classic introductory reference and revision text is indispensable to medical students and all those who want to quickly acquire a practical understanding of the scientific principles underpinning biochemical tests and a working knowledge of test selection test procedures and the interpretation of results within a clinical context *Clinical Biochemistry* Roger W. Giese, 1977 **Clinical biochemistry** Simon Walker, 2013 Lecture Notes on Clinical Chemistry Lionel Gordon Whitby, Iain Walter Percy-Robb, Alistair Fairley Smith, 1975 **Clinical Biochemistry** Simon W. Walker, Geoffrey J. Beckett, Peter Rae, Peter Ashby, 2013-08-02 Concise yet comprehensive Clinical Biochemistry Lecture Notes contains all the essential information for students and foundation doctors to understand the biochemical basis of disease and principles of biochemical diagnostics It presents scientific principles in a clinical setting with a range of case studies integrated into the text to clearly demonstrate how knowledge should be applied to real life situations Key features include The fundamental science underpinning common biochemical disorders and their investigation in clinical practice Accessible flow charts of biochemical processes and the reasoning behind specific tests making look up and understanding easy A brand new companion website at [www.lecturenoteseries.com/clinicalbiochemistry](http://www.lecturenoteseries.com/clinicalbiochemistry) with self assessment and downloadable summary slides for revision Clinical Biochemistry Lecture Notes is an ideal overview and revision guide for medical students foundation doctors general practitioners and nurses It also provides a core text for scientific and medical staff pursuing a career in clinical biochemistry *Lecture Notes: Clinical Biochemistry* Simon W. Walker, Geoffrey J. Beckett, Peter Rae, Peter Ashby, 2013-10-14 Concise yet comprehensive Clinical Biochemistry Lecture Notes contains all the essential information for students and foundation doctors to understand the biochemical basis of disease and principles of biochemical diagnostics It presents scientific principles in a clinical setting with a range of case studies integrated into the text to clearly demonstrate how knowledge should be applied to real life situations Key features

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**Lecture Notes on Clinical Biochemistry** Simon W. Walker, Alistair Fairley Smith, Geoffrey J. Beckett, 2003

**Lecture Notes on Clinical Biochemistry**, 1998

**Lecture Notes on Clinical Biochemistry** Epz Smith, Smith Et. Al, 2004-01-01

**Clinical Biochemistry** Peter Rae, Mike Crane, Rebecca Pattenden, 2017-10-02

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**Clinical Biochemistry** Allan Gaw, 2008-01-01

2014 BMA Medical Book Awards Highly Commended in Basic and Clinical Sciences category This fully revised edition of Clinical Biochemistry offers essential reading for today's medical student and all those who require a concise practical introduction to this subject Topics are clearly presented in a series of double page learning units each covering a particular

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*Lecture Notes on Clinical Chemistry* L. G. Whitby, I. W. Percy-Rubb, 1975

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