Clinical Biochemistry: Contemporary Theories and Techniques - Unlocking the Secrets of Human Health

Clinical biochemistry is a vital field of medical science that bridges the gap between basic science and clinical practice. By studying the biochemical processes within the human body, clinicians can gain valuable insights into disease states, develop effective treatments, and improve patient outcomes.

Contemporary Theories and Techniques The field of clinical biochemistry has witnessed significant advancements in recent years. This book provides a comprehensive overview of the latest theories and techniques that are revolutionizing the diagnosis, management, and prevention of diseases.

Clinical Biochemistry: Contemporary Theories and Techniques by Herbert E. Spiegel

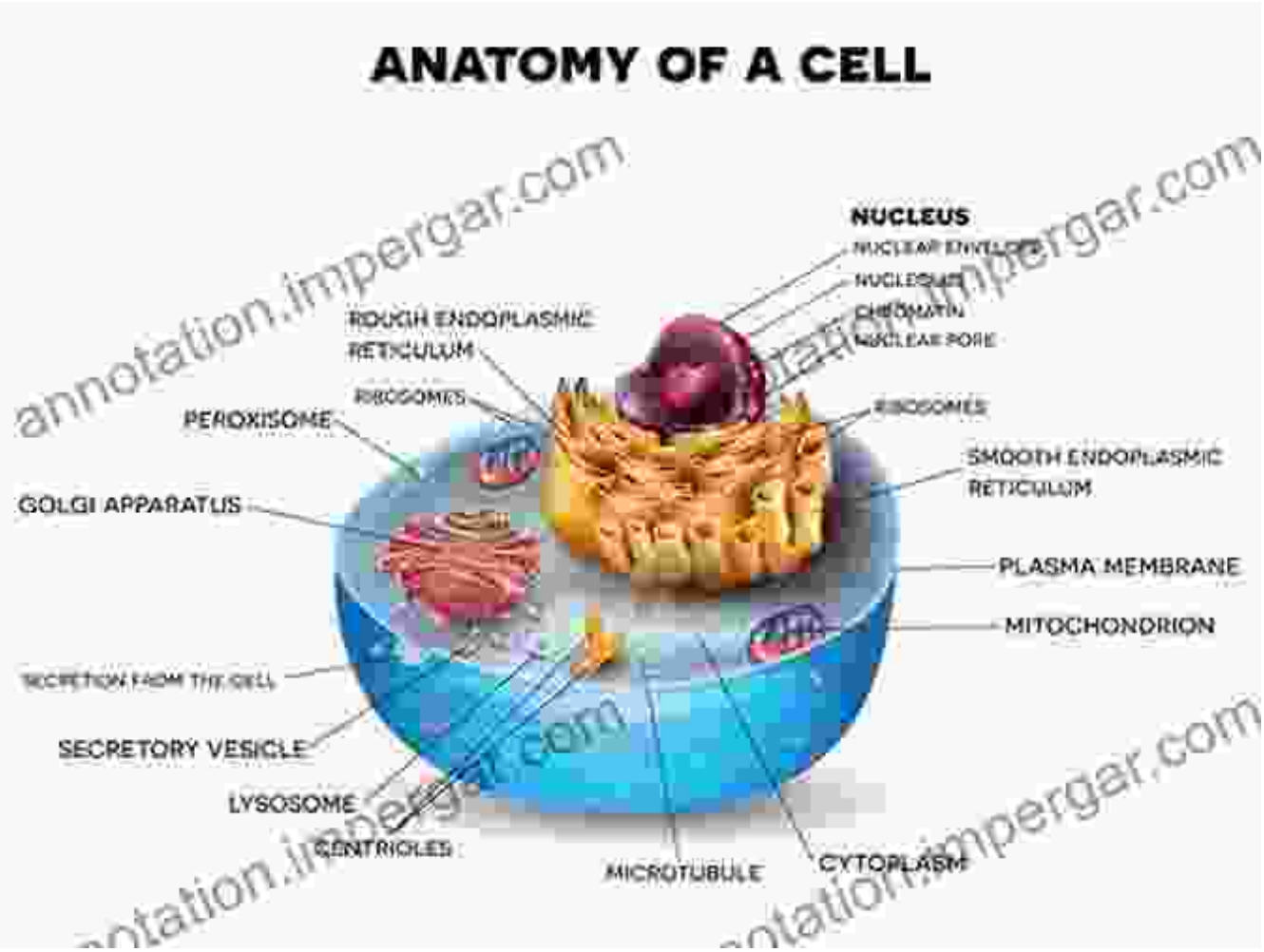
4.5 out of 5

Language	: English
File size	: 28901 KB
Screen Reader	: Supported
Print length	: 232 pages

Chapter 1: The Role of Biochemistry in Health and Disease

This chapter explores the fundamental principles of biochemistry and its implications for human health. Readers will gain an understanding of how

biochemical reactions regulate cellular function, maintain homeostasis, and contribute to disease processes.



Chapter 2: Analytical Techniques in Clinical Biochemistry

This chapter provides a detailed examination of the analytical techniques used in clinical biochemistry laboratories. Readers will learn about spectrophotometry, chromatography, and mass spectrometry, as well as their applications in diagnosing and monitoring diseases.

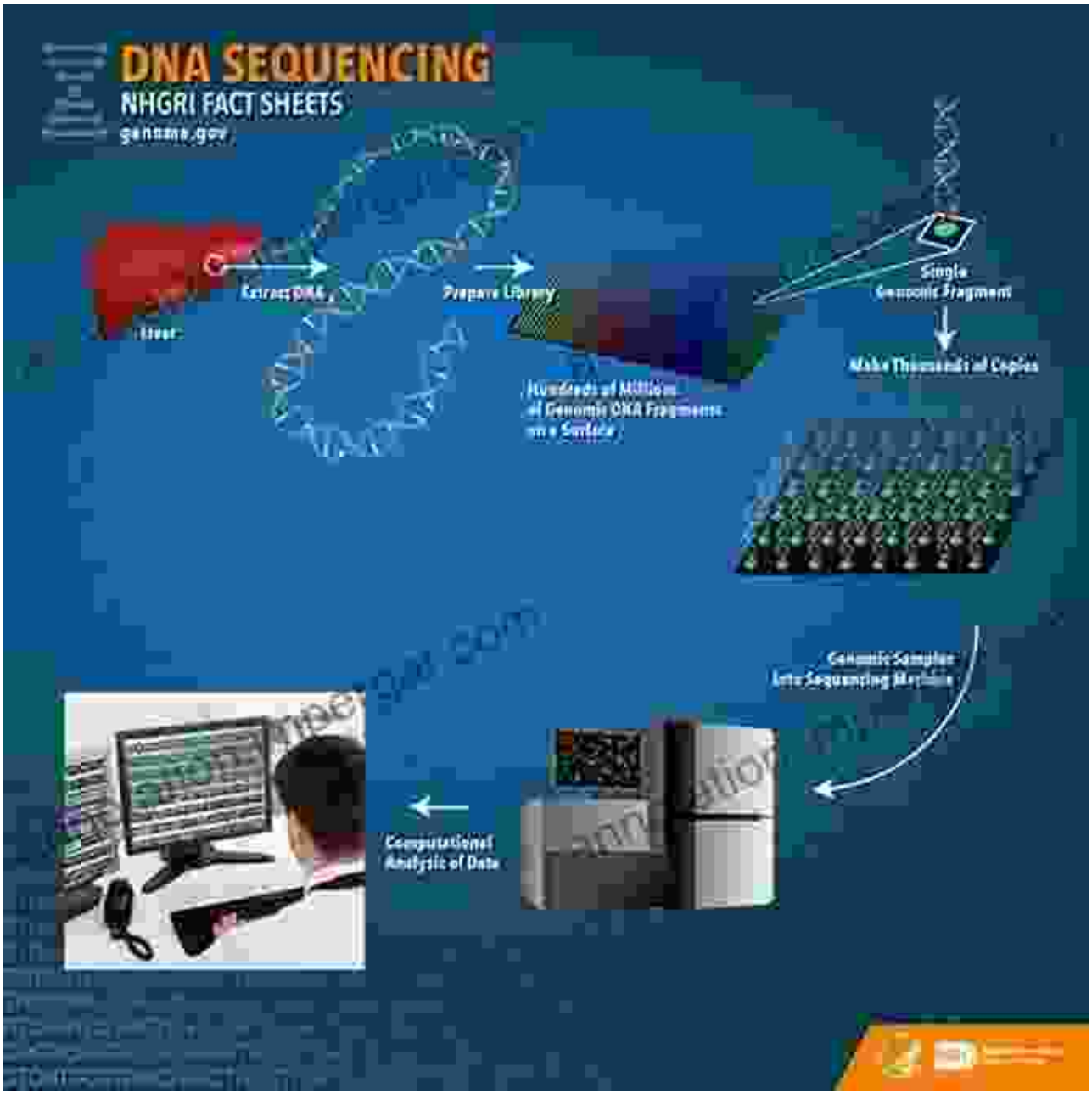
Chapter 3: Clinical Chemistry in Disease Diagnosis

This chapter explores the role of clinical chemistry in diagnosing various disease states. Readers will learn about the biochemical markers associated with specific diseases, such as diabetes, liver disease, and kidney disease, and how these markers can aid in early detection and monitoring.

	Test	Result (normal range)
CBC	Hemoglobin	11.8 (13.0–18.0) g/dL
	WBC count	8.7 (4.0–11.0) k/μL
	Platelet	150 (140–450) k/μL
LFT	Serum total protein	6.1 (6–8) g/dL
	Albumin	2.3 (3.5–5) g/dL
	SGOT	651 (15–37) U/L
	SGPT	94 (14–63) U/L
	LDH	726 (81–234) U/L
	GGTP	376 (5–55) U/L
	ALP	238 (46–116) U/L
Tumor markers	AFP	4629 (0–40) ng/mL
	BHCG	1.20 (5–25) mIU/mL
	CA 125	27.7 (<35) U/mL
	CA 19-9	605.57 (0–37) U/mL
	CEA	0.50 (≤3) ng/mL

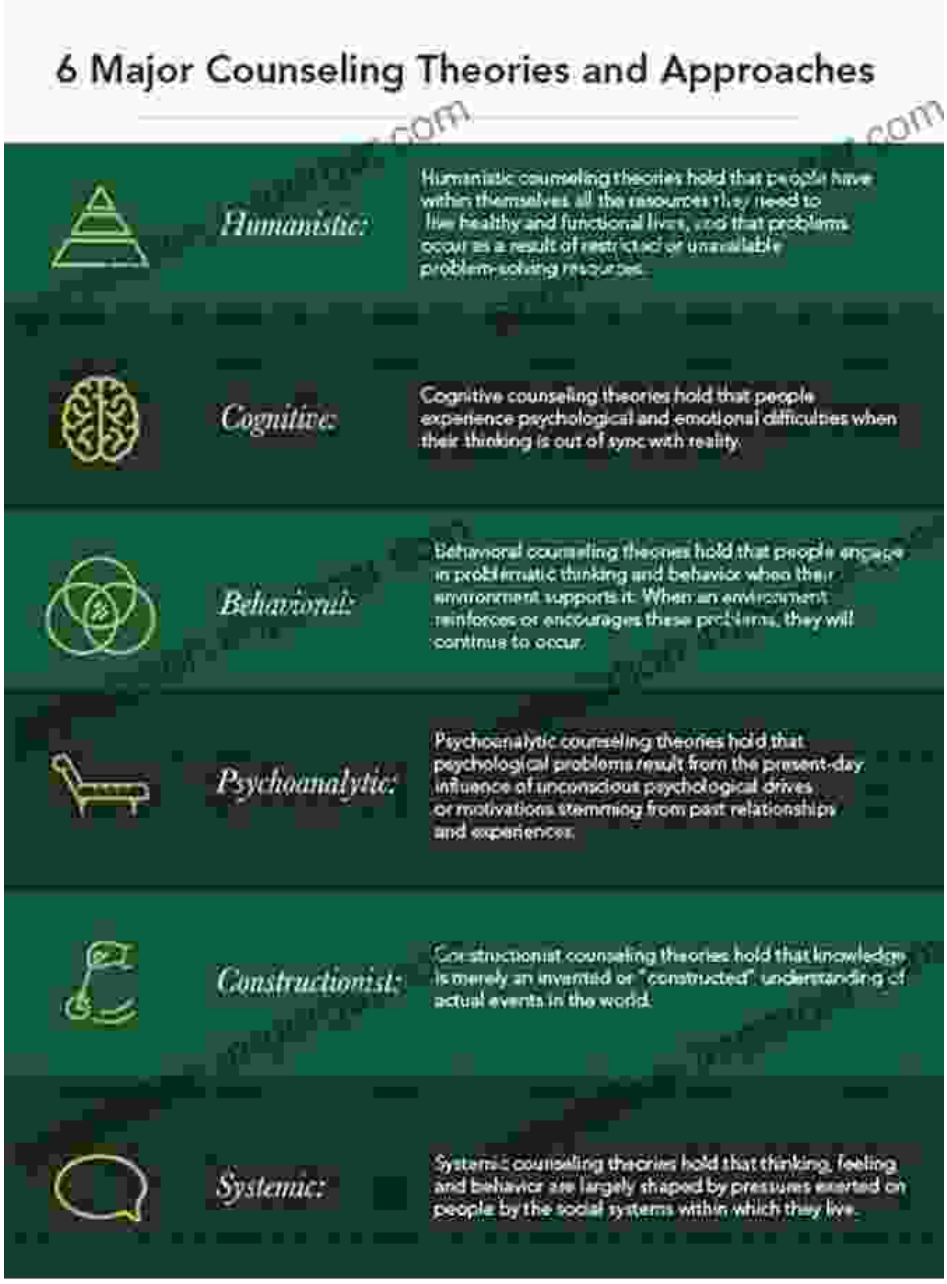
Chapter 4: Molecular Diagnostics in Clinical Biochemistry

This chapter introduces molecular diagnostics, a rapidly growing field that uses genetic information to diagnose and manage diseases. Readers will learn about polymerase chain reaction (PCR),gene sequencing, and other techniques used to identify genetic mutations and variations associated with inherited and acquired diseases.



Chapter 5: Clinical Biochemistry in Personalized Medicine

This chapter examines the emerging field of personalized medicine, which tailors medical treatments to individual patient profiles. Readers will explore the role of clinical biochemistry in identifying genetic variants and biochemical markers that can predict drug response, disease risk, and treatment outcomes.



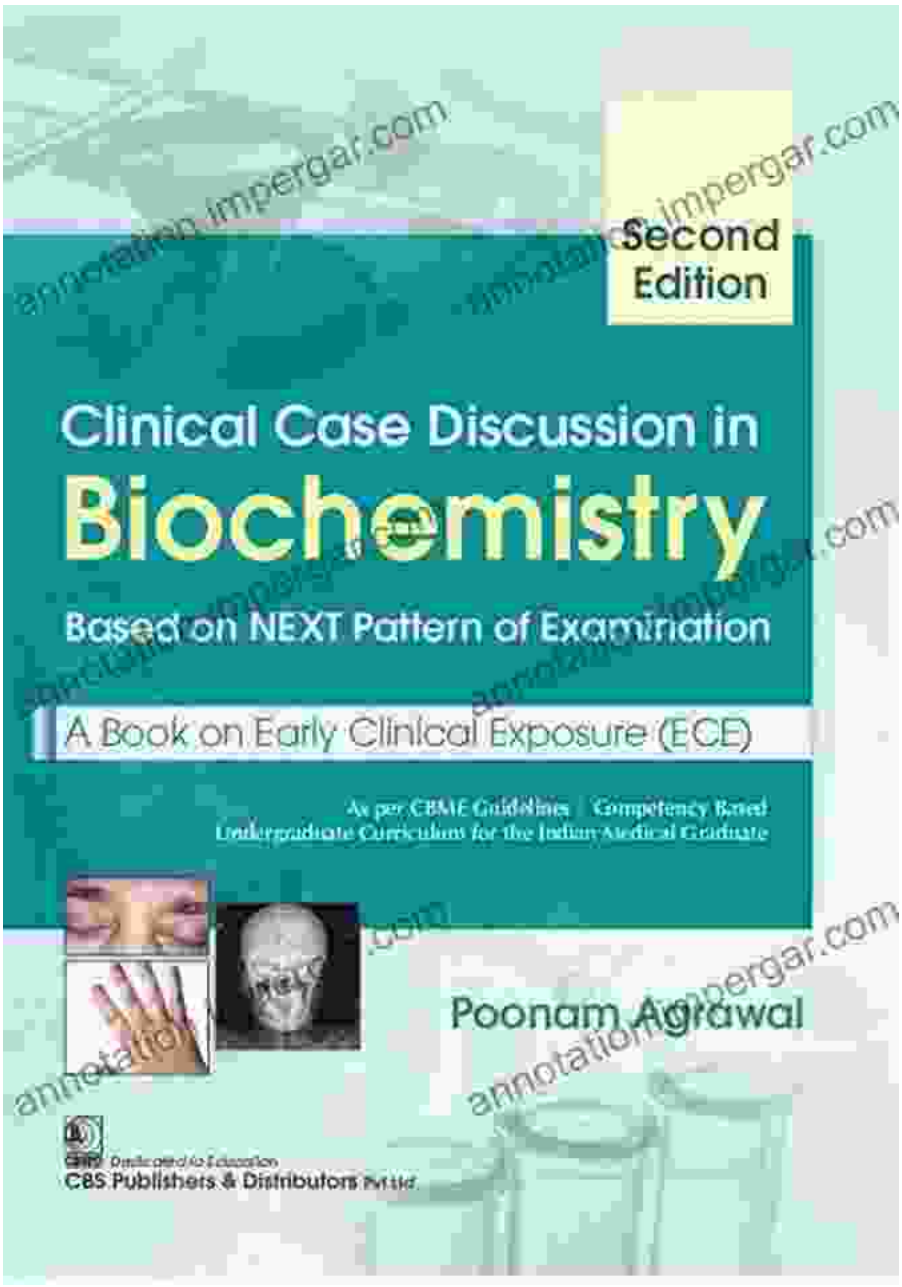
Chapter 6: Clinical Biochemistry in Therapeutic Monitoring

This chapter discusses the use of clinical biochemistry in monitoring the effectiveness and safety of drug therapies. Readers will learn about therapeutic drug monitoring (TDM) and how it helps clinicians optimize drug dosages, minimize side effects, and ensure positive patient outcomes.

Drug	Timing of blood sample	Vacutainer tube	Therapeutic Range
Carbamazepine	Sample immediately before next dose (trough)	Red or Yellow	18-50 micmol/L
Clozapine	Sample immediately before next dose (trough) or at anytime if toxicity suspected	Red	Trough 1000 nmol/L; Toxicity >2000 nmol/L
Cyclosporin	Sample immediately before next dose *(C0)* or exactly 2 hours post dose *(C2)*	Purple	**See drug monograph for interpretation**
Digoxin	Sample 8-24 hours post dose	Red or Yellow	0.6-2.0 nmol/L
Gentamicin	Sample trough level 2-4 hours before next dose is due	Yellow or Red (Green for peeds)	**See drug monograph for interpretation**
Lithium	Sample 12 hours post dose	Yellow	0.6-1.2 mmol/L
Phenobarbitone	Sample immediately before next dose (trough)	Yellow, Red or Green	65-130 micmol/L
Phenytoin	Sample at least 12 hours post dose (trough)	Yellow	Trough 40-80 micmol/L
Theophylline	For i/v infusion, sample at any time	Yellow, Red or Green	55-110 micmol/L
Tobramycin	- Trough: immediately before next dose - Peak: 30 mins post dose	Red or Yellow	Trough <1mg/L Peak 20-30mg/L
Vancomycin	- Intermittent dosing: sample immediately before 4th dose - Continuous infusion: sample after 18 hours duration	Red, Yellow or Purple	15-20mg/L *(intermittent)* 15-25mg/L *(infusion)* **See drug monograph**

Chapter 7: Case Studies in Clinical Biochemistry

This chapter presents real-life case studies that illustrate the practical application of clinical biochemistry in various disease scenarios. Readers will analyze patient data, interpret biochemical results, and develop comprehensive treatment plans.



Clinical Biochemistry Contemporary Theories And Techniques is an essential reference for medical students, residents, practicing clinicians, and researchers in the field of clinical biochemistry. With its comprehensive coverage of contemporary theories, analytical techniques, and clinical applications, this book empowers readers to advance their understanding of human health and disease and ultimately improve patient care.

Free Download your copy today and unlock the secrets of clinical biochemistry!

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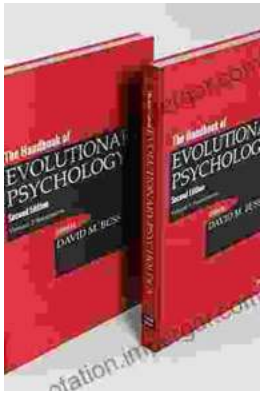

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