

ELSEVIER

MBBS 101 – Flip, Learn, Scribble

Start *Smart* with Elsevier

Your trusted academic partner in your journey to becoming a doctor

Welcome, Future Healers

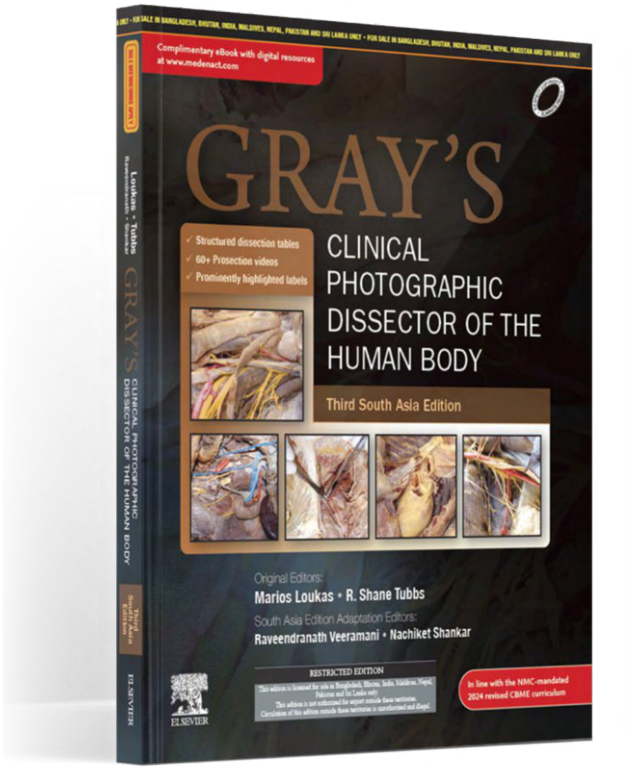
Your Journey to becoming
a doctor begins today



"Wherever the art of Medicine is loved, there is also a love of Humanity."

– Hippocrates

Sketches, Stories & Structures:
Anatomy that Sticks



Gray's Clinical Photographic Dissector of the Human Body

By **Raveendranath Veeramani Nachiket Shankar**

ISBN: **9788131269824** | Pub Year: **2025** | INR **1820.00**

When to refer to it

- Before and after dissection labs
- During revision before internal/ practical exams

How it helps

- Step-by-step dissection format with level-based structure identification (must-know, good-to-know)
- Real cadaveric photographs with labeled priority structures
- Self-assessment checklists to evaluate progress

Why should you read this book?

To build confidence in identifying anatomical structures during cadaveric dissection and to follow a guided, structured approach to practical learning.

What's inside?

Level-based learning
Prioritize structures as Must, Good-to, and Nice-to identify

Step-by-step dissection tables
Clear, region-wise instructions

High-quality labelled photos
With Level 1 highlights for easy recall

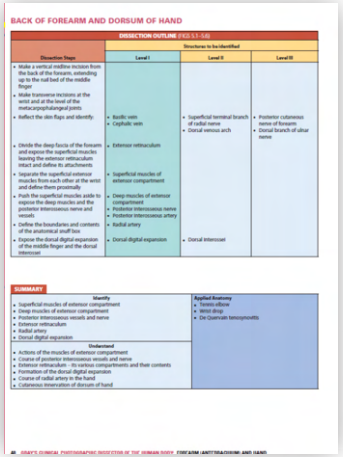
Clinical summary tables Link anatomy to real-life medical scenarios

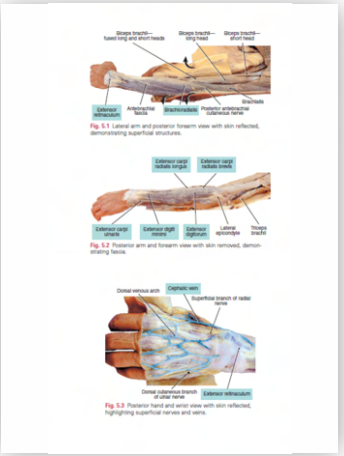
Self-assessment tools
Checklists & review figures

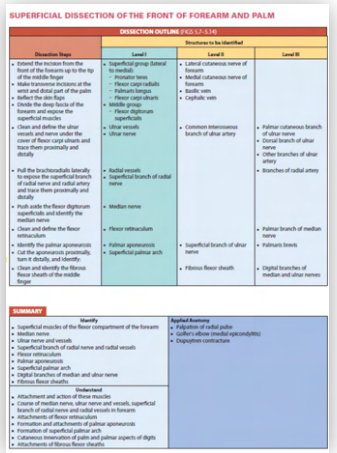
CBME-aligned
Chapters mapped to latest NMC 2024 competencies

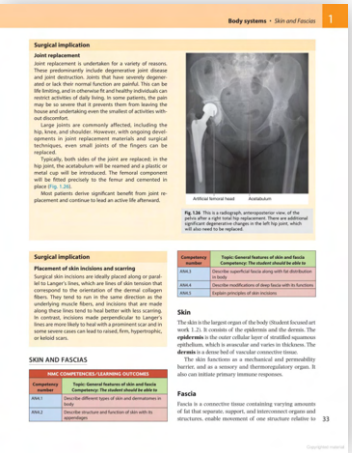
Bonus
Free eBook + 60+ prosection (dissection) videos via MedEnact

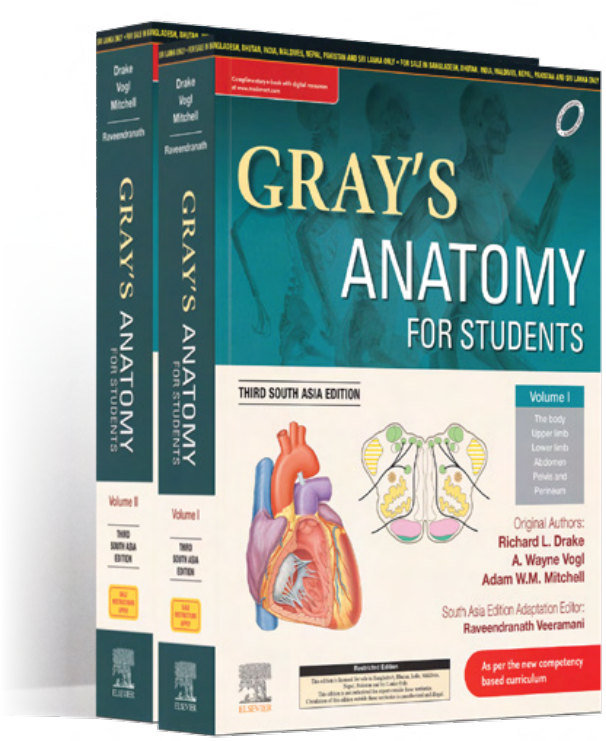
#Tip Learn it like a story! Pretend each muscle has a personality – it helps you remember attachments!











Gray's Anatomy for Students (2-Volume Set)

By **Richard L Drake, A. Wayne Vogl, Adam W.M. Mitchell**
South Asia Edition Adaptation Editors: **Raveendranath Veeramani**

ISBN: **9788131267486** | Pub Year: **2023** | INR **3,995.00**

When to refer to it

- During conceptual learning of new systems
- While solving clinical case questions
- For structured exam preparation

How it helps

- Starts chapters with clinical cases to contextualize learning
- High-quality visuals, flowcharts, and integrated concept maps
- Promotes critical thinking and early clinical orientation

Why should you read this book?

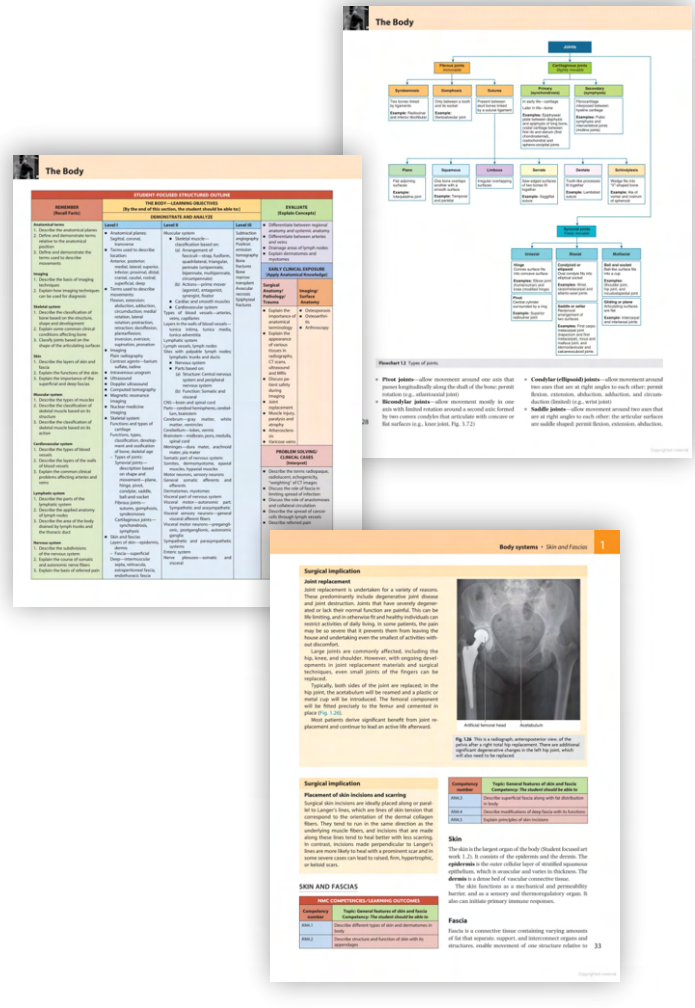
To connect theoretical concepts in anatomy with their clinical relevance and develop a systems-based, applied understanding.

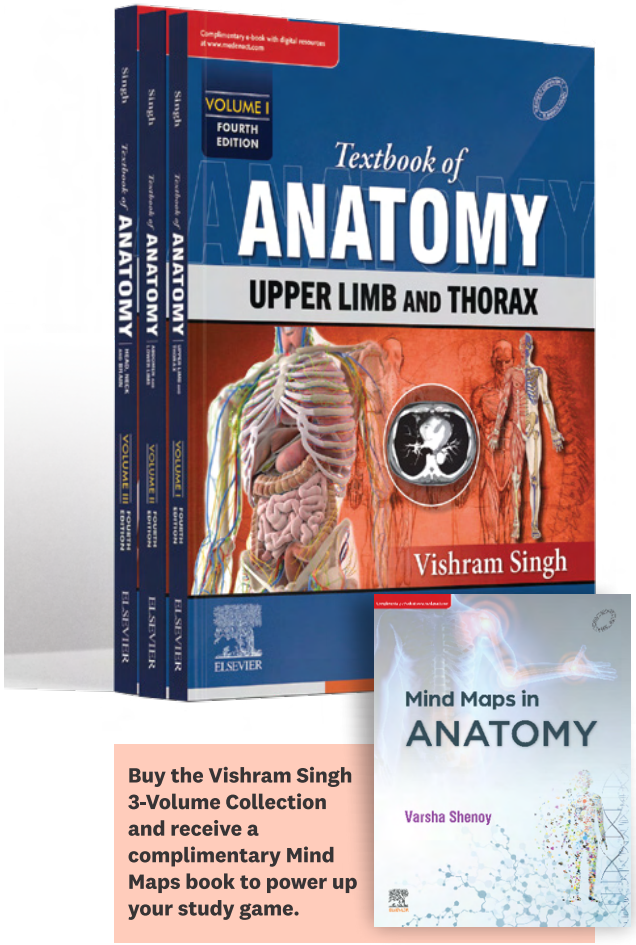
What's inside?

2 Volumes, Full Coverage
From limbs to neuroanatomy
— all regions simplified

Clinical First Approach
Real-life cases, surgical insights & early clinical exposure

Smart Study Tools
Concept maps, MCQs (NExT-style), and critical thinking questions





Buy the Vishram Singh 3-Volume Collection and receive a complimentary Mind Maps book to power up your study game.

Textbook of Anatomy, 4th Edition

By **Vishram Singh**

Volume 1: Upper Limb and Thorax
ISBN: **9788131264812** | Pub Year: **2023** | INR **1,025.00**

Volume 2: Abdomen and Lower Limb
ISBN: **9788131264836** | Pub Year: **2023** | INR **1,075.00**

Volume 3: Head, Neck and Brain
ISBN: **9788131264850** | Pub Year: **2023** | INR **1,025.00**

When to refer to it

- While learning organ systems or body regions
- Before vivas and clinical integration classes
- For quick revision using visuals and case vignettes

Why should you read this book?

Get exam-ready in Anatomy with clear concepts, clinical cases, real-life images, and CBME-based content that connects theory to practice

Use your Medenact scratch code to experience Complete Anatomy free for 1 month.

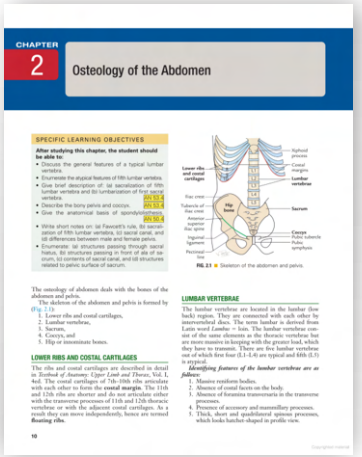
What's inside?

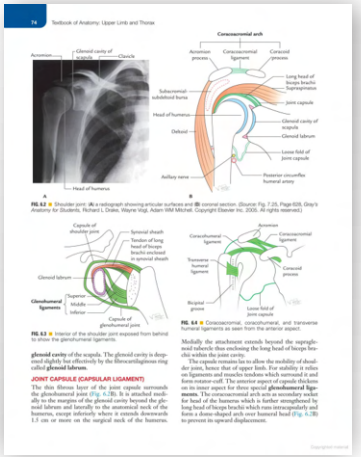
100+ Enhanced Visuals
3D diagrams, new line art,
CT, MRI & ultrasound images

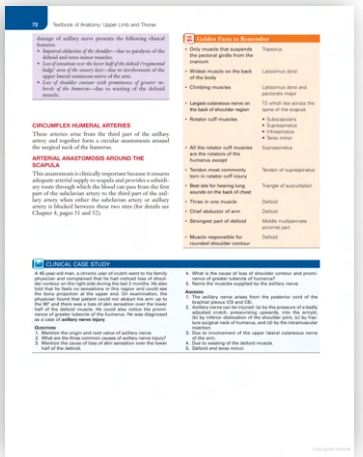
CBME-Focused
Competency codes and learning
objectives integrated throughout

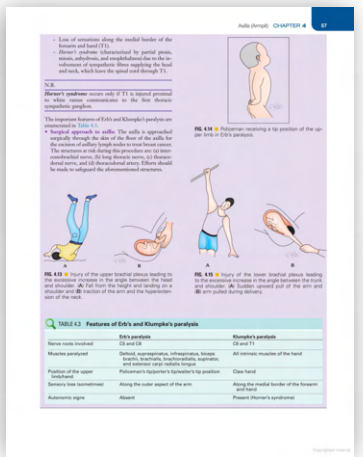
Clear Chapter Flow
Structured content for easy
navigation and retention

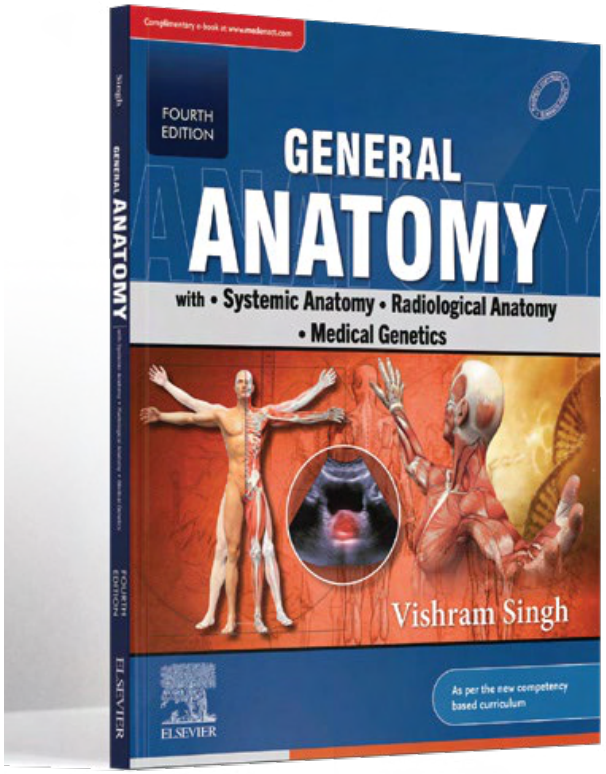
#Tip Use the clinical vignettes to practice “how” and “why” questions — they’re perfect for cracking vivas and NExT-style exams.


CHAPTER 2
Osteology of the Abdomen









General Anatomy with Systemic Anatomy, Radiological Anatomy, Medical Genetics, 4th Edition

By **Vishram Singh**

ISBN: **9788131264874** | Pub Year: **2022** | INR **985.00**

When to refer to it

- Before studying any organ/system
- During dissection & radiology sessions
- Quick revision before exams

Relevant Areas of Study

- Radiology; Genetics basics
- Theory; entrance exams (NEET PG)

Why should you read this book?

Lays a strong foundation in anatomy, radiology, and genetics—clinically connected, easy to understand, and designed for quick recall

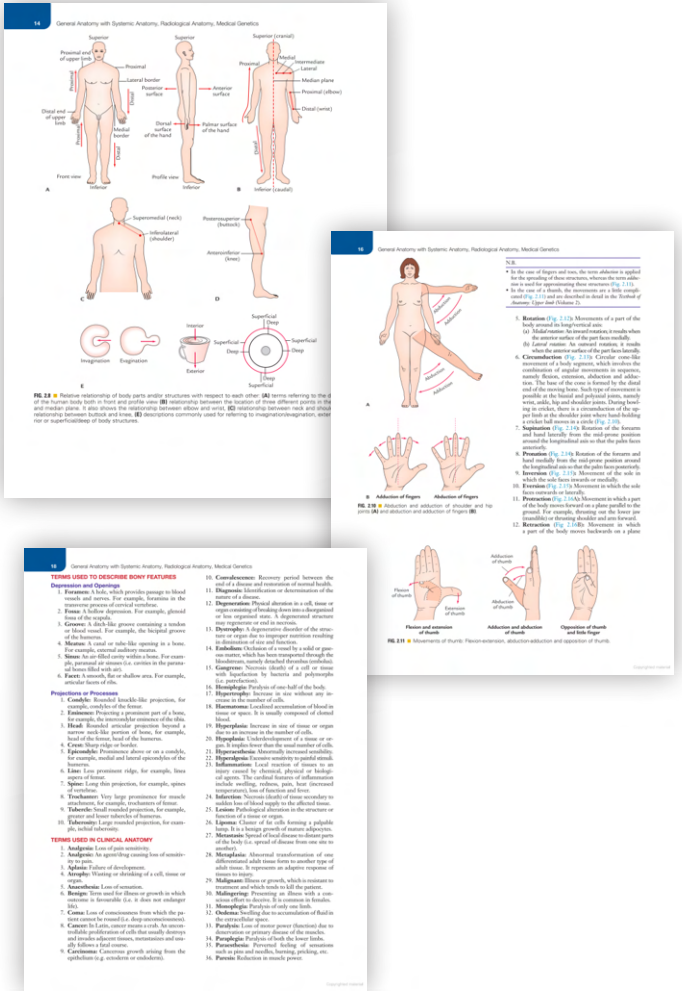
What's inside?

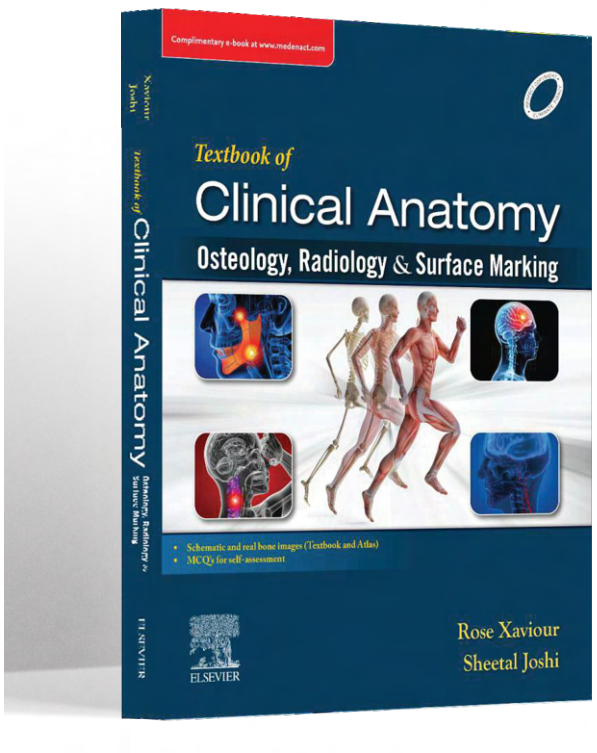
Core anatomy +
expanded genetics

Clinical cases &
imaging correlation

“Golden Facts” &
“Nota Bene.” boxes
for quick recall

#Tip Use the clinical vignettes to practice “how” and “why” questions — they're perfect for cracking vivas and NExT-style exams.





Textbook of Clinical Anatomy: Osteology, Radiology & Surface Marking

By **Rose Xaviour, Sheetal Joshi**

ISBN: **9788131268872** | Pub Year: **2025** | INR **735.00**

When to refer to it

- Solid foundation in theory while aiding quick visual recall during exam
- While preparing for viva voce or radiology spotting

How it helps

- Real bone images aid visual memory
- Surface markings linked with radiological imaging
- MCQs and brain teasers enhance exam readiness

Why should you read this book?

To strengthen your understanding of bone landmarks, radiological anatomy, and surface relations — key components of both theory and viva.

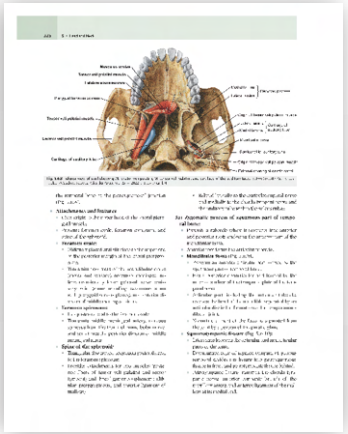
What's inside?

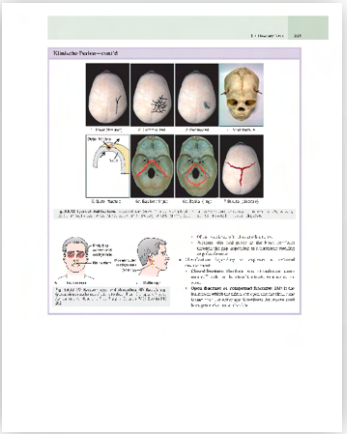
Real bone images + diagrams for better clarity

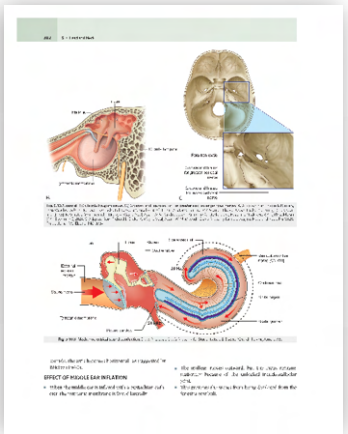
Clinical cases at the start, MCQs & brain teasers at the end

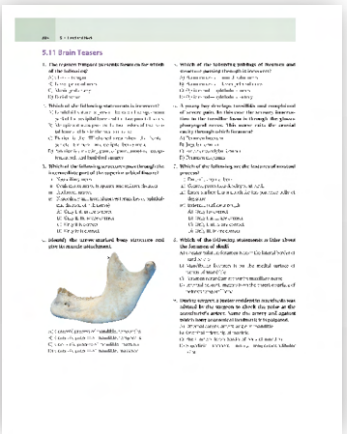
Easy bullet-point format for fast learning

Quick revision tools: Klinische Perlen (Clinical Pearls), FAQs & recent advances

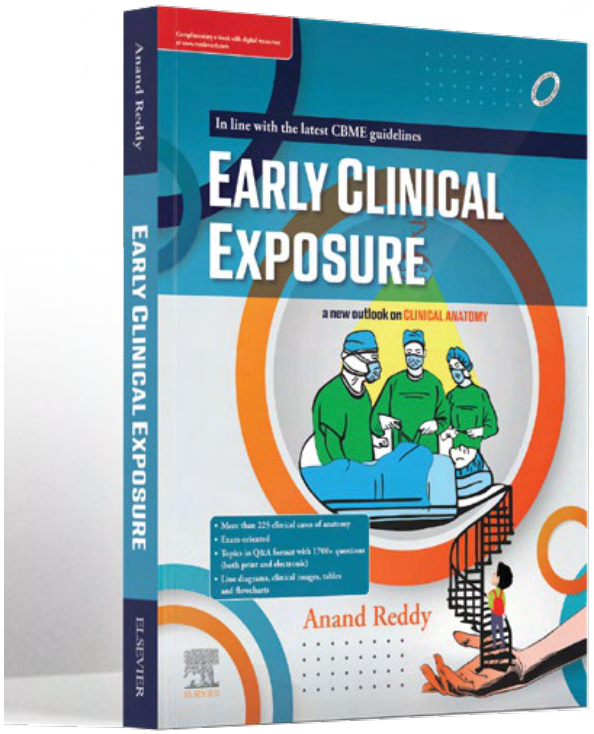








#Tip One book, multiple goals! Whether you're aiming for **NEET PG, INI-CET, FMGE, MRCP, or FRCS**, this book has you covered — *study once, succeed everywhere.*



Early Clinical Exposure

By **Anand Reddy**

ISBN: **9788131268711** | Pub Year: **2024** | INR **850.00**

When to refer to it

- Before anatomy vivas & university exams — for quick revision through structured Q&As
- While preparing for competency-based assessments like Medenact
- When revisiting key concepts in higher years or integrated system-based learning

Relevant Areas of Study

- Gross Anatomy (Upper Limb to CNS)
- General Anatomy, Embryology, Genetics
- CBME-aligned AETCOM modules
- Clinical application of anatomical concepts

Why should you read this book?

Master anatomy with 225+ clinical cases, 1700+ Q&As, and AETCOM integration — all designed for applied, ethical, and visual learning.

What's inside?

225+ real-world clinical cases

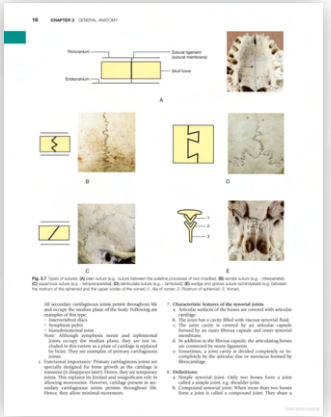
1700+ curated questions designed for active recall

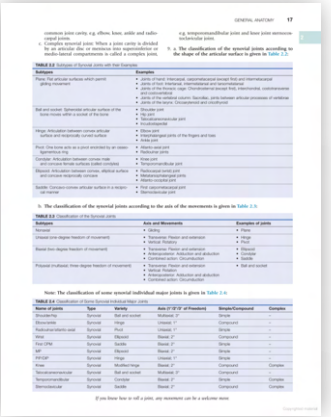
AETCOM-aligned ethics content integrated with anatomy

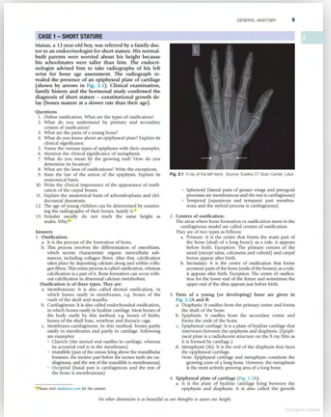
Visual toolkit
line diagrams, images, flowcharts, tables

Concept-based learning structure that supports long-term retention

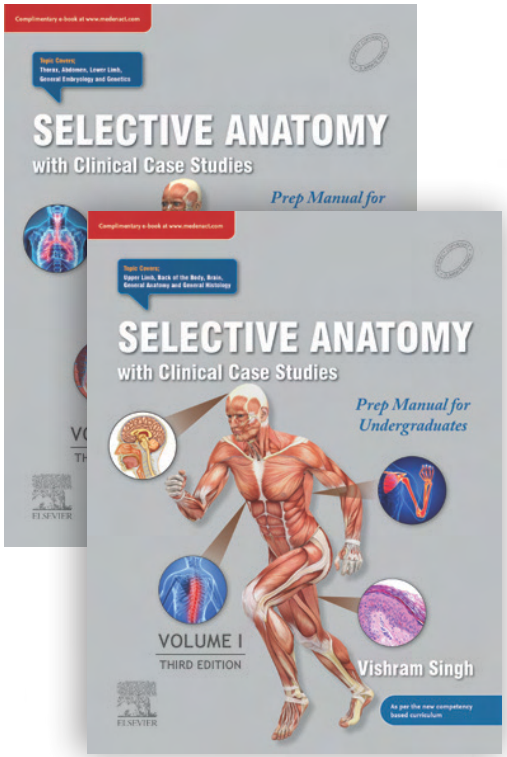
#Tip Perfect for building concepts and exam confidence from Year 1.











Selective Anatomy: Prep Manual for Undergraduates, 3rd edition

By **Vishram Singh**

Volume-I : ISBN: **9788131268612** | Pub Year: **2024** | INR **925.00**
Volume-II : ISBN : **9788131268636** | Pub Year: **2024** | INR **925.00**

When to refer to it

- During internal and university exam preparation
- For last-minute revisions
- As a quick refresher before clinical postings or PG entrance tests

How it helps

- Bullet-style summaries for rapid recall
- Includes CBME-linked competencies
- Real-world case questions + MCQs for better application

Why should you read this book?

To simplify revision with a concise, high-yield review of all anatomy topics, aligned with your MBBS curriculum to ace in exams

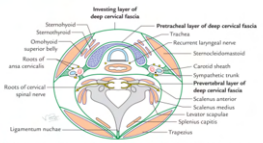


Fig. 10.2 Diagrammatic transverse section through neck at the level of the sixth cervical vertebra to show the horizontal disposition of the three layers of deep cervical fascia.

Inferiorly
- Spine of scapula
- Acromion process of scapula
- Clavicle
- Manubrium sterni

Anteriorly
- Symphysis mentii
- Hyoid bone
- Oblique line of thyroid cartilage

Posteriorly
- Ligamentum nuchae
- Spine of seventh cervical vertebra.

Features
- Splits to enclose:
  - *Two muscles*: Trapezius and SCM, when traced horizontally
  - *Two salivary glands*: Parotid and submandibular } When traced vertically
  - *Two spaces*: Suprasternal and supraclavicular
- Forms *two pulleys/slings* - one each for intermediate tendon of digastric and omohyoid
- Thickens to form *two structures*: Stylomandibular ligament and parotidomasseteric fascia

Mnemonic: Twoli

❖ What is suprasternal space (of Burns)? Explain its contents. **AN35.1**

It is a triangular space above the suprasternal notch enclosed between the two investing layers of deep cervical fascia.

Copyrighted material

1

Thoracic Cavity

❖ Define thoracic cavity and thoracic cage. Discuss its boundaries and contents. **AN21.3**

It is a cavity of thorax. It is the second largest cavity of the body. It is enclosed in an elastic osseocartilaginous framework (thoracic cage) which helps in both increasing and decreasing the volume of thoracic cavity. It is separated below from abdominal cavity by a large and thin dome-shaped muscle—the diaphragm.

Boundaries (Fig. 1.1)

Anterior
Sternum.

Lateral
Twelve ribs with their costal cartilages and intercostal spaces containing intercostal muscles, membranes, nerve and vessels.

Posterior
Bodies of 12 thoracic vertebrae and the intervening intervertebral discs.

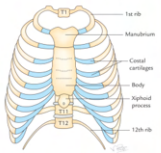


Fig. 1.1 Thoracic cage: anterior aspect.

Contents
The major contents are as follows:
- **Lungs**, chief organs of respiration
- **Heart**, chief organ of circulation
- Trachea and oesophagus
- Major blood vessels
- Other tissues.

Apertures
Thoracic cavity has two apertures: (a) *superior thoracic aperture* and (b) *inferior thoracic aperture*.

The *superior thoracic aperture* opens towards the neck, while the *inferior thoracic aperture* is located inferiorly and almost completely closed by large muscular diaphragm.

❖ Write a short note on the thoracic inlet or superior thoracic aperture. **AN21.3**

It is a superior aperture of the thoracic cavity. It is reniform in shape and measuring 10 cm in transverse plane and 5 cm in anteroposterior plane. The inlet slopes downwards and anteriorly at an angle of 45 degrees. It is partially closed on each side by a **suprapleural membrane** (also called **Sibson's fascia**).

Copyrighted material

TABLE 1.1 Major Openings of the Diaphragm and Structures Passing Through Them

Opening	Vertebral Level	Shape	Structures Passing Through
Vena caval opening	T8	Quadrangular	Inferior vena cava Right phrenic nerve
Oesophageal opening	T10	Elliptical	Oesophagus Right and left vagal trunks Oesophageal branch of left gastric artery
Aortic opening	T12	Circular	From left to right: Aorta Thoracic duct Azygos vein

- It occurs in about 0.17% of cases and is responsible for about 95% congenital hernias of diaphragm.
- Mostly occurs on left side, approximately during 6th week of gestation.

❖ Enumerate the major (large) openings in the diaphragm and structures passing through them in tabular form. **AN47.13**

There are three major (large) openings in the diaphragm. The **caval opening** is present in central tendon of diaphragm slightly to the right side of midline. The **oesophageal opening** lies slightly to the left side of midline and is mainly formed by right crus of diaphragm. The **aortic hiatus opening** lies in the centre behind median arcuate ligament. The details of these openings and structures passing through them are given in Table 1.1.

❖ Write a short note on the cervical rib. **AN35.9**

It is an **extra rib** which develops from the costal element of the transverse process of the C7 vertebra. It is present in about 0.2%–0.5% of the cases. Its posterior end is attached to the transverse process of the C7 vertebra, and its distal extremity is free or attached to the first rib.

Applied Anatomy

The cervical rib reduces the size of scalene triangle and may cause thoracic outlet syndrome. *Clinically it presents as:*
- Tingling and numbness along the medial side of the hand and little finger, due to compression of the lower trunk of the brachial plexus
- Pallor and coldness of the upper limb due to compression of subclavian artery
- Reduction in radial pulse pressure, due to compression of subclavian artery.

❖ Enumerate the structures passing in front of the neck of the first rib. **AN21.1**

From medial to lateral side, these are as follows (Fig. 1.4):
- Sympathetic chain
- First posterior intercostal vein (ICV)
- Superior intercostal artery
- First thoracic nerve (ventral ramus)

MNEMONIC: Chain pulls **VAN**. Here C of chain stands for sympathetic chain.

Copyrighted material

9

Scalp, Temple and Face

❖ Describe the scalp under the following headings: (a) definition, (b) layers, (c) arterial supply, (d) venous drainage, (e) nerve supply and (f) applied anatomy. **AN27.1**

Definition and Boundaries

The soft tissue structures covering the vault of skull form the **scalp**. The boundaries of scalp are as follows.
Anteriorly: Superciliary arches of the frontal bone
Posteriorly: Superior nuchal lines of the occipital bone
On each side: Superior temporal line.

Layers of Scalp

The *scalp consists of five layers*, which can be easily remembered by the initial letter of each layer, that is, SCALP. From superficial to deep, these are as follows (Fig. 9.1).
- **S:** Skin
- **C:** Connective tissue
- **A:** Aponeurosis (epicranial aponeurosis) of fronto-occipitalis muscle
- **L:** Loose areolar tissue
- **P:** Pericranium (outer periosteum)

Mnemonic: SCALP

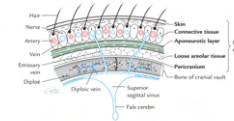


Fig. 9.1 Layers of the scalp.

Copyrighted material

- Temporalis muscle
- Pericranium.

❖ Describe the sensory innervation of the face in brief. **AN29.2**

The sensory innervation to the skin of whole face is derived from the branches of the three divisions of trigeminal nerves except the skin over the angles of lower jaw, on each side which is innervated by the great auricular nerve, a branch of cervical plexus (C2 and C3; Fig. 9.9).

The details are given in Table 9.1.

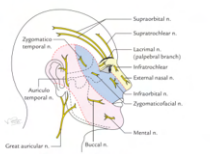


Fig. 9.9 Sensory innervation of the face.

TABLE 9.1 Sensory Innervation of the Face

Source	Cutaneous Nerves	Area of Distribution
Ophthalmic division of trigeminal nerve (V1)	• Supratrochlear nerve • Supraorbital nerve • Lacrimal nerve • Infratrochlear nerve • External nasal nerve	• Upper eyelid and forehead • Scalp up to vertex • Eyelids • Root, dorsum and tip of the nose
Maxillary division of trigeminal nerve (V2)	• Infraorbital nerve • Zygomaticofacial nerve • Zygomaticotemporal nerve	• Lower eyelid, side of ala of nose and upper lip • Upper part of the cheek • Anterior part of temple
Mandibular division of trigeminal nerve (V3)	• Auriculotemporal nerve • Buccal nerve • Mental nerve	• Upper two-thirds of the lateral side of auricle and temple • Lower part of the cheek • Chin and lower lip
Cervical plexus	• Anterior division of great auricular nerve (C2 and C3)	• Skin over angle of the jaw and over the parotid gland

Copyrighted material

TABLE 3.1 Differences Between Right and Left Lungs

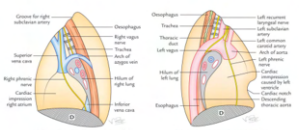
Right Lung	Left Lung
• Larger, wider, shorter and heavier (weight about 700 g)	• Smaller, narrower, longer and lighter (weight about 600 g)
• Anterior border straight and does not present cardiac notch and lingula	• Anterior border not straight and presents cardiac notch and lingula
• Consists of three lobes (upper, middle and lower)	• Consists of two lobes (upper and lower)
• Presents two bronchi (eparterial and hyparterial) in its hilum	• Presents only one bronchus in its hilum

TABLE 3.2 Structures Related to the Mediastinal Surfaces of the Right and Left Lungs

Right Lung	Left Lung
Right atrium	Left ventricle
Superior vena cava	Left common carotid and left subclavian arteries
Arch of azygos vein	Arch of aorta
Oesophagus	Oesophagus, thoracic duct and descending thoracic aorta
Right vagus nerve	Left vagus nerve and left recurrent laryngeal nerve
Trachea	—
Inferior vena cava	Pulmonary trunk

- ***Mediastinal surface of left lung*** is related to arterial structures, viz. arch of aorta descending thoracic aorta, left common carotid and subclavian arteries, hence it is called ***'red side' of mediastinum*** while ***mediastinal surface of right lung*** is related to venous structures, viz. azygos vein and arch, superior and inferior vena cava, and hence it is also called as ***'blue side' of mediastinum.***

These are given in Table 3.2 and impressions caused by them are shown in Figure 3.1A, B.



(a) Blue right side of mediastinal surface **(b)** Red left side of mediastinal surface

Fig. 3.1B Impressions caused by various structures on the mediastinal surfaces of the lungs: **(a)** structures causing impressions on the mediastinal surface of the right lung, **(b)** structures causing impressions on the mediastinal surface of the left lung. *Zl.* diaphragmatic surface.

Copyrighted material

Fibrofatty Stroma

It forms of fibrofatty tissue of breast and consists of fibrous tissue and adipose tissue.
- *Fibrous tissue*, consists of fibrous septa (**ligaments of Cooper**), which extends from skin to the pectoral fascia and divides the mammary gland into 15–20 lobes. It also holds the breast in place.
- *Fatty tissue*, lies between fibrous septa and glandular part.

N.B. To drain breast abscess, the incision is given radially to avoid damage to large number of lactiferous ducts as the lobes of mammary gland are arranged radially.

❖ Describe the female breast under the following headings: (a) location and extent, (b) relations, (c) blood supply, (d) lymphatic drainage and (e) applied anatomy. **AN9.2**

Location (Fig. 1.3)

The breast is hemispherical in shape of the size of 36° bra in general and located one on either side in the superficial fascia of the pectoral region. It is freely mobile.

Extent (Fig. 1.3)
- *Vertically:* It extends from second to sixth rib in the midclavicular line.
- *Horizontally:* It extends from lateral border of the sternum to the midaxillary line.
- A projection from upper and outer quadrant of breast which enters into axilla by piercing a deep fascia (foramen of Langer) is called *axillary tail of Spence.*

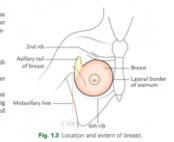


Fig. 1.3 Location and extent of breast.

Relations

Superficial Relations
- Skin
- Superficial fascia

Deep Relations
- Pectoral fascia (deep fascia covering the pectoralis major)
- Three muscles Pectoralis major (medially), serratus anterior (laterally) and external oblique (inferomedially)
- Loose areolar tissue of the **retromammary space** intervenes between the breast and pectoral fascia.

N.B.
- The structures forming deep relations together constitute the **mammary bed**.
- Glandular tissue of the breast can be freely moved on its base formed by is pectoralis major covered by pectoral fascia because it is separated from it by a large areolar tissue called retromammary space.
- The breast prostheses are often inserted in the **retromammary space**

Copyrighted material

❖ Give a brief description of *mechanism of external respiration.* **AN21.9**

The external respiration consists of two components: (a) inspiration and (b) expiration.

Mechanism of Inspiration

During inspiration, the volume of thoracic cavity increases due to downward movement of diaphragm and upward and outward movement of ribs by intercostal muscles to create a negative intrathoracic pressure. As a result, the air is sucked into the lungs. The details are as under:

The increase in volume of thoracic cavity occurs due to an **increase in transverse, anteroposterior and vertical diameters of the thoracic cavity.**
- ***Increase in transverse diameter of the thoracic cavity*** occurs due to ***bucket handle movements* of the 7th–10th ribs** (*vertebrochondral ribs*) (see Fig. 1.1) mainly. The ribs articulate in front with the costal cartilages of ribs above and behind with the vertebral column. Because the ribs curve downwards as well as forwards around the chest wall, they resemble bucket handle. Therefore, when the ribs are raised like ***bucket handle,*** the transverse diameter of thoracic cavity is increased (Fig. 1.12).
- ***Increase in anteroposterior diameter of the thoracic cavity*** occurs due to ***pump-handle movements*** of the *vertebrosternal ribs* (Fig. 1.13).

The anterior ends of the ribs lie at the lower level than the posterior ends; therefore, during the elevation of ribs, the anterior ends move upwards and forwards, leading to an increase in the anteroposterior diameter of the thoracic cavity. Since the anterior ends of the vertebrosternal (the first to seventh) ribs are fixed with sternum, the sternum also moves up and down along with the up and down movements of the ribs (Fig. 1.13). This leads to increase in anteroposterior diameter of the thoracic cavity.

The anterior ends of the ribs move up and down by the rotation at the costotransverse and costovertebral joints.

N.B. Vertebrosternal ribs = Upper seven ribs (i.e. first to seventh)

- ***Increase in vertical diameter*** occurs due to the **descent of the diaphragm** as a result of its contraction (Fig. 1.14).

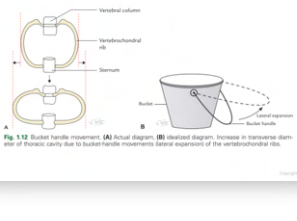
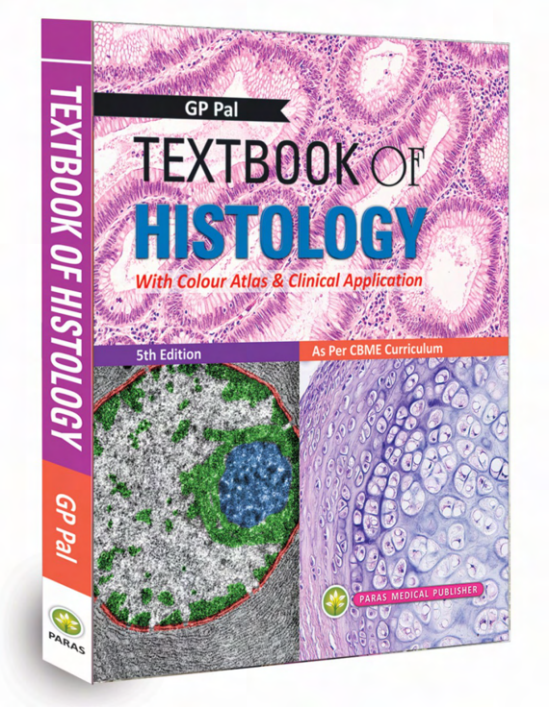


Fig. 1.12 Bucket handle movement. **(A)** Actual diagram, **(B)** idealized diagram. Increase in transverse diameter of thoracic cavity due to bucket-handle movements (lateral expansion) of the vertebrochondral ribs.

Copyrighted material



Textbook of Histology, Text and Atlas, 5th edition

By **GP Pal**

ISBN: **9788181915085** | Pub Year: **2024** | INR **INR 1,095.00**

A visually rich, clinically relevant, and NMC-aligned guide that simplifies histology for UG students while offering deeper insights for PG aspirants.

When to refer to it

- **First Year MBBS –** Core subject in the initial semesters
- **During PG Entrance Prep –** Refer to "Further Details" panels for deeper insights
- **While Revising Systemic Topics –** Makes cross-reference with Physiology/Pathology easier

Relevant areas of study

- **Cell Biology & Ultrastructure**
- **Histology of Basic Tissues –** Epithelium, Connective, Muscle & Nervous tissue
- **Systemic Histology –** Organs of all major systems including CVS, Respiratory, GIT, Endocrine, Reproductive, etc.
- **Correlations with Physiology & Pathology –** For an integrated learning experience

Why should you read this book?

A visually rich, clinically relevant, and NMC-aligned guide that simplifies histology for UG students while offering deeper insights for PG aspirants.

What's inside?

100+ high-quality light & electron photomicrographs

Improved illustrations with clear, labeled diagrams

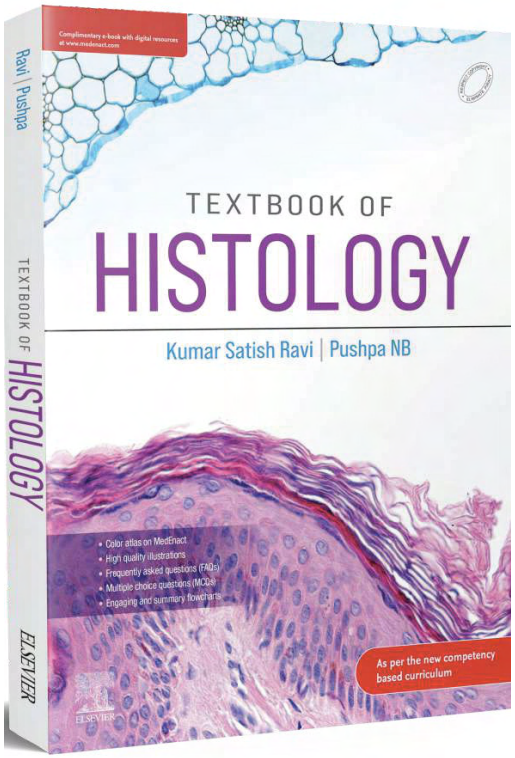
“Remember” boxes for quick facts and high-yield points

Clinical correlations in every chapter

Colored panels with “Further Details” for PG aspirants

#Tip Don't miss the Handy “Last Minute” section — it's your secret weapon for rapid-fire revision right before exams!





Textbook of Histology

By **Kumar Satish Ravi, Pushpa NB**

ISBN: **9788131268391** | Pub Year: **2024** | INR **1110.00**

When to refer to it

- During lectures or lab sessions
- Before exams for quick revisions
- While practicing diagrams

Relevant areas of study

- 1st-Year MBBS - Theory + practical histology
- Viva, internal assessments & NEET PG prep

Why should you read this book?

Master histology with crystal-clear concepts, exam-focused tools, and visuals that make learning stick.

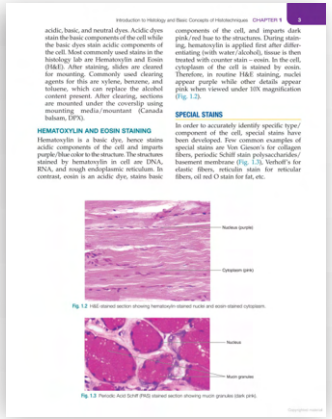
What's inside?

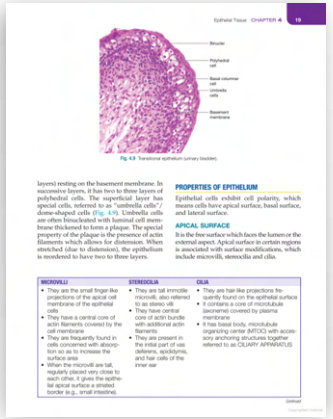
Clear explanations of tissue structure & function

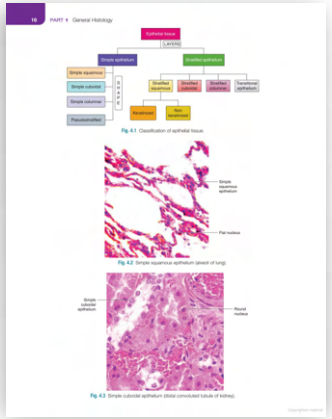
Diagrams you can practice & record

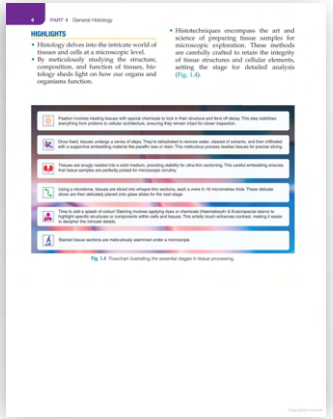
Chapter-wise FAQs, MCQs & short-answer questions

Flowcharts & tables for quick comparisons

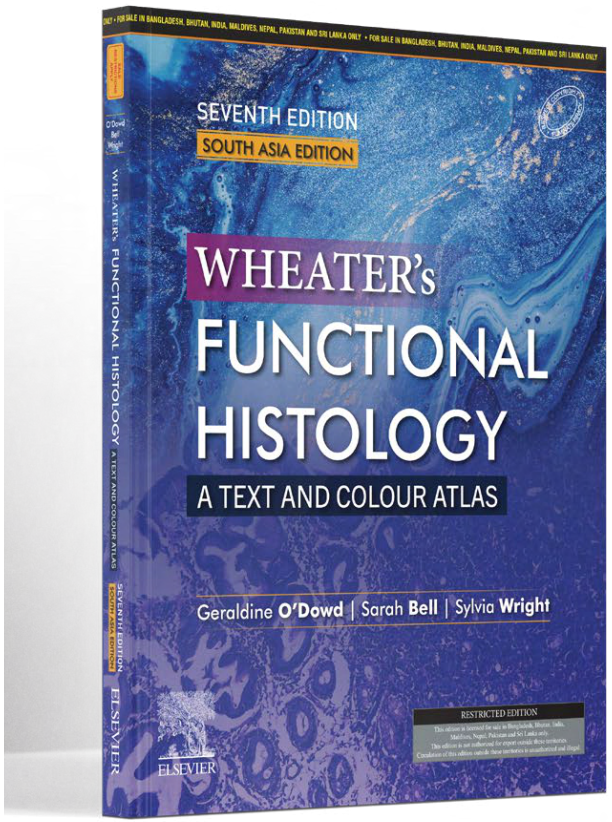








#Tip Don't miss the Handy "Last Minute" section — it's your secret weapon for rapid-fire revision right before exams!



Wheater's Functional Histology a Text and Colour Atlas, South Asia, 7th Edition

By **Geraldine O'Dowd, Sarah Bel, Sylvia Wright**

ISBN: **9788131268575** | Pub Year: **2023** | INR **1,545.00**

When to refer to it

- While studying tissue structure and function
- During microscope sessions & slide interpretation

Relevant areas of study

- Histology theory, microscopy, and tissue identification
- Practical labs, viva, and competitive exam prep

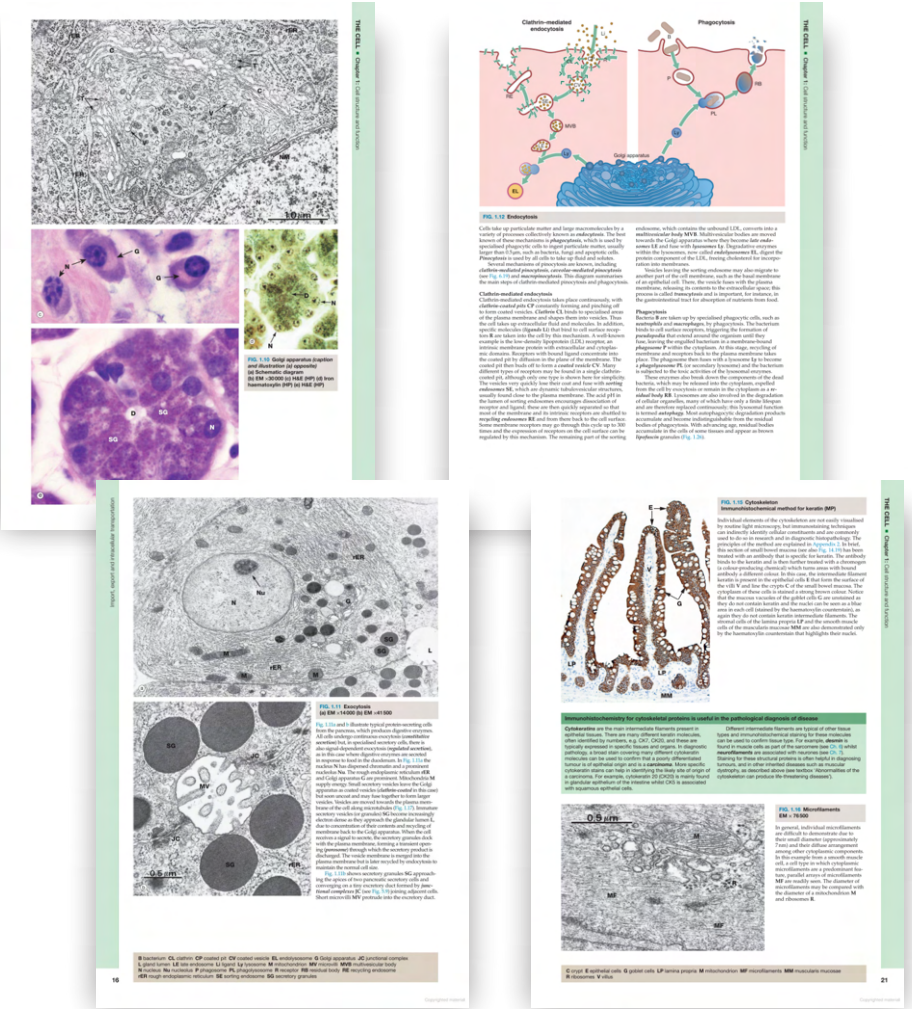
Why should you read this book?

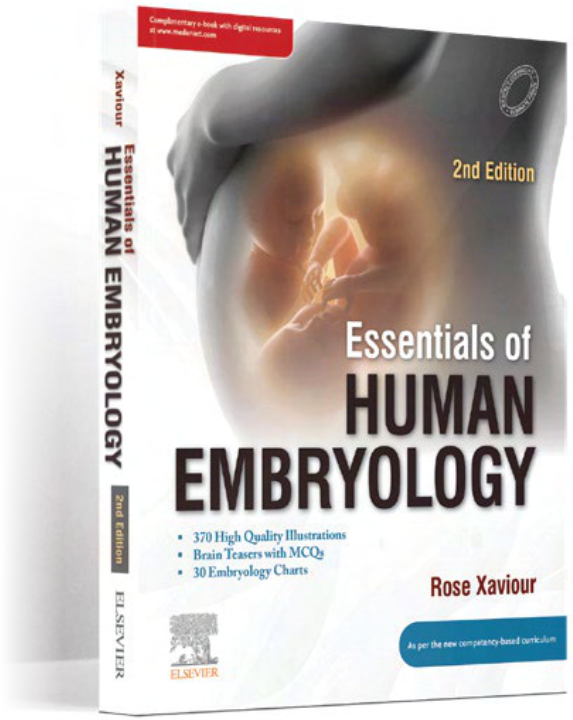
A clinically-linked, visually rich guide to mastering histology—ideal for first-time learners.

What's inside?



Features 900+ high-quality histology images with clear labels, concise explanations of tissue types & organ systems





Essentials of Human Embryology, 2nd Edition

By **Rose Xaviour**

ISBN: **9788131269107** | Pub Year: **2024** | INR **765.00**

When to refer to it

- While studying early development topics
- During genetics lectures or case-based discussions
- Before viva or exam involving developmental anatomy

How it helps

- Clinical scenarios at the start of each chapter
- 3D illustrations, flowcharts, and embryology charts
- Brain teasers and FAQs from university papers

Why should you read this book?

To gain clarity on embryological development, understand clinical implications of congenital anomalies, and visualize developmental timelines.

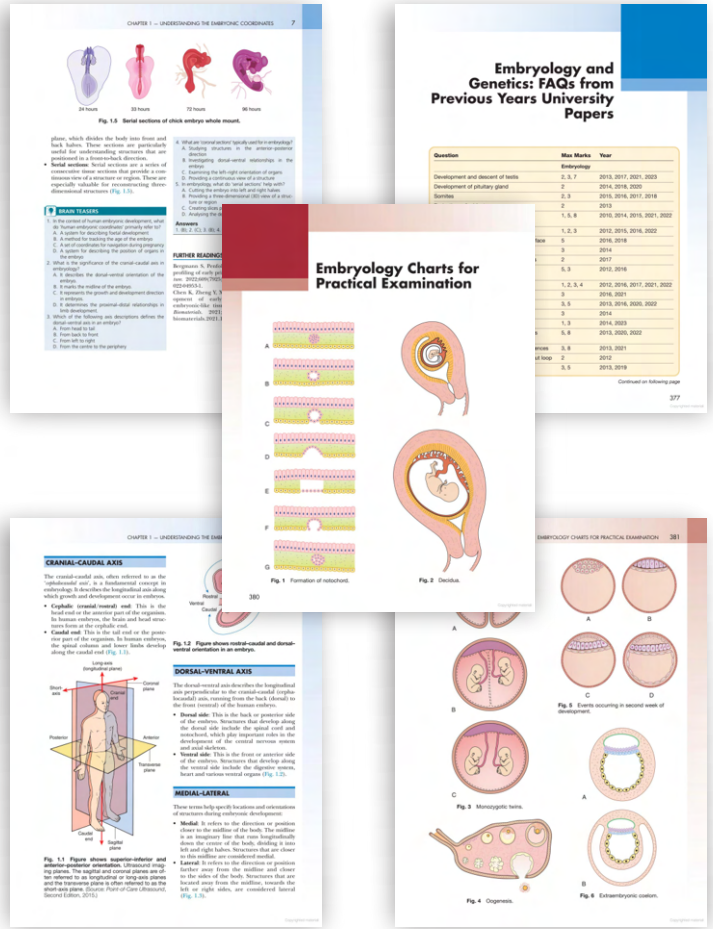
What's inside?

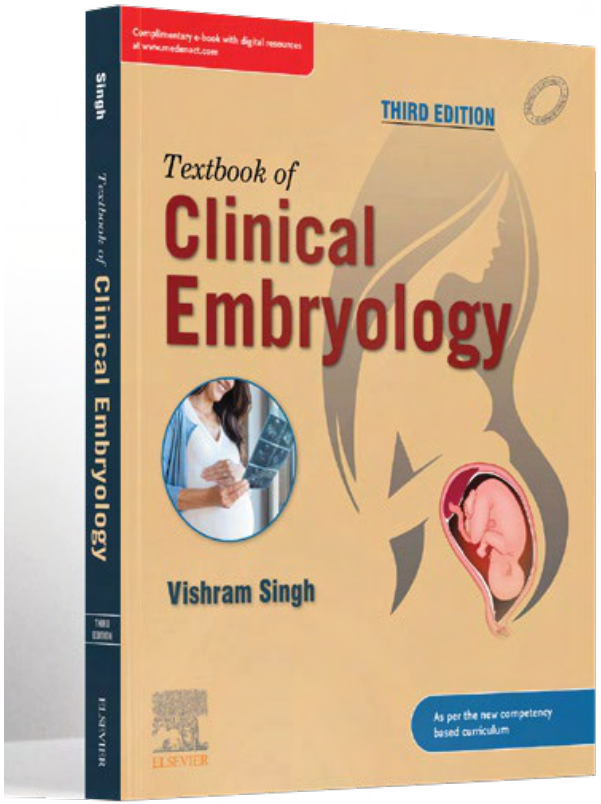
230+ 3D diagrams, clinical images & ultrasound scans for enhanced visual learning

5 structured sections, including new chapters on genetic counseling & recent advances

FAQs from past exams, “Points to Ponder,” and curated further readings

Easy, point-wise format with clinical nuggets & Klinische Perlen(Clincial pearls) for real-world relevance





Textbook of Clinical Embryology, 3rd Edition

By **Vishram Singh**

ISBN: **9788131263969** | Pub Year: **2022** | INR **1,135.00**

When to refer to it

- While learning weekly embryological milestones
- During discussions on birth defects or genetic disorders
- Before theory exams, viva, or PBL sessions

Relevant areas of study

- Developmental biology & clinical embryology
- Prenatal diagnosis, foetal development & therapy
- Case-based and problem-based medical learning
- 1st-Year MBBS, NEET PG foundation, and early clinical exposure

Why should you read this book?

Understand how life begins — from cell to system — with a clinically grounded, visually rich guide that simplifies complex embryological concepts

What's inside?

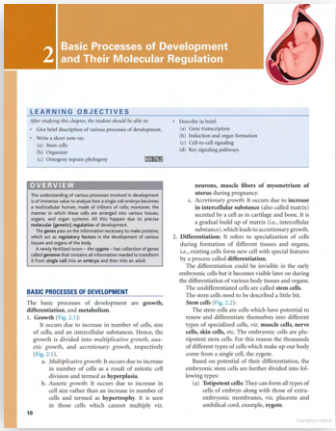
New chapters on molecular regulation, teratology & foetal interventions

Weekly breakdown of events up to 8th week

Visual aids: diagrams, flowcharts, ultrasound images

Clinical links to prenatal diagnostics and surgery

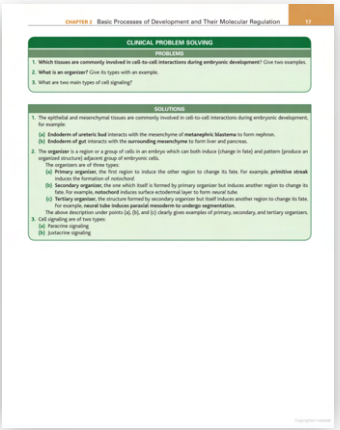
Case studies for applied embryology & genetics


2 Basic Processes of Development and Their Molecular Regulation

LEARNING OBJECTIVES

OVERVIEW

BASIC PROCESSES OF DEVELOPMENT


CHAPTER 2 Basic Processes of Development and Their Molecular Regulation 17

CLINICAL PROBLEM SOLVING

PROBLEMS

SOLUTIONS

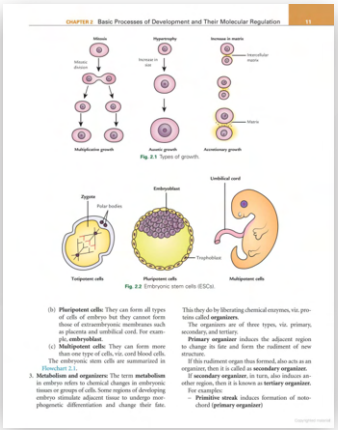
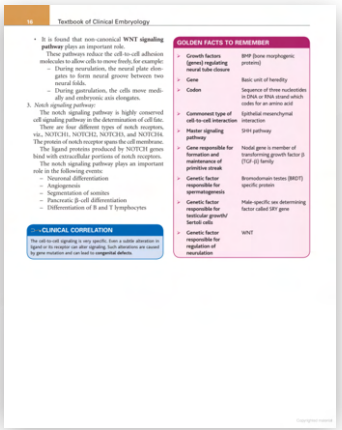

CHAPTER 2 Basic Processes of Development and Their Molecular Regulation 11

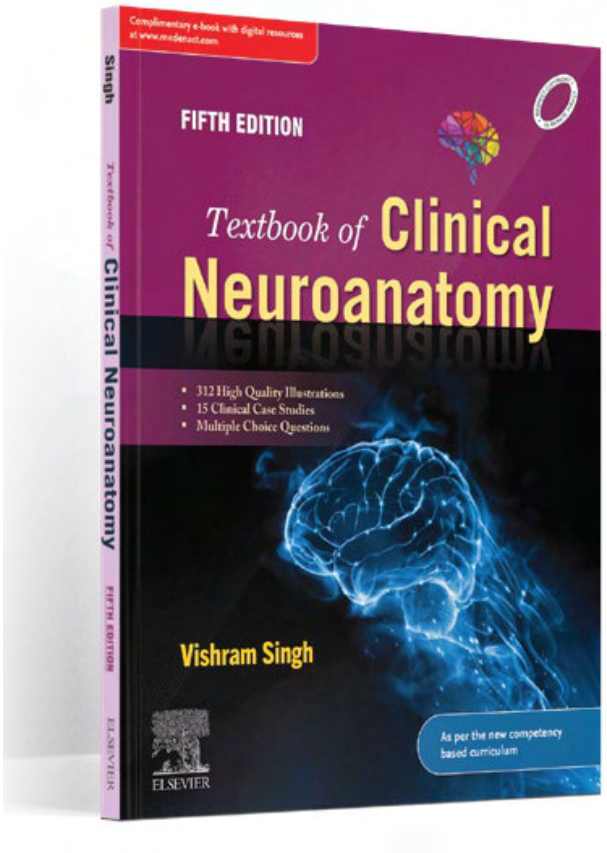
Fig. 2.1 Types of growth.

Fig. 2.2 Embryonic stem cells (ESCs).


16 Textbook of Clinical Embryology

GOLDEN FACTS TO REMEMBER

CLINICAL CORRELATION



Textbook of Clinical Neuroanatomy, 5th Edition

By **Vishram Singh**

ISBN: **9788131268599** | Pub Year: **2024** | INR **935.00**

When to refer to it

- While studying regional anatomy or system-wise structure
- During clinical case discussions or dissection labs
- While preparing for exams with MCQs & clinical problem-solving practice

Relevant Areas of Study

- 1st-Year MBBS
- NEET PG, USMLE, PLAB, and other competitive exams
- Ideal for practical anatomy, early clinical exposure (ECE), and conceptual clarity

Why should you read this book?

A trusted anatomy guide, now updated for the CBME syllabus(Competency Based Medical Education) — packed with clinical cases, NMC-aligned competencies, and tools to make learning stick.

What's inside?

New Clinical Case Studies at chapter ends for real-world application

20+ New Diagrams including 3D visuals to boost retention

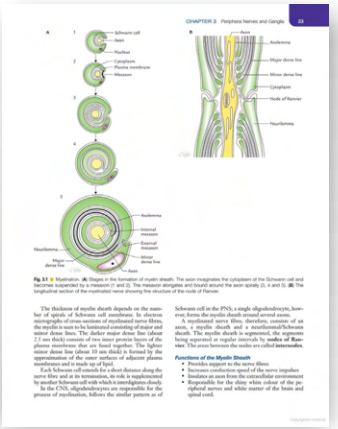
N.B. Boxes with advanced insights & exam-worthy facts

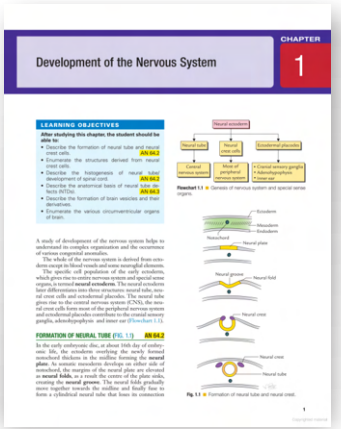
Facts to Remember for PG entrance & international exams

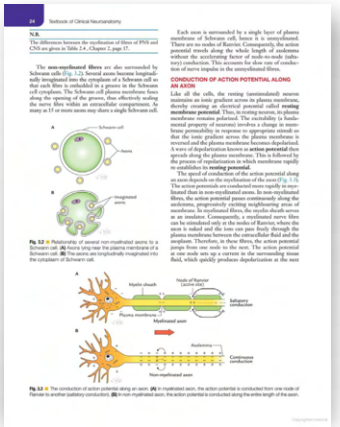
Clinical Problems + Solutions for active recall and understanding

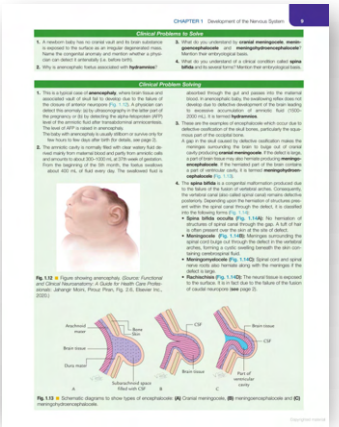
Full eBook Access + Chapter-wise Image Bank for digital flexibility

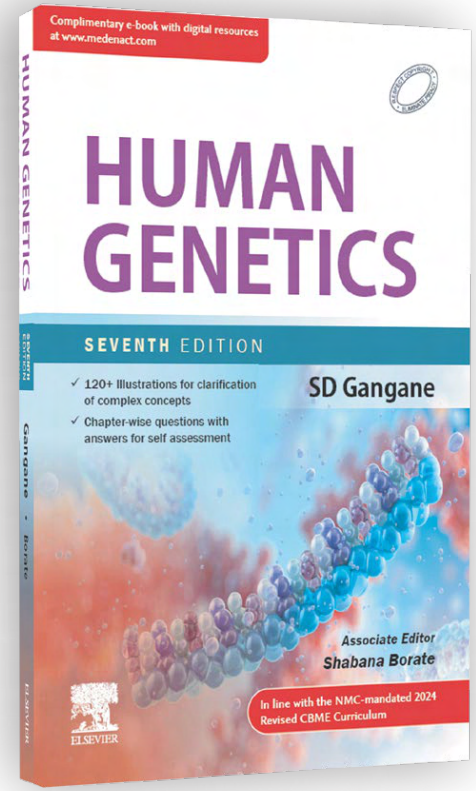
#Tip Use the “Facts to Remember” + “Clinical Problems” together while revising—it's a high-yield combo for cracking NEET PG and USMLE/PLAB.











Human Genetics, 7th Edition

By **S D Gangane**

ISBN: **9788131270363** | Pub Year: **2025** | INR **585.00**

When to refer to it

- While studying molecular and developmental genetics
- Before exams for quick revision of key syndromes and pathways
- For self-assessment and viva preparation

Relevant Areas of Study

- 1st-Year MBBS
- Genetics theory, prenatal diagnosis & molecular biology
- NEET PG, clinical genetics foundation

Why should you read this book?

A focused, up-to-date guide on genetics designed for easy understanding and exam success in the CBME era.

What's inside?

New topics: telomeres, ageing, syndromes (Jacobsen, Williams, ALPS, XLP), NGS & more

Updated chapters on cytogenetics, immunogenetics & prenatal diagnosis

Visual aids: line diagrams, flowcharts, photos & summary boxes

End-of-chapter Q&A with answers for self-assessment

Complimentary eBook + topic animations on MedEnact

#Tip Watch the animations after reading chapters — they make complex pathways and syndromes easier to remember.

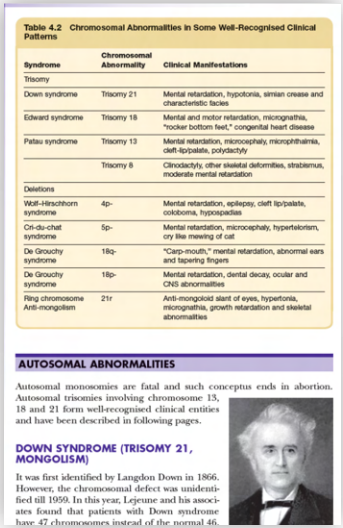


Table 4.2 Chromosomal Abnormalities in Some Well-Recognised Clinical Patterns

Syndrome	Chromosomal Abnormality	Clinical Manifestations
Trisomy		
Down syndrome	Trisomy 21	Mental retardation, hypotonia, simian crease and characteristic facies
Edward syndrome	Trisomy 18	Mental and motor retardation, micrognathia, "rocker bottom feet," congenital heart disease
Patau syndrome	Trisomy 13	Mental retardation, microcephaly, microphthalmia, cleft lip/palate, polydactyly
	Trisomy 8	Clinodactyly, other skeletal deformities, strabismus, moderate mental retardation
Deletions		
Wolf–Hirschhorn syndrome	4p-	Mental retardation, epilepsy, cleft lip/palate, coloboma, hypospadias
Cri-du-chat syndrome	5p-	Mental retardation, microcephaly, hypertelorism, cry like mewing of cat
De Grouchy syndrome	18q-	"Carp-mouth," mental retardation, abnormal ears and tapering fingers
De Grouchy syndrome	18p-	Mental retardation, dental decay, ocular and CNS abnormalities
Ring chromosome Anti-mongolism	21r	Anti-mongoloid slant of eyes, hypertonia, micrognathia, growth retardation and skeletal abnormalities

AUTOSOMAL ABNORMALITIES

Autosomal monosomies are fatal and such conceptus ends in abortion. Autosomal trisomies involving chromosome 13, 18 and 21 form well-recognised clinical entities and have been described in following pages.

DOWN SYNDROME (TRISOMY 21, MONGOLISM)

It was first identified by Langdon Down in 1866. However, the chromosomal defect was unidentified till 1959. In this year, Lejeune and his associates found that patients with Down syndrome have 47 chromosomes instead of the normal 46.

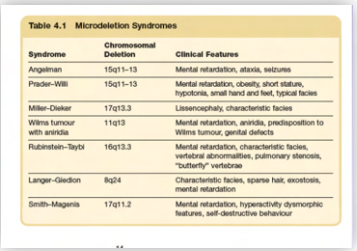


Table 4.1 Microdeletion Syndromes

Syndrome	Chromosomal Deletion	Clinical Features
Angelman	15q11–13	Mental retardation, ataxia, seizures
Prader–Willi	15q11–13	Mental retardation, obesity, short stature, hypotonia, small hand and feet, typical facies
Miller–Dieker	17q13.3	Lissencephaly, characteristic facies
Wilms tumour with aniridia	11q13	Mental retardation, aniridia, predisposition to Wilms tumour, genital defects
Rubinstein–Taybi	16q13.3	Mental retardation, characteristic facies, vertebral abnormalities, pulmonary stenosis, "butterfly" vertebrae
Langer–Giedion	8q24	Characteristic facies, sparse hair, exostosis, mental retardation
Smith–Magenis	17q11.2	Mental retardation, hyperactivity dysmorphic features, self-destructive behaviour



Williams Syndrome

Williams syndrome (WS) refers to a multisystem disorder presenting with aortic stenosis (elastin arteriopathy), delayed milestones and mild mental retardation with learning disorders. The babies have feeding problems and incurving of little finger (Fig. 4.5).

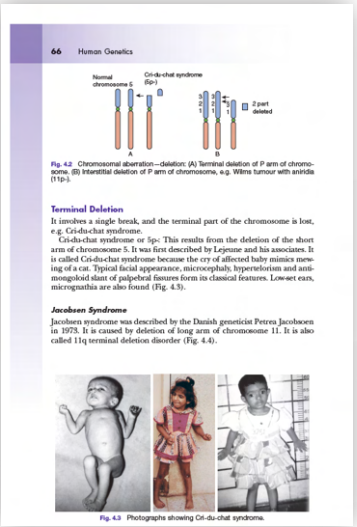
Genetic cause: WS is caused due to partial deletion of chromosome 7 (nearly 28 genes on the chromosome are lost). The genes lost are supposed to be involved in producing elastin. Life expectancy is normal in most cases; however, in some cases it may be reduced owing to cardiovascular disease.

Age of detection: Most cases were diagnosed as a newborn or in early childhood, average age of diagnosis being 3–3.5 years.

Risk of William syndrome: This may occur in people with no history of the disorder in the family. However, risk of WS in a child is increased if parent has inversion involving chromosome 7.

Prenatal detection: Though prenatal diagnosis is rare, foetal hands, hypotonia and generalised hypotonia were detected around 17 weeks of gestation in a case reported.

Fig. 4.5 Williams syndrome. (Source: Illustrated Textbook of Paediatrics, 4ed.: Alan Craft, Graham Clayden, Tom Lissauer, Fig. 8.18, Elsevier Ltd., 2012.)



66 Human Genetics

Fig. 4.2 Chromosomal aberration—deletion: (A) Terminal deletion of P arm of chromosome. (B) Interstitial deletion of P arm of chromosome, e.g. Wilms tumour with aniridia (11p-).

Terminal Deletion

It involves a single break, and the terminal part of the chromosome is lost, e.g. Cri-du-chat syndrome.

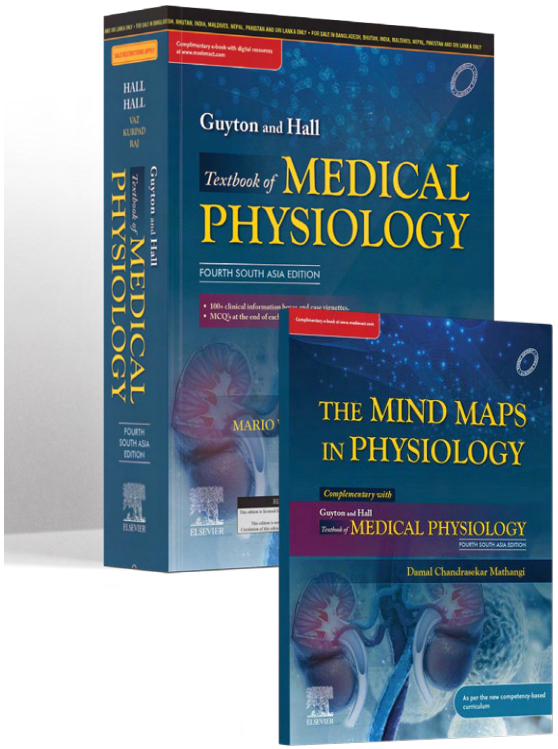
Cri-du-chat syndrome or 5p-: This results from the deletion of the short arm of chromosome 5. It was first described by Lejeune and his associates. It is called Cri-du-chat syndrome because the cry of affected baby mimics mewing of a cat. Typical facial appearance, microcephaly, hypertelorism and anti-mongoloid slant of palpebral fissures form its classical features. Low-set ears, micrognathia are also found (Fig. 4.3).

Jacobsen Syndrome

Jacobsen syndrome was described by the Danish geneticist Petrea Jacobsoen in 1973. It is caused by deletion of long arm of chromosome 11. It is also called 11q terminal deletion disorder (Fig. 4.4).

Fig. 4.3 Photographs showing Cri-du-chat syndrome.

Physio Unplugged:
What Your Body's Really Doing



Guyton and Hall Textbook of Medical Physiology, Fourth South Asia Edition & The Mind Maps In Physiology

Adaptation Editors: **Mario Vaz, Anura Kurpad, Tony Raj**

ISBN: **9788131270639** | Pub Year: **2024** | INR **2,525.00**

Simplifies complex physiology with visuals and clinical cases—making learning easier and exam prep smarter. Comes with a complimentary Mind Maps booklet for quick, high-yield revision. Authored with an experimental approach to build strong concepts from the ground up.

When to refer to it

- **Before class:** read Learning Objectives & preview diagrams
- **During class:** match the "One chapter = One lecture" format
- **After class:** use Mind Maps & MCQs to revise and self-test
- **Before exams:** quick chapter recaps, clinical cases & summary boxes = saviour!

Relevant Areas of Study

- **First-year MBBS** (core Physiology syllabus)
- **Integrated learning** (with Anatomy & Biochemistry)
- **Clinical years –** builds base for Pathology, Medicine & Pharmacology
- **Great for PG prep –** NEET PG, USMLE/PLAB INI-CET, FMGE

What's inside?

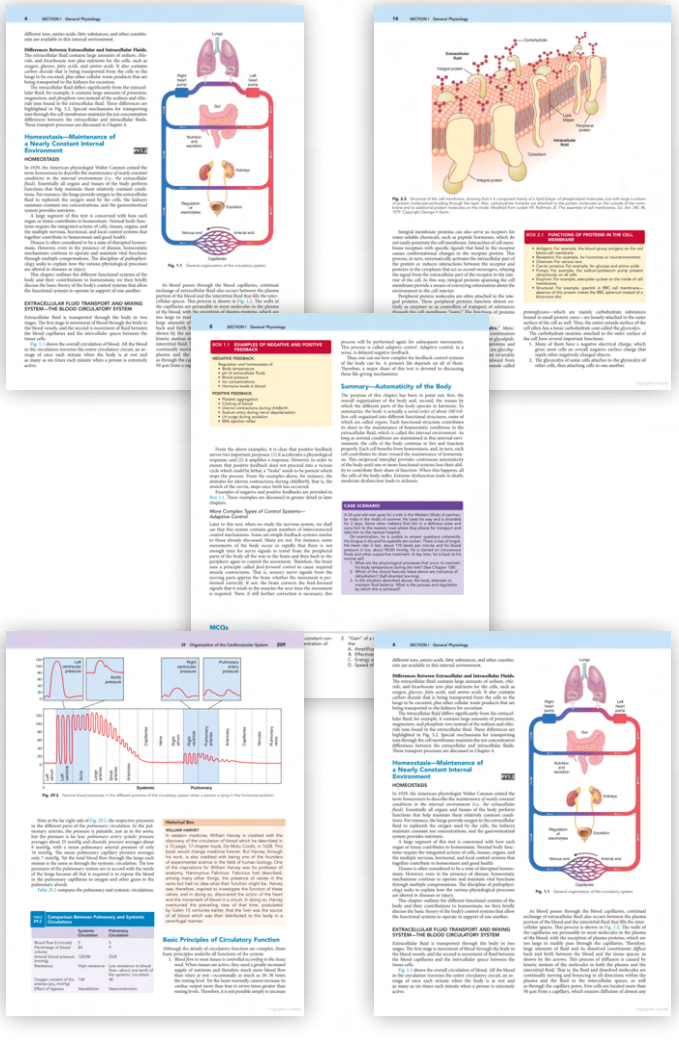
Over 1000+ full-color diagrams & flowcharts

Clinical links to obesity, Alzheimer's, cardiac/metabolic disorders

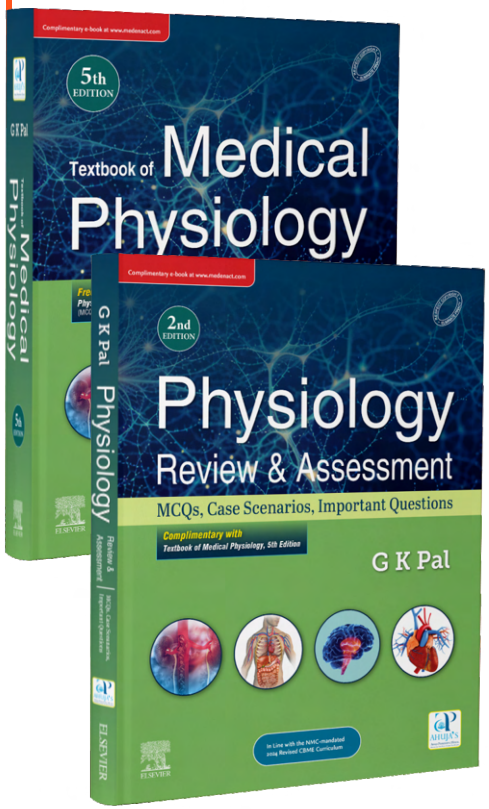
One Chapter – One Lecture Model

Glossaries, learning objectives, new MCQs & open-ended questions

Complimentary e-book + mind maps booklet



Launching September 2025



Textbook of Medical Physiology 5th Edition

By **GK Pal**

ISBN: **9788131273913** | Pub Year: **2025** | INR **1,795.00**

When to refer to it

- To strengthen conceptual clarity in tricky topics like renal, cardiac, and neuro-physiology
- While preparing for end-semester exams & viva
- During clinical postings to connect basics with patient cases
- For quick revision before tests & entrance prep

Relevant areas of study

- Core Physiology for MBBS & Allied Health Sciences
- Clinical application across Medicine, Surgery, Pediatrics, and more
- Integrated CBME-aligned curriculum requirements
- Foundation for PG entrance and competitive exams

Why should you read this book?

Your ultimate survival guide to mastering Physiology — updated, clinically tuned, and CBME-ready.
Learn faster, revise smarter, and apply concepts with confidence.

What's inside?

Chapter Frameworks mapped to competencies with page references

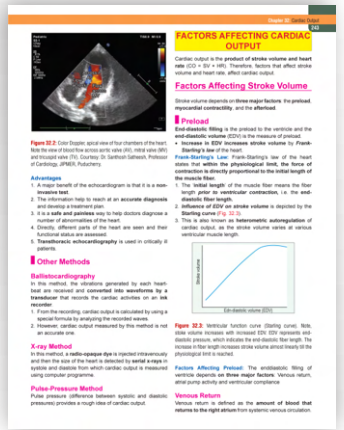
Point-wise format for quicker learning & revision

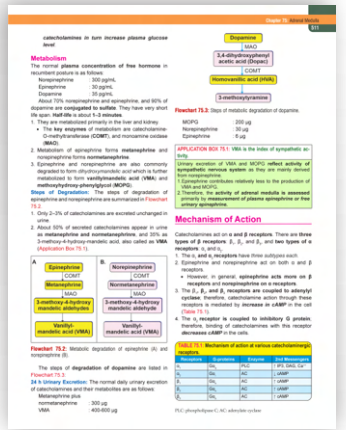
1500+ diagrams & flowcharts for visual clarity

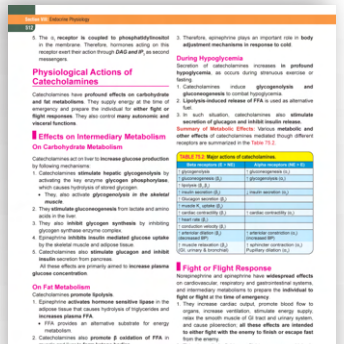
800+ Application Boxes linking textbook knowledge to clinical cases

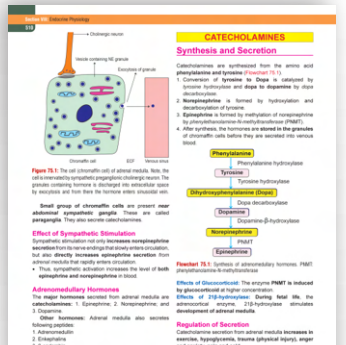
Applied insights at the end of every topic

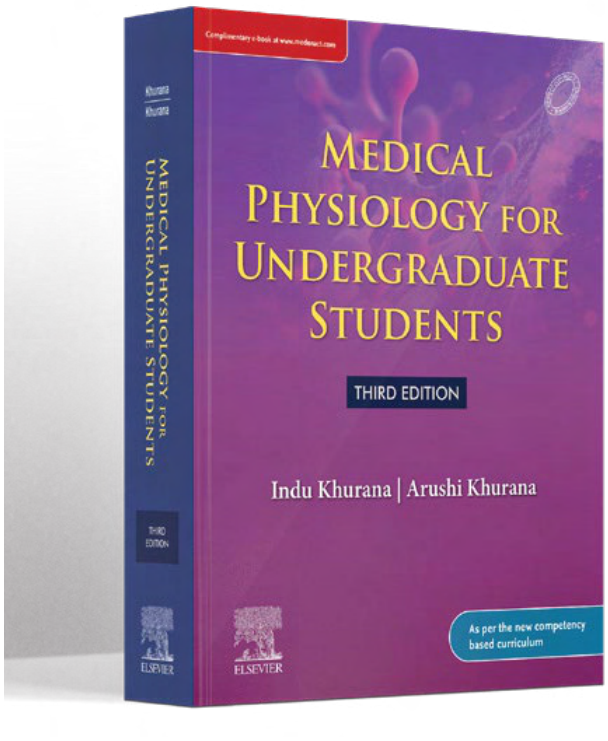
Bonus supplement – Physiology: Review & Assessment (MCQs, case-based Qs, viva prep)











Medical Physiology for Undergraduate Students, 3rd Edition

By **Indu Khurana, Arushi Khurana**

ISBN: **9788131264935** | Pub Year: **2022** | INR **2,135.00**

When to refer to it

- During lectures and modular learning sessions
- Preparing for internals, finals, and viva
- High-yield revision tool before exams
- For MCQ practice and solving clinical cases

Relevant Areas of Study

- Muscle physiology
- Neurophysiology
- Cardiovascular and Respiratory systems
- Renal, Endocrine, and Reproductive physiology
- Applied and clinical concepts relevant to pathophysiology

Why should you read this book?

Grasp concepts faster with 1000+ visuals, tables, and flowcharts. Clinically integrated and CBME-aligned—designed to help you learn smart, revise fast, and stay exam-ready.

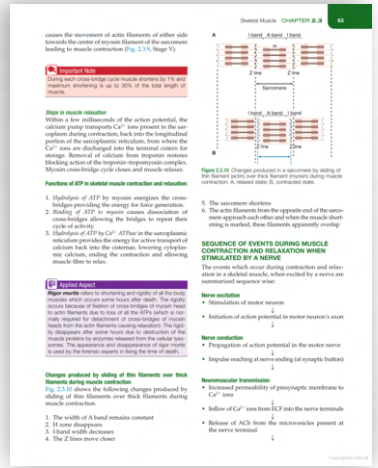
What's inside?

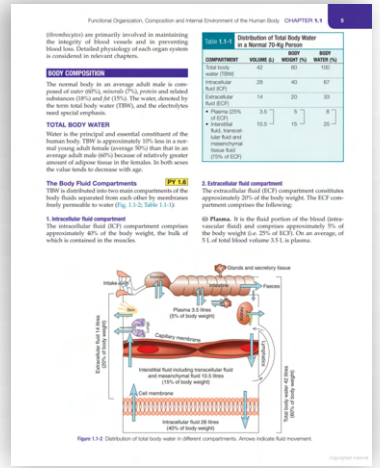
New Topics: Obesity and the effects of a sedentary lifestyle

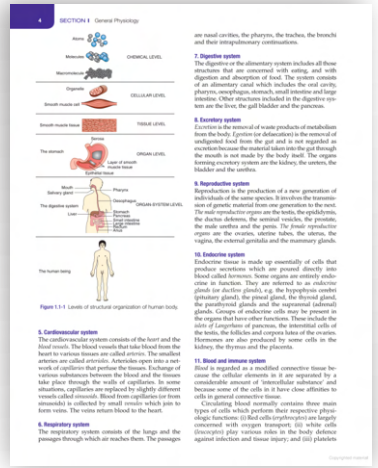
Updated Content: Refreshed sections on Muscular Dystrophy and Myasthenia Gravis

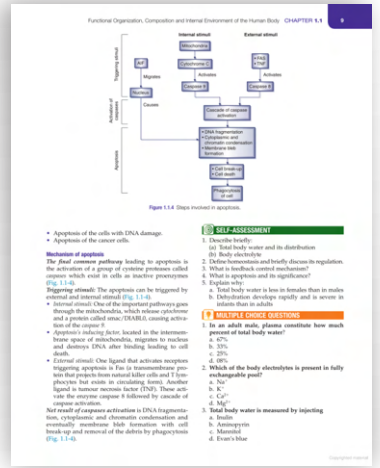
MCQs at the end of each chapter for self-assessment

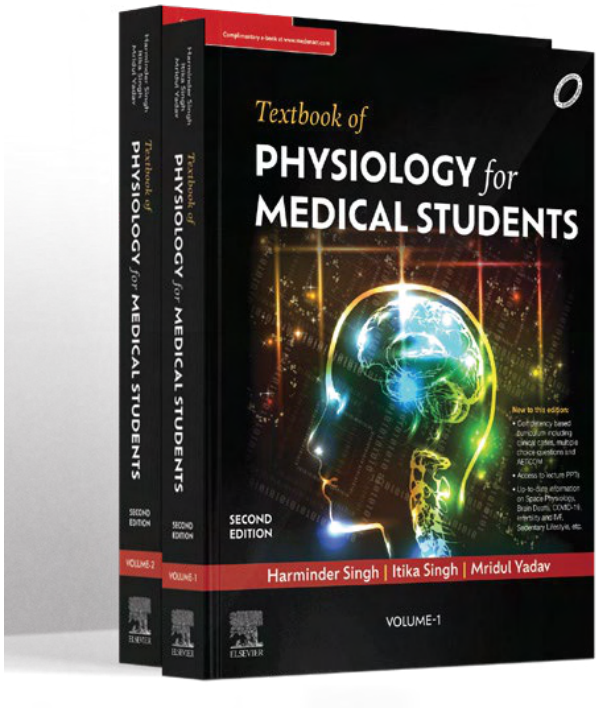
Concept + Application: Strong blend of theory with real-world clinical relevance











Textbook of Physiology for Medical Students, 2nd Edition 2-Volume Set

By **Harminder Singh, Itika Singh, Mridul Yadav**

ISBN: **9788131265604** | Pub Year: **2022** | INR **1,905.00**

When to refer to it

- For understanding tough topics like neurophysiology or endocrinology
- Before vivas using the clinical images and diagrams
- When revising AETCOM topics or integrated physiology

Relevant Areas of Study

- 1st-year MBBS Physiology curriculum (CBME aligned)
- University exam prep (theory + viva)
- Concept building for NEET PG & clinical understanding
- Foundation for systemic and integrated physiology
- Obesity, Parkinsonism, Alzheimer's, COVID-19

- Obesity, Parkinsonism, Alzheimer's, COVID-19

Why should you read this book?

A complete 2-volume set that simplifies physiology with updated topics, 1000+ diagrams, and NMC-aligned AETCOM content – everything a medical student needs in one place!

What's inside?

Volume 1

General Physiology, Haematology, Nerve-Muscle Physiology, Gastrointestinal Physiology, Cardiovascular Physiology, Respiratory Physiology

Volume 2

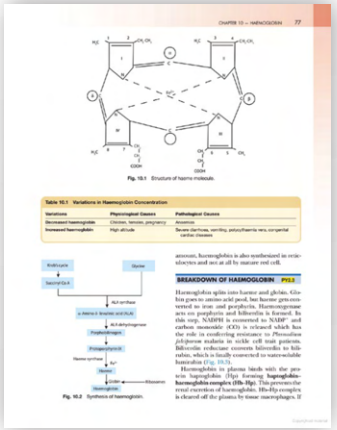
Renal, Endocrine & Reproductive Physiology, Neurophysiology & Integrated Physiology, AETCOM topics and Qs

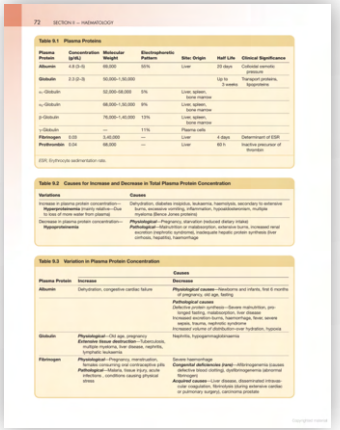
1000+ full-color **diagrams** including radiographs, histological pictures, MRI scans, ECGs, angiograms, USG, and flowcharts

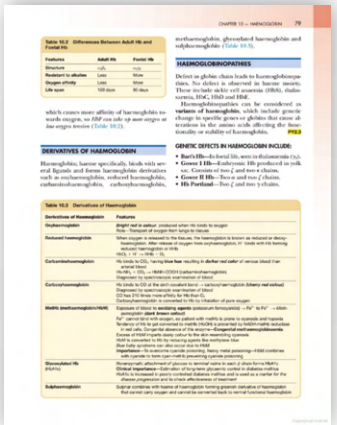
Recent additions like:

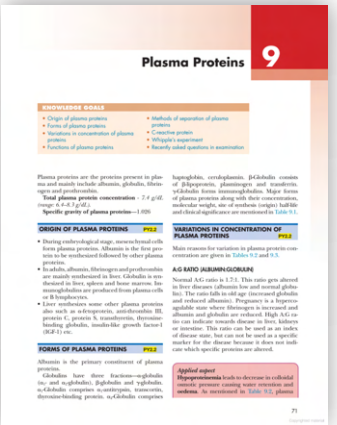
Stress physiology, metabolic syndrome, IVF, yoga & pranayama

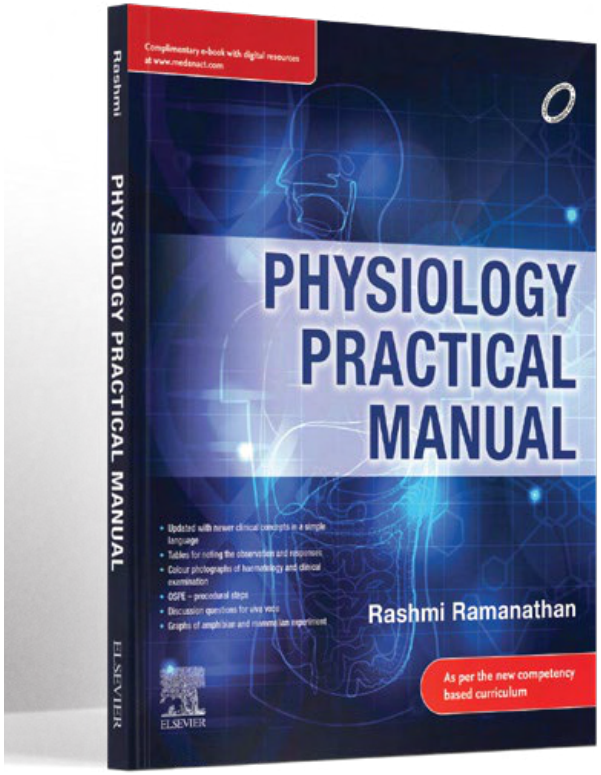
Cold injuries, space physiology, free radicals, and more











Physiology Practical Manual

By **Rashmi Ramanathan**

ISBN: **9788131266458** | Pub Year: **2023** | INR **799.00**

When to refer to it

- During practical classes for guided documentation
- Before exams to revise clinical procedures and graphs
- While learning how to interpret scenarios or calculations

Relevant Areas of Study

- Skill-based learning and certification
- Logbook and internal assessment preparation
- Clinical examination and interpretation

Why should you read this book?

Designed for hands-on learning—this manual helps you master clinical procedures while directly recording your logbook competencies, just as required by NMC!

What's inside?

Tables designed for direct logbook entry of competencies

Full-color photos, diagrams & step-by-step illustrations for each procedure

Saves time during practical hours by focusing on hands-on skills, not just theory

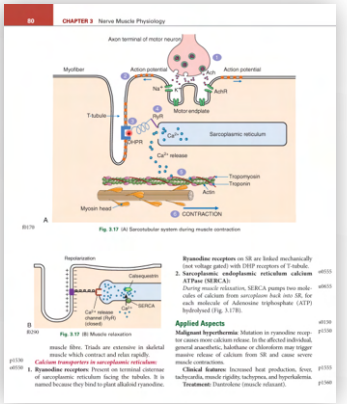
Chapters on:

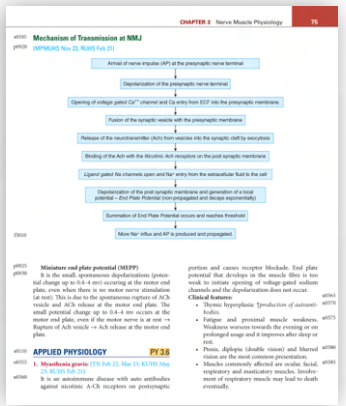
Clinical examination

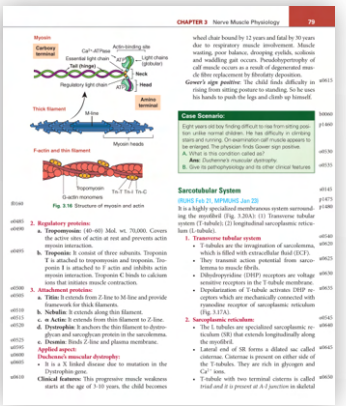
Charts, graphs & interpretation

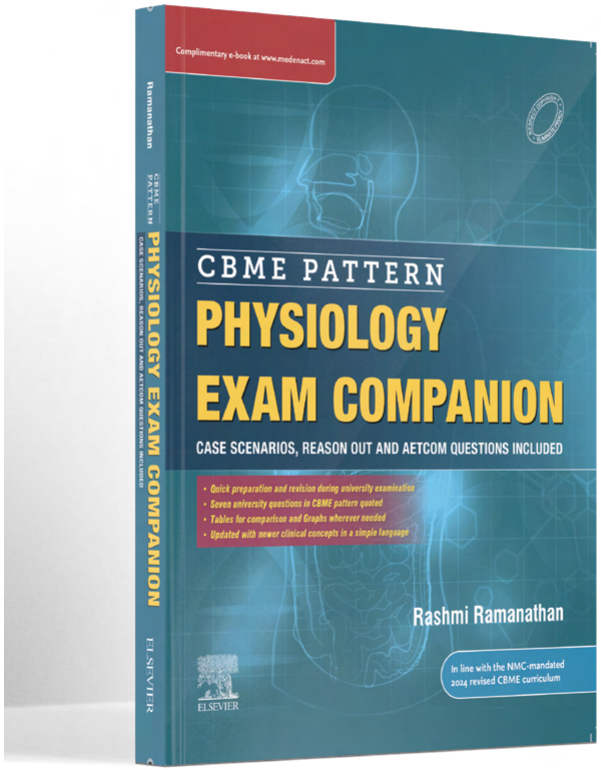
Calculations and case-based scenarios











Physiology Exam Companion

By **Rashmi Ramanathan**

ISBN: **9788131270752** | Pub Year: **2025** | INR **795.00**

When to refer to it

- While practicing MCQs, case scenarios, or "reason out" questions
- For a quick brush-up of high-yield clinical concepts

Relevant Areas of Study

- MBBS Physiology exam preparation
- University-level case-based and reasoning questions
- Clinical physiology and application-based learning

Why should you read this book?

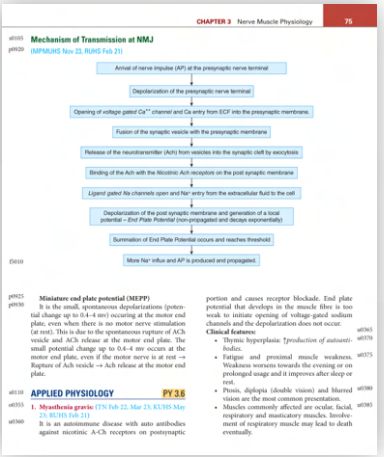
Crack your university exams with confidence! This is your go-to revision guide packed with case-based questions, clinical insights, and exam-style MCQs.

What's inside?

Real university exam questions from 7 major Indian medical universities

Case-based learning, MCQs, reasoning-style questions

Quick-reference tools: Comparative tables, High-yield graphs, Essential summaries for last-minute revision


CHAPTER 3 Nerve Muscle Physiology 75

Mechanism of Transmission at NMJ

(MPMUHS Nov 22, RUHS Feb 21)

Arrival of nerve impulse (AP) at the presynaptic nerve terminal

Depolarization of the presynaptic nerve terminal

Opening of voltage gated Ca^{++} channel and Ca entry from ECF into the presynaptic membrane.

Fusion of the synaptic vesicle with the presynaptic membrane

Release of the neurotransmitter (Ach) from vesicles into the synaptic cleft by exocytosis

Binding of the Ach with the Nicotinic Ach receptors on the post synaptic membrane

Ligand gated Na channels open and Na^+ entry from the extracellular fluid to the cell

Depolarization of the post synaptic membrane and generation of a local potential – *End Plate Potential (non-propagated)* and decays exponentially)

Summation of End Plate Potential occurs and reaches threshold

More Na^+ influx and AP is produced and propagated.

Miniature end plate potential (MEPP)

It is the small, spontaneous depolarizations (potential change up to 0.4–4 mv) occuring at the motor end plate, even when there is no motor nerve stimulation (at rest). This is due to the spontaneous rupture of ACh vesicle and ACh release at the motor end plate. The small potential change up to 0.4–4 mv occurs at the motor end plate, even if the motor nerve is at rest → Rupture of Ach vesicle → Ach release at the motor end plate.

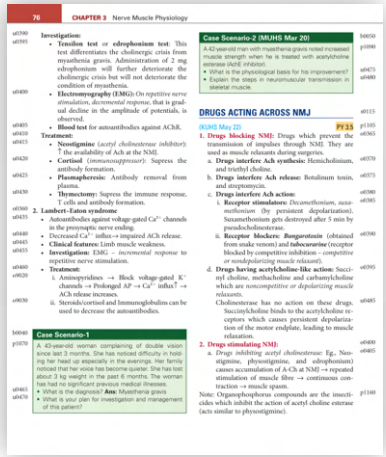
APPLIED PHYSIOLOGY PY 3.6

1. **Myasthenia gravis:** (TN Feb 22, Mar 23; KUHS May 23, RUHS Feb 21)

It is an autoimmune disease with auto antibodies against nicotinic A-Ch receptors on postsynaptic portion and causes receptor blockade. End plate potential that develops in the muscle fibre is too weak to initiate opening of voltage-gated sodium channels and the depolarization does not occur.

Clinical features:

- Thymic hyperplasia: ↑*production of autoantibodies*.
- Fatigue and proximal muscle weakness. Weakness worsens towards the evening or on prolonged usage and it improves after sleep or rest.
- Ptosis, diplopia (double vision) and blurred vision are the most common presentation.
- Muscles commonly affected are ocular, facial, respiratory and masticatory muscles. Involvement of respiratory muscle may lead to death eventually.


76 CHAPTER 3 Nerve Muscle Physiology

Investigation:

- **Tensilon test** or **edrophonium test**: This test differentiates the cholinergic crisis from myasthenia gravis. Administration of 2 mg edrophonium will further deteriorate the cholinergic crisis but will not deteriorate the condition of myasthenia.
- **Electromyography (EMG):** *On repetitive nerve stimulation, decremental response*, that is gradual decline in the amplitude of potentials, is observed.
- **Blood test** for autoantibodies against AChR.

Treatment:

- **Neostigmine** (*acetyl cholinesterase inhibitor*): ↑ the availability of Ach at the NMJ.
- **Cortisol** (*immunosuppressor*): Supress the antibody formation.
- **Plasmapheresis**: Antibody removal from plasma.
- **Thymectomy:** Supress the immune response, T cells and antibody formation.

2. **Lambert–Eaton syndrome**

- *Autoantibodies* against voltage-gated Ca^{2+} channels in the presynaptic nerve ending.
- Decreased Ca^{2+} influx→impaired ACh release.
- **Clinical features:** Limb muscle weakness.
- **Investigation:** EMG - *incremental response* to repetitive nerve stimulation.
- **Treatment:**
  i. Aminopyridines → Block voltage-gated K^+ channels → Prolonged AP → Ca^{2+} influx↑ → ACh release increases.
  ii. Steroids/cortisol and Immunoglobulins can be used to decrease the autoantibodies.

Case Scenario-1

A 43-year-old woman complaining of double vision since last 3 months. She has noticed difficulty in holding her head up especially in the evenings. Her family noticed that her voice has become quieter. She has lost about 3 kg weight in the past 6 months. The woman has had no significant previous medical illnesses.

- What is the diagnosis? **Ans:** Myasthenia gravis
- What is your plan for investigation and management of this patient?

Case Scenario-2 (MUHS Mar 20)

A 42-year-old man with myasthenia gravis noted increased muscle strength when he is treated with acetylcholine esterase (AchE inhibitor).

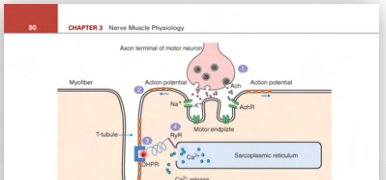
- What is the physiological basis for his improvement?
- Explain the steps in neuromuscular transmission in skeletal muscle.

DRUGS ACTING ACROSS NMJ PY 3.5

(KUHS May 23)

1. **Drugs blocking NMJ:** Drugs which prevent the transmission of impulses through NMJ. They are used as muscle relaxants during surgeries.
   a. **Drugs interfere Ach synthesis:** Hemicholinium, and triethyl choline.
   b. **Drugs interfere Ach release:** Botulinum toxin, and streptomycin.
   c. **Drugs interfere Ach action:**
      i. **Receptor stimulators:** *Decamethonium, suxamethonium* (by persistent depolarization). Suxamethonium gets destroyed after 5 min by pseudocholinesterase.
      ii. **Receptor blockers: *Bungarotoxin*** (obtained from snake venom) and ***tubocurarine*** (receptor blocked by competitive inhibition – *competitive or nondepolarizing muscle relaxant*).
   d. **Drugs having acetylcholine-like action:** Succinyl choline, methacholine and carbamylcholine which are *noncompetitive or depolarizing muscle relaxants*.
      Cholinesterase has no action on these drugs. Succinylcholine binds to the acetylcholine receptors which causes persistent depolarization of the motor endplate, leading to muscle relaxation.
2. **Drugs stimulating NMJ:**
   a. *Drugs inhibiting acetyl cholinesterase*: Eg., Neostigmine, physostigmine, and edrophonium) causes accumulation of A-Ch at NMJ → repeated stimulation of muscle fibre → continuous contraction → muscle spasm.

Note: Organophosphorus compounds are the insecticides which inhibit the action of acetyl choline esterase (acts similar to physostigmine).


80 CHAPTER 3 Nerve Muscle Physiology

Axon terminal of motor neuron

Myofiber

Action potential

Ach

Action potential

Na^+

AchR

Motor endplate

T-tubule

RyR

Sarcoplasmic reticulum

DHPR

Ca^{2+} release

Tropomyosin

Troponin

Actin

Myosin head

CONTRACTION

A

Fig. 3.17 (A) Sarcotubular system during muscle contraction

Repolarization

Calsequestrin

SERCA

Ca^{2+} release channel (RyR) (closed)

B

Fig. 3.17 (B) Muscle relaxation

muscle fibre. Triads are extensive in skeletal muscle which contract and relax rapidly.

Calcium transporters in sarcoplasmic reticulum:

1. **Ryanodine receptors**: Present on terminal cisternae of sarcoplasmic reticulum facing the tubules. It is named because they bind to plant alkaloid ryanodine.

Ryanodine receptors on SR are linked mechanically (not voltage gated) with DHP receptors of T-tubule.

2. **Sarcoplasmic endoplasmic reticulum calcium ATPase (SERCA):**

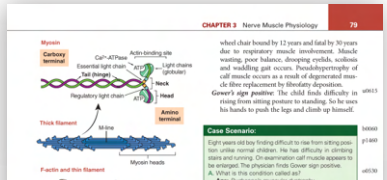
During muscle relaxation, SERCA pumps two molecules of calcium from *sarcoplasm back into* SR, for each molecule of Adenosine triphosphate (ATP) hydrolysed (Fig. 3.17B).

Applied Aspects

Malignant hyperthermia: Mutation in ryanodine receptor causes more calcium release. In the affected individual, general anaesthetic, halothane or chloroform may trigger massive release of calcium from SR and cause severe muscle contractions.

Clinical features: Increased heat production, fever, tachycardia, muscle rigidity, tachypnea, and hyperkalemia.

Treatment: Dantrolene (muscle relaxant).


CHAPTER 3 Nerve Muscle Physiology 79

Myosin

Carboxy terminal

Ca^{2+}-ATPase

Actin-binding site

Essential light chain

ATP

Light chains (globular)

Tail (hinge)

Neck

Regulatory light chain

ATP

Head

Amino terminal

Thick filament

M-line

Myosin heads

F-actin and thin filament

Tropomyosin

Tn-T Tn-I Tn-C

G-actin monomers

Fig. 3.16 Structure of myosin and actin

wheel chair bound by 12 years and fatal by 30 years due to respiratory muscle involvement. Muscle wasting, poor balance, drooping eyelids, scoliosis and waddling gait occurs. Pseudohypertrophy of calf muscle occurs as a result of degenerated muscle fibre replacement by fibrofatty deposition.

Gower's sign positive: The child finds difficulty in rising from sitting posture to standing. So he uses his hands to push the legs and climb up himself.

Case Scenario:

Eight years old boy finding difficult to rise from sitting position unlike normal children. He has difficulty in climbing stairs and running. On examination calf muscle appears to be enlarged. The physician finds Gower sign positive.

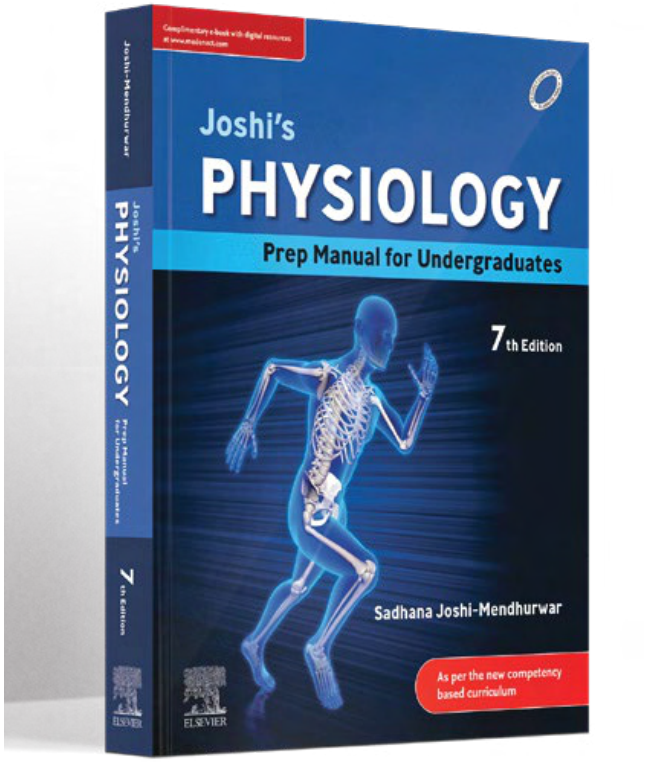
A. What is this condition called as?
Ans: *Duchenne's muscular dystrophy.*
B. Give its pathophysiology and its other clinical features

Sarcotubular System

(RUHS Feb 21, MPMUHS Jan 22)

It is a highly specialized membranous system surrounding the myofibril (Fig. 3.20A): (1) Transverse tubular system (T-tubule); (2) longitudinal sarcoplasmic reticulum (L-tubule).

1. **Transverse tubular system**
   - T-tubules are the invagination of sarcolemma, which is filled with extracellular fluid (ECF).
   - They transmit action potential from sarcolemma to muscle fibrils.
   - Dihydropyridine (DHP) receptors are voltage sensitive receptors in the T-tubule membrane.
   - Depolarization of T-tubule activates DHP receptors which are mechanically connected with ryanodine receptor of sarcoplasmic reticulum (Fig. 3.17A).
2. **Sarcoplasmic reticulum:**
   - The L tubules are specialized sarcoplasmic reticulum (SR) that extends longitudinally along the myofibril.
   - Lateral end of SR forms a dilated sac called cisternae. Cisternae is present on either side of the T-tubules. They are rich in glycogen and Ca^{2+} ions.
   - T-tubule with two terminal cisterns is called *triad and it is present at A-I junction* in skeletal



Joshi's Physiology: Prep Manual for Undergraduates, 7th Edition

By **Sadhana Joshi-Mendhurwar**

ISBN: **9788131266458** | Pub Year: **2023** | INR **799c.00**

When to refer to it

- **Day-to-Day Practical Classes:** For filling pre-drawn tables/logbook directly during practical hours.
- **Before Skill Assessment / OSCE:** Quick revision of procedural steps with diagrams & sample OSCE examples.

Relevant Areas of Study

- **Physiology in Action –** Linking theory to practice through experiments on cardiovascular, respiratory, nervous, and muscular systems
- **Laboratory Skills –** Handling microscopes, blood sample collection, haemocytometry, and use of lab instruments
- **Emergency Skills –** Basics like CPR, first response, and interpreting simple diagnostic tests

Why should you read this book?

A complete exam-focused guide with real clinical cases and problem-based learning to help you *think like* a doctor while preparing like a topper!

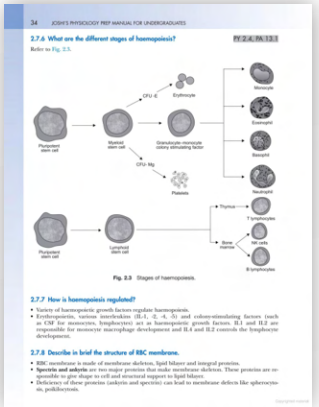
What's inside?

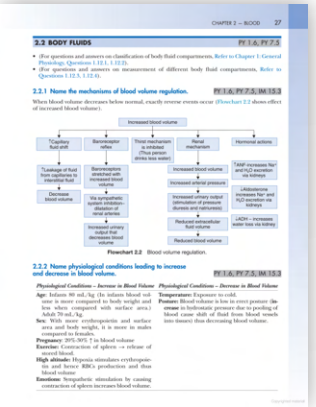
Structured content to master LAQs, SAQs, short notes & case-based questions.

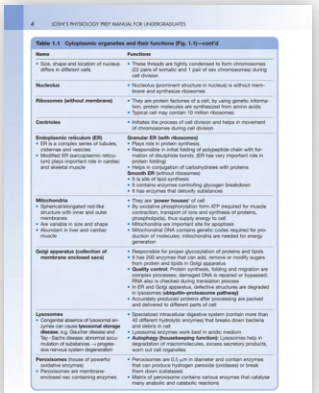
Covers the physiological basis behind clinical conditions and exam scenarios.

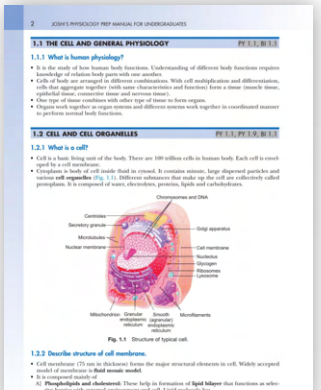
Features clinical case studies to connect textbook learning to real-life medical practice.

Includes important formulas & calculations—especially in Respiratory & Excretory Physiology.

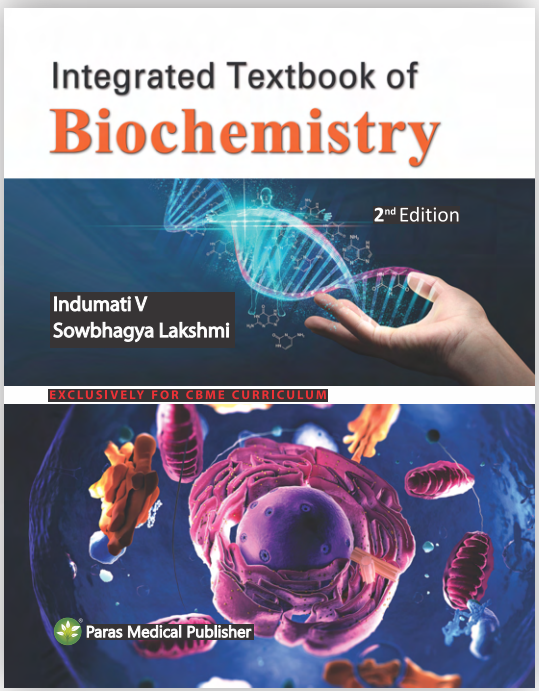








Biochemistry:
The Story Behind Symptoms



Integrated Textbook of Biochemistry, 2nd Edition

By **Indumathi V**

ISBN: **9788181915580** | Pub Year: **2024** | INR **1,795.00**

When to refer to it

- **Early Clinical Exposure (ECE)** – Perfect for connecting biochemistry with clinical scenarios
- **Before Practicals & Viva** – Self-assessment questions, MCQs, and clinical vignettes included
- **During NExT & PG Prep** – Case-based content and chapter recaps aid fast-track revisions

Relevant Areas of Study

- **Case-Based Biochemistry –** Aetiology to treatment explained in clinical context
- **Emerging Topics –** Includes CRISPR/Cas9 and COVID-related biochemistry (e.g., inflammatory markers in SARS-CoV-2)
- **SGD & SDL Aligned Topics –** For active learning and classroom discussions

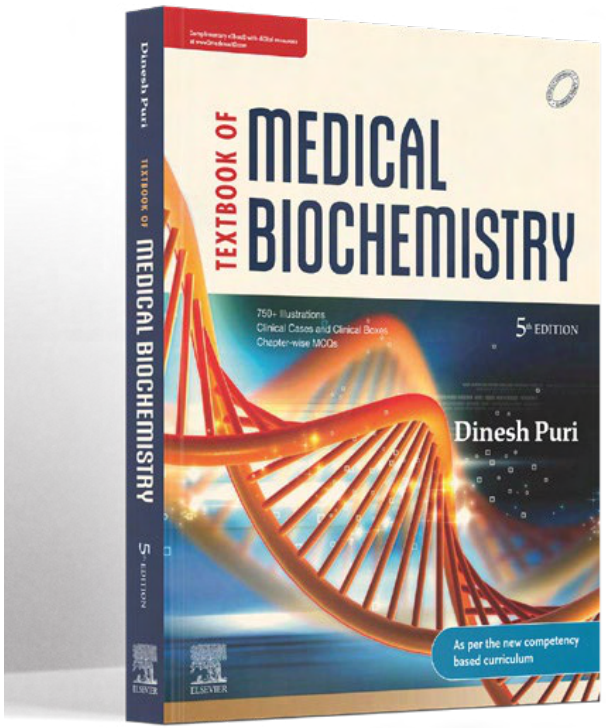
Why should you read this book?

A one-stop resource that builds strong biochemical foundations while preparing you for clinical application and future entrance exams like NExT.



What's inside?

- 700+ full-colour illustrations
- 160+ tables, algorithms & visual aids
- 10+ dedicated Case-Based Learning (CBL) chapters
- Chapter-wise SLOs, MCQs, Viva & Vignette-based questions
- Highlights of CRISPR/Cas9 & COVID-era biomarkers
- NMC-aligned layout with SGD & SDL support for modern classrooms



Textbook of Medical Biochemistry, 5th Edition

By **Dinesh Puri**

ISBN: **9788131264898** | Pub Year: **2022** | INR **1895.00**

When to refer to it

- For studying core biochemistry systems
- During revision before uni/class tests
- Before attending lab sessions or case discussions
- To prepare for MCQs & viva

Relevant Areas of Study

- Genetics & Molecular Biology
- Cancer Biochemistry
- Immunology
- Genetic Engineering & rDNA Technology

Why should you read this book?

Bridges basic biochemistry with clinical application — helping you understand not just *what* happens, but *why* it matters in real patients.

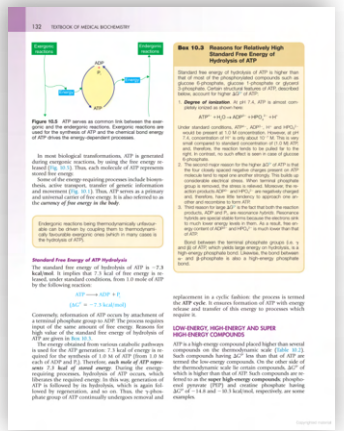
What's inside?

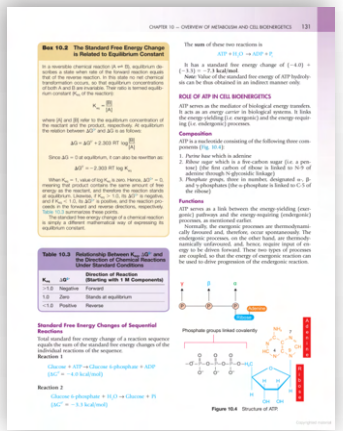
Protein targeting, cancer, immunology, rDNA tech & more.

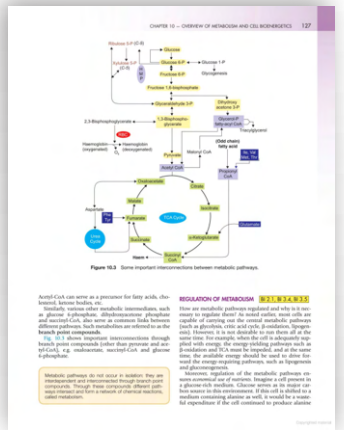
Includes line diagrams, clinical photographs, and reproducible tables.

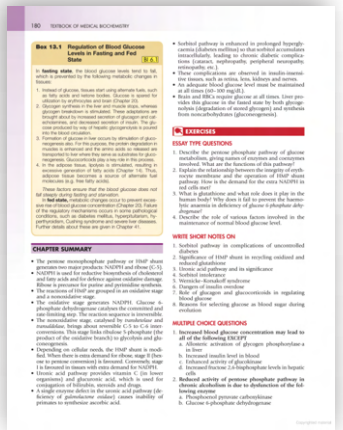
MCQs for Self-Check

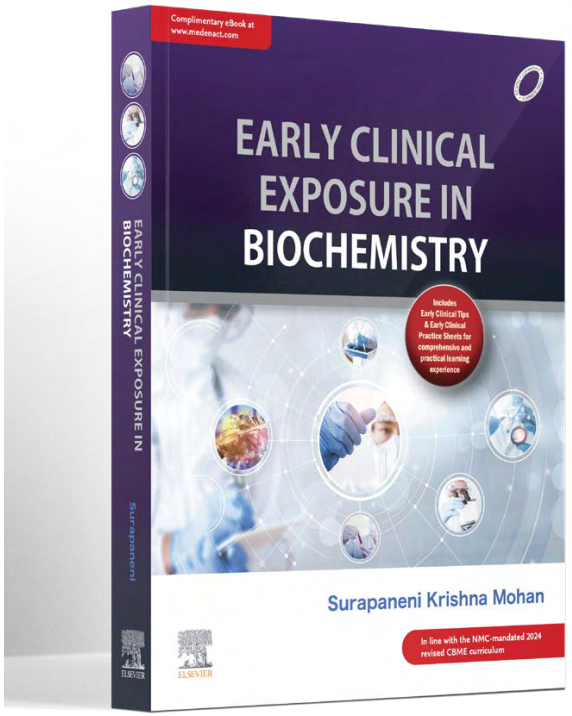
Clinical Boxes that connect biochemistry with physiology, pathology & medicine for *horizontal* and *vertical integration*.











Early Clinical Exposure in Biochemistry

By **Surapaneni Krishna Mohan**

ISBN: **9788131270967** | Pub Year: **2025** | INR **585.00**

When to refer to it

- During ECE sessions
- While preparing case logs and patient encounter sheets
- For revising biochemistry concepts with clinical context
- Before skill lab sessions involving decision-making or diagnosis

Relevant Areas of Study

- Early Clinical Exposure (ECE)
- Clinical Biochemistry
- Communication, Ethics, and Professionalism (AETCOM)
- Case-Based & Competency-Based Biochemistry
- Ideal for MBBS Phase 1 students navigating the new CBME curriculum.

Why should you read this book?

Builds a strong bridge between biochemistry and real-world clinical decision-making—perfect for early exposure and confident transitions into practice.

What's inside?

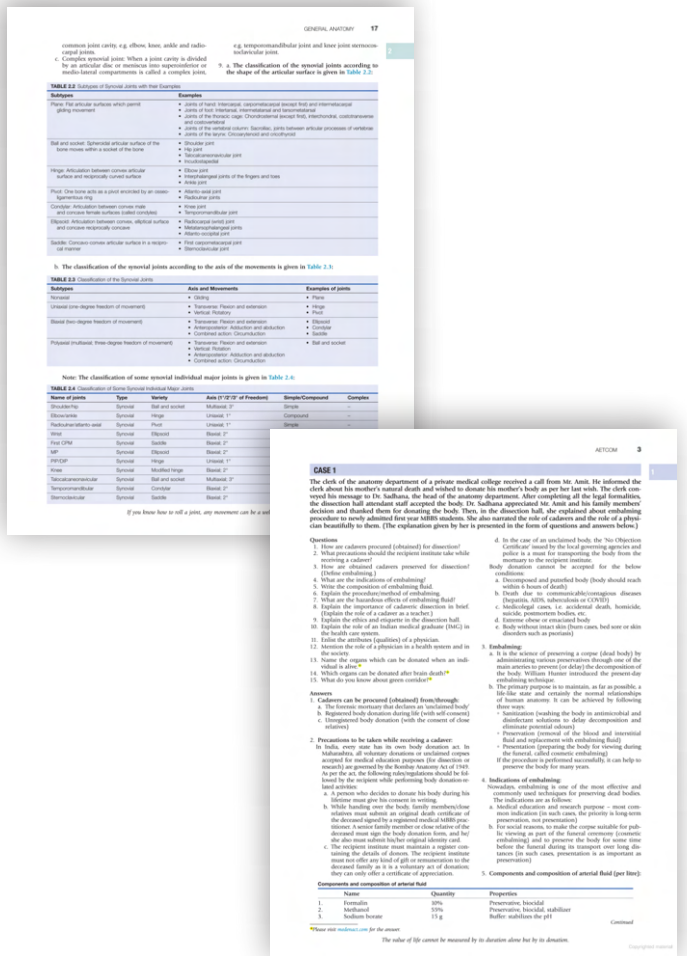
Early Clinical Tips

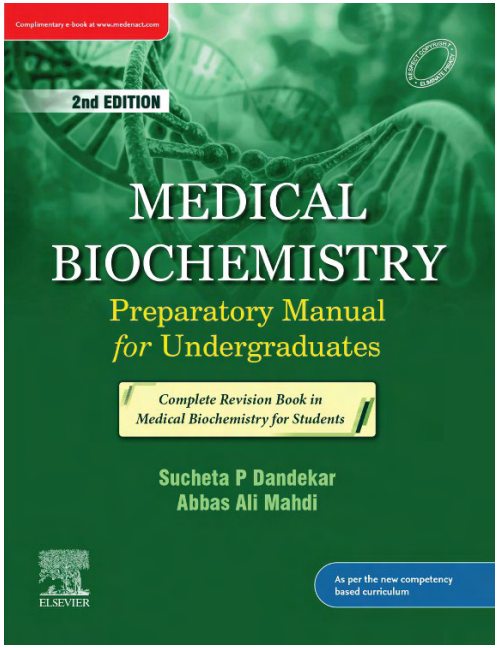
Clinical Practice Sheets to document patient interactions and enhance hands-on learning.

Case-Based Learning Approach with real clinical scenarios

Step-by-Step Patient Care Framework

AETCOM Integration Builds essential skills in communication, ethics, and professionalism for holistic medical training.





Medical Biochemistry: Preparatory Manual for Undergraduates, 2e

By **Dandekar**

Pub Year: **2021** | INR **1,035.00**

When to refer to it

- Throughout First-Year MBBS for regular assessments
- During pre-exam revisions for theory and viva voce
- Ideal for last-minute prep—concise, bullet-style layout supports quick recall
- Before University Exams – especially useful for framing well-structured answers

Relevant Areas of Study

- Core Biochemistry Concepts
- Applied & Clinical Biochemistry
- Viva & University Exam Preparation
- Competency-Based Learning aligned with NMC

Why should you read this book?

This second edition is fully revised and aligned with the latest **NMC competency-based curriculum**, designed to not only test your knowledge but also develop clinical thinking—helping you answer smart, think deeper, and perform better.

What's inside?

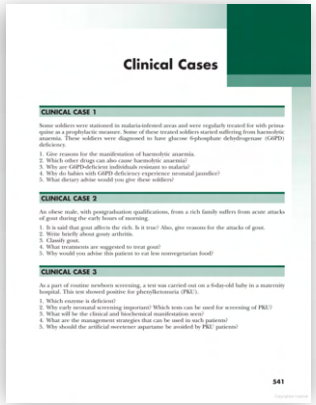
Question-Answer Format – Covers all expected university exam types

Same Answer, Different Questions – Practice handling variations in exam phrasing

Key Concepts Simplified – Tables break down complex topics for faster revision

Applied/Clinical Aspects highlighted in colored boxes for real-world relevance

'Points to Ponder' Recap – Every chapter ends with a high-yield summary


Clinical Cases

CLINICAL CASE 1

Some soldiers were stationed in malaria-infested areas and were regularly treated for with primaquine as a prophylactic measure. Some of these treated soldiers started suffering from haemolytic anaemia. These soldiers were diagnosed to have glucose 6-phosphate dehydrogenase (G6PD) deficiency.

1. Give reasons for the manifestation of haemolytic anaemia.
2. Which other drugs can also cause haemolytic anaemia?
3. Why are G6PD-deficient individuals resistant to malaria?
4. Why do babies with G6PD deficiency experience neonatal jaundice?
5. What dietary advise would you give these soldiers?

CLINICAL CASE 2

An obese male, with postgraduation qualifications, from a rich family suffers from acute attacks of gout during the early hours of morning.

1. It is said that gout affects the rich. Is it true? Also, give reasons for the attacks of gout.
2. Write briefly about gouty arthritis.
3. Classify gout.
4. What treatments are suggested to treat gout?
5. Why would you advise this patient to eat less nonvegetarian food?

CLINICAL CASE 3

As a part of routine newborn screening, a test was carried out on a 6-day-old baby in a maternity hospital. This test showed positive for phenylketonuria (PKU).

1. Which enzyme is deficient?
2. Why each neonatal screening important? Which tests can be used for screening of PKU?
3. What will be the clinical and biochemical manifestations seen?
4. What are the management strategies that can be used in such patients?
5. Why should the artificial sweetener aspartame be avoided by PKU patients?

541


18 Medical Biochemistry: Preparatory Manual for Undergraduates

Table 2.1 Vitamins and coenzymes

Vitamins	Coenzymes
Niacin	Nicotinamide adenine dinucleotide (NAD^+)
Niacin	Nicotinamide adenine dinucleotide phosphate ($NADP^+$)
Riboflavin	Flavin adenine dinucleotide (FAD), flavin mononucleotide (FMN)
	Coenzyme Q
	Cytochrome heme groups
Pantothenic acid	Coenzyme A
Thiamine	Thiamine pyrophosphate
Pyridoxal	Pyridoxal phosphate
Folic acid	Tetrahydrofolic acid
B_{12}	Cobamide coenzymes
	Nucleoside triphosphates: adenosine triphosphate (ATP)
Biotin	Biotin

Table 2.2 Trace elements as cofactors and their respective enzymes

Element	Enzyme
Fe^{2+} or Fe^{3+}	Cytochrome oxidase, catalase
Cu^{2+}	Cytochrome oxidase
Mg^{2+}	Hexokinase, glucose 6-phosphatase
Zn^{2+}	Carbonic anhydrase
K^+	Pyruvate kinase

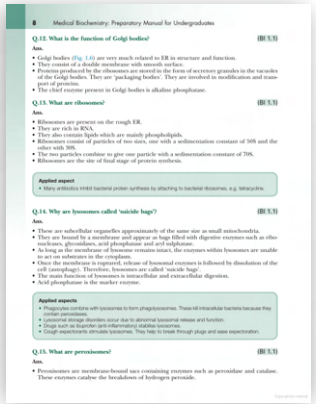
Q.13. Name different enzyme classes, their reactions and representative examples. (Bl 2.1)

Ans. The different enzyme classes are depicted in Table 2.3. You can memorise 'OTHILI.' to help you remember the exact sequence of the enzyme classes.

Q.14. Classify enzymes. Mention the six major classes of enzymes, stating reactions and examples. (Bl 2.1)

Ans.

- The most commonly used enzyme names have suffix '-ase' attached to the substrate of the reaction, e.g. sucrase acting on sucrose, lactase acting on lactose and urease acting on urea; or to a description of the action performed by the enzyme, e.g. lactate dehydrogenase and glyceraldehyde-3-phosphate dehydrogenase.
- Moreover, some enzymes isolated earlier still retain their original whimsical names, which give no hint of the associated enzyme reaction, e.g. the proteolytic enzymes pepsin and trypsin.


8 Medical Biochemistry: Preparatory Manual for Undergraduates

Q.12. What is the function of Golgi bodies? (Bl 1.1)

Ans.

- Golgi bodies (Fig. 1.6) are very much related to ER in structure and function.
- They consist of a double membrane with smooth surface.
- Proteins produced by the ribosomes are stored in the form of secretory granules in the vacuoles of the Golgi bodies. They are 'packaging bodies'. They are involved in modification and transport of proteins.
- The chief enzyme present in Golgi bodies is alkaline phosphatase.

Q.13. What are ribosomes? (Bl 1.1)

Ans.

- Ribosomes are present on the rough ER.
- They are rich in RNA.
- They also contain lipids which are mainly phospholipids.
- Ribosomes consist of particles of two sizes, one with a sedimentation constant of 50S and the other with 30S.
- The two particles combine to give one particle with a sedimentation constant of 70S.
- Ribosomes are the site of final stage of protein synthesis.

Applied aspect

- Many antibiotics inhibit bacterial protein synthesis by attaching to bacterial ribosomes, e.g. tetracycline.

Q.14. Why are lysosomes called 'suicide bags'? (Bl 1.1)

Ans.

- These are subcellular organelles approximately of the same size as small mitochondria.
- They are bound by a membrane and appear as bags filled with digestive enzymes such as ribonuclease, deoxyribonuclease, protease and acid phosphatase.
- As long as the membrane of lysosome remains intact, the enzymes within lysosomes are unable to act on substrates in the cytoplasm.
- Once the membrane is ruptured, release of lysosomal enzymes is followed by dissolution of the cell (autophagy). Therefore, lysosomes are called 'suicide bags'.
- The main function of lysosomes is intracellular and extracellular digestion.
- Acid phosphatase is the marker enzyme.

Applied aspects

- Phagocytes combine with lysosomes to form phagolysosomes. These kill intracellular bacteria because they contain hydrolytic enzymes.
- Lysosomal storage disorders occur due to abnormal lysosomal release and function.
- Drugs such as ibuprofen (anti-inflammatory) stabilise lysosomes.
- Cough expectorants stimulate lysosomes. They help to break through plugs and ease expectoration.

Q.15. What are peroxisomes? (Bl 1.1)

Ans.

- Peroxisomes are membrane-bound sacs containing enzymes such as peroxidase and catalase. These enzymes catalyse the breakdown of hydrogen peroxide.

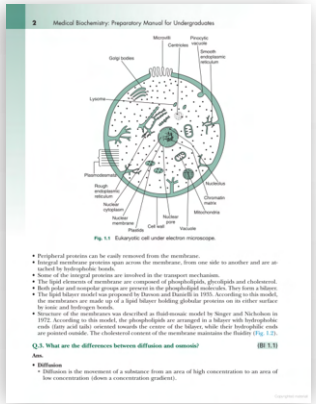

2 Medical Biochemistry: Preparatory Manual for Undergraduates

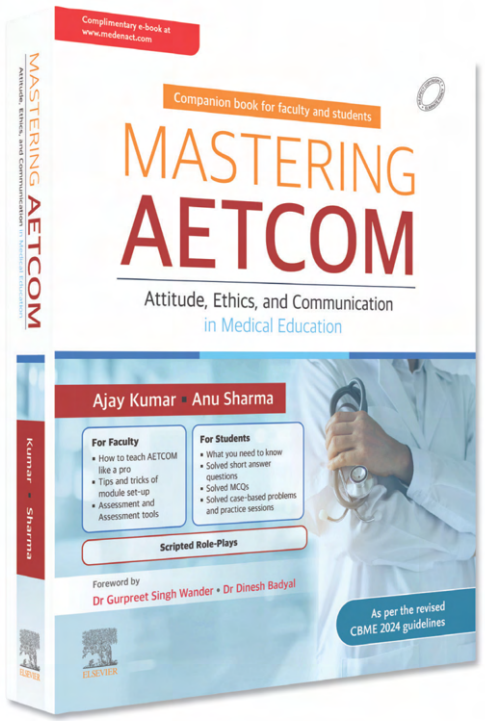
Fig. 1.1 Eukaryotic cell under electron microscope.

- Peripheral proteins can be easily removed from the membrane.
- Integral membrane proteins span across the membrane, from one side to another and are attached by hydrophobic bonds.
- Some of the integral proteins are involved in the transport mechanism.
- The lipid elements of membrane are composed of phospholipids, glycolipids and cholesterol.
- Both polar and nonpolar groups are present in the phospholipid molecules. They form a bilayer.
- The lipid bilayer model was proposed by Davson and Danielli in 1935. According to this model, the membranes are made up of a lipid bilayer holding globular proteins on its either surface by ionic and hydrogen bonds.
- The fluid mosaic model was described as fluid-mosaic model by Singer and Nicholson in 1972. According to this model, the phospholipids are arranged in a bilayer with hydrophobic ends (fatty acid tails) oriented towards the centre of the bilayer, while their hydrophilic ends are pointed outside. The cholesterol content of the membrane maintains the fluidity (Fig. 1.2).

Q.3. What are the differences between diffusion and osmosis? (Bl 1.1)

Ans.

- **Diffusion**
  - Diffusion is the movement of a substance from an area of high concentration to an area of low concentration (down a concentration gradient).



Mastering AETCOM: Attitude, Ethics, and Communication in Medical Education

By **Ajay Kumar, Anu Sharma**

ISBN: **9788131270585** | Pub Year: **2025** | INR **630.00**

When to refer to it

- During AETCOM module sessions across MBBS phases
- While preparing for formative or summative assessments
- For role-plays, case discussions, and group activities
- When building communication and empathy skills in real-life clinical settings

Relevant Areas of Study

- Medical ethics and professional attitude
- Effective doctor-patient communication
- Reflective writing and clinical reasoning
- Ethical decision-making frameworks
- Interpersonal skills for healthcare practice

Why should you read this book?

Master the attitude, ethics, and communication skills essential for becoming a compassionate, responsible doctor. Aligned with the NMC AETCOM curriculum, this book helps you develop a strong professional identity across all MBBS phases.

What's inside?

Complete AETCOM content with real-life case studies

Scripted role-plays for hands-on learning

Interactive activities and self-assessment tools (MCQs, reflective writing, clinical cases)

Appendix to set up AETCOM sessions in class

Free enhanced eBook with highlight, note, and audio support

Written by renowned anatomy faculty with deep expertise in bioethics and medical education



Exam Hacks

Because We Don't Have Time for Stress

1 Don't Just Read, Quiz Yourself -

Reading passively = brain nap.
Instead, close the book and ask yourself questions like you're the examiner. Flashcards, voice notes, or brain-dumps — whatever works, just engage that brain.

2 Chapters Are Overrated. Start with Questions.

Be that person who starts with MCQs, then reads what you didn't get. It's reverse engineering, med school style.

3 Pomodoro Is the Real MVP

30 mins study, 10 mins break = productivity unlocked.
Use apps, timers, or just your vibe check — but don't study in zombie mode.

4 Color Code Like a Pro

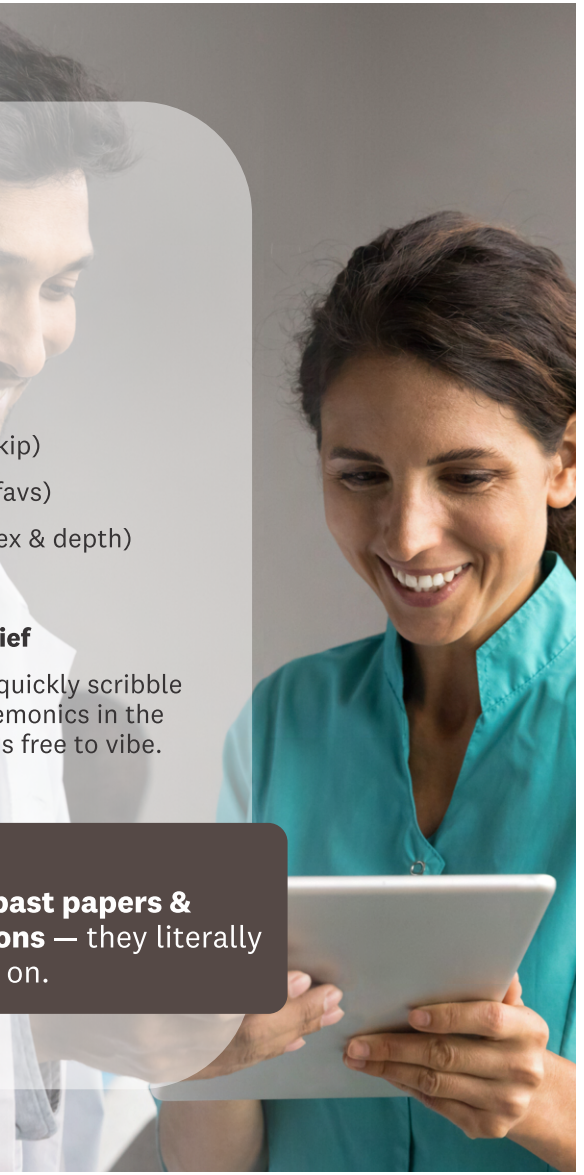
Label your notes:

- Must-Know (do not skip)
- Should-Know (exam favs)
- Good-to-Know (for flex & depth)

5 Brain Dump = Brain Relief

Before the exam starts, quickly scribble formulas, values, or mnemonics in the margin. Now your brain is free to vibe.

Quick Hacks:
Start your prep from **past papers & previous year questions —** they literally tell you what to focus on.





ELSEVIER



Osmosis

ClinicalKey
Student



Complete Anatomy

Who am I?

“I'm flat and broad, I pull the arm backward. I arise partly with the serratus but insert into ribs. Who am I?”



Challenge 1

Cracked the quiz? Check the last page to join the contest and win!

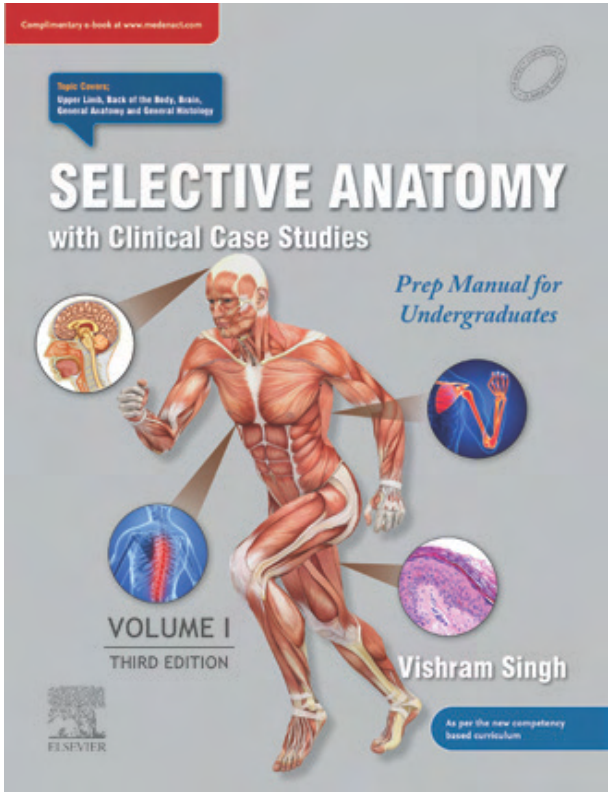
Crack the Clavicle!

Quiz Show Challenge

“If you've cracked open the book (Selective Anatomy Vol-1 By Vishram Singh), you'll crack the bone zone too!”

Look closely at Fig. 1.1 – can you spot where the clavicle loves to crack the most?

- Which part of the clavicle is the weakest structurally and most prone to fracture?
- In the diagram, how much percentage does this part account for?



Challenge 2

Cracked the quiz? Check the last page to join the contest and win!

Breathe It Out!

Exercise Physiology Quiz

Hint
Unlock the answers with
Medical Physiology for Undergraduate Students, 3rd Edition
By Indu Khurana

Test your knowledge on how your body powers up during a workout!

- The _____ threshold marks the point where ventilation increases disproportionately to oxygen consumption.
- _____ acid accumulation during exercise stimulates increased ventilation.
- Increased pulmonary _____ during exercise allows more oxygen to be taken up per minute.
- The hormone _____ mobilizes fats for energy during prolonged physical activity.
- Capillary _____ helps facilitate the movement of O_2 from the blood to the tissues.



Challenge 3

Cracked the quiz? Check the last page to join the contest and win!

Crack the Case: Breathe It Out!

A Clinical Quiz

Clinical Scenario: A man is suffering from infertility (due to lack of motile sperms), reduced hearing, and altered sense of smell. He complains of a **dry cough with cold** that worsens in **polluted air**.

Your task: Solve the case using your knowledge of physiology!

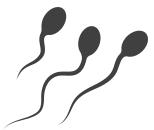
Decode the Clues

Q1: Which cellular structure is most likely defective in this patient?

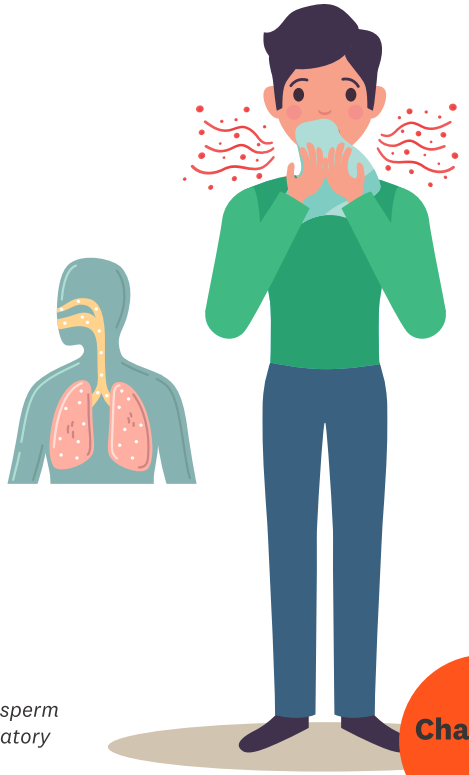
- Microvilli
- Cilia
- Flagella
- Ribosomes







Hint: Think of what helps sperm swim and helps the respiratory tract clear out mucus.



Challenge 4

Cracked the quiz? Check the last page to join the contest and win!

Digestive Dominoes

Mix & Match Grid

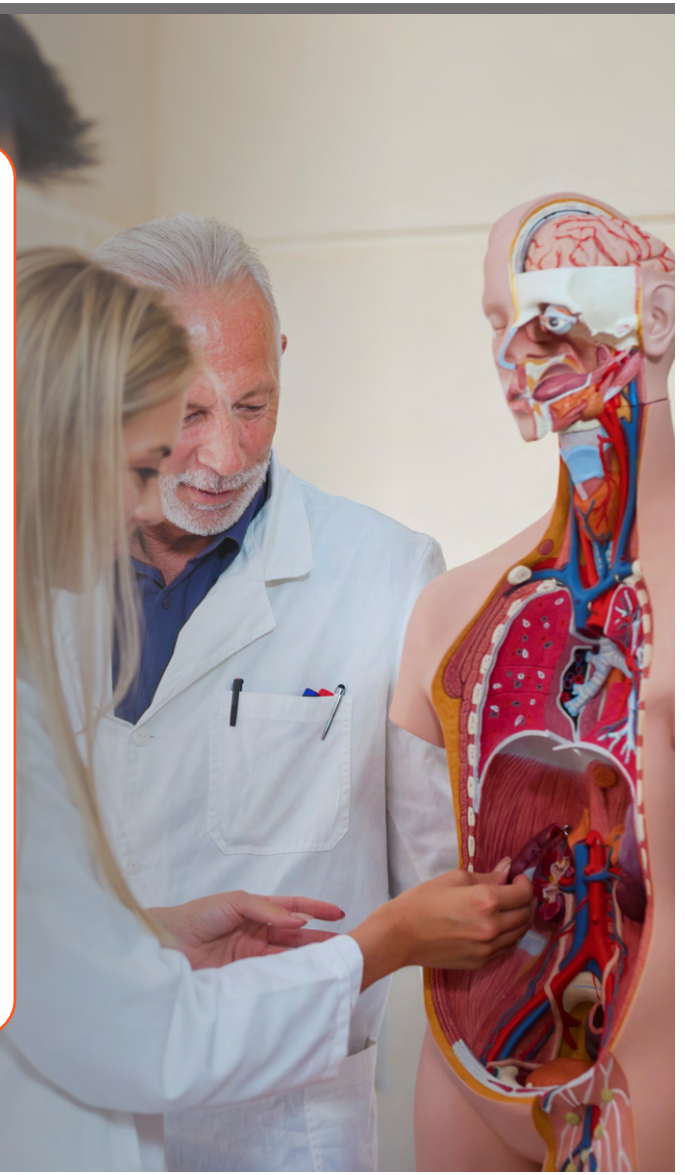
Match each sugar/enzyme with its function or description:

Terms	Descriptions
1. Lactose	A. Detects reducing sugars in urine – useful in diabetes screening
2. Invert Sugar	B. Disaccharide of glucose + fructose; non-reducing in nature
3. Maltase	C. Hydrolyzed into glucose and galactose; needs lactase enzyme
4. Amino Sugar	D. Formed when sucrose is broken down; rotation changes direction
5. Benedict's Test	E. Has a $-NH_2$ group instead of –OH (e.g., glucosamine)
6. Sucrose	F. Breaks malt sugar into two glucose units

Challenge 5

Hint
The answer you seek is hidden in the pages of Textbook of Medical Biochemistry, By Dinesh Puri

Cracked the quiz? Check the last page to join the contest and win!



“Build the Bone Buddy!”

Word Scramble Challenge

Objective: Unscramble the medical words to help your "Bone Buddy" grow from tiny bones into a tall, strong skeleton!

How It Works:

- Each scrambled word is a "bone piece".
- With every correct answer, you unlock a part of the skeleton.
- Unscramble all 8 bones to complete your Bone Buddy!

Unscramble each to reveal a key term from Chapter 1 from the book (Early Clinical Exposure, By Anand Reddy)

1 O P A O S T F I C N I I

2 I S A P H D I Y S

3 S I H Y P S I P E P

4 A H Y T A M L P S I Y

5 D N L A O R E H C O D

6 E M U N S R A M B O

7 R I A M P R Y

8 R D A Y C N E S O



Challenge 6

Cracked the quiz? Check the last page to join the contest and win!



Cracked the quiz ?

Don’t stop there

FLIP, SOLVE & WIN!

Scan the QR Code to participate in *Start Smart with Elsevier* contest

Register your name

Upload your quiz answers

Stand a chance to **win exciting goodies & vouchers!**

Every correct entry counts – the more you solve, the higher your chances!

Winners will be announced soon.

So keep flipping, keep solving... and keep winning!

ELSEVIER

Show your Elsevier book! Follow us, tag us & share to win exciting rewards

Facebook

Instagram