

# INTRODUCTION TO HEMATOLOGY

## HEMATOLOGY / HAEMATOLOGY

- greek words "Haima" Blood; "Logos" Study
- study of the quality & quantity of the cellular elements of the peripheral blood and the bone marrow which includes **Erythrocytes (RBC)**, **Leukocytes (WBC)**, & **Thrombocytes (PLT)**
- study of the disorders & abnormalities related or associated with the quality & quantity of the cellular elements of the blood
- study of the laboratory procedures & techniques being used to examine the quality & quantity of the cellular elements of the blood

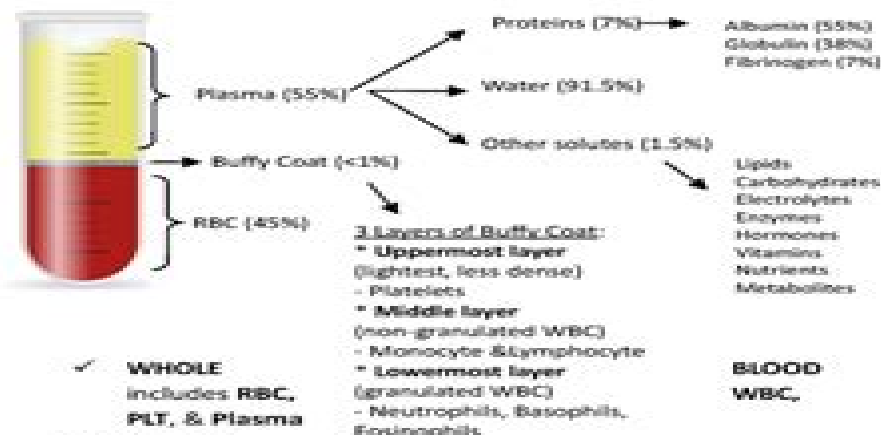
### GENERAL CHARACTERISTICS OF THE BLOOD:

- ✓ **In vivo:** Fluid; **In vitro:** Solid (coagulates 5-10mins)
- ✓ **Thick & Viscous** (3-5x thicker than water)
- ✓ makes up 7-8% of the total body component or 75-85mL of blood per kg body weight
- ✓ approximately 20g solid per 100mL blood
- ✓ **Total Volume:**
  - **Adult male:** 5-6 L
  - **Adult female:** 4-5 L
  - **Newborns:** 250-350 mL
- ✓ **pH:** 7.35-7.45 / Average: 7.40
  - **Venous blood:** 7.35
  - **Arterial blood:** 7.45
- ✓ **Specific Gravity:** # of solutes dissolved in the blood
  - **Whole blood:** 1.045-1.066
  - **Plasma:** 1.025-1.029
  - **Serum:** 1.024-1.028
- ✓ **Color:**
  - **Arterial blood:** Bright red (Hgb is saturated with Oxygen; saturated HbO<sub>2</sub>)
  - **Venous blood:** Dark purplish red (Hgb is not saturated with Oxygen; 0% HbO<sub>2</sub>)
  - **In pulmonary arteries & veins:**
    - ◆ Hgb with O<sub>2</sub>: Purple
    - ◆ Hgb without O<sub>2</sub>: Blue
- ✓ **Osmolality:**
  - concentration of solutes dissolved in the blood
  - uses **Osmometer** for measurement
  - **Reference range:** 281-297 mOsm/kg

### FUNCTIONS OF THE BLOOD:

- ✓ Aids in Respiration
- ✓ Transports Nutrients & Hormones
- ✓ Eliminates Wastes
- ✓ Maintains Body temperature
- ✓ Responsible in Body defense mechanism

### COMPOSITION OF THE BLOOD:



- ✓ **WHOLE** includes RBC, PLT, & Plasma
- ✓ When a specimen is centrifuged, WBC & PLT make up the **BUFFY COAT** (Small white layer of cells lying between RBC & Plasma)
- ✓ **Plasma** is the liquid portion of unclotted blood
- ✓ **Serum** is the fluid that remains after coagulation has occurred & clot has formed

SERUM	PLASMA
Liquid portion of <b>CLOTTED BLOOD</b>	Liquid portion of <b>UNCLOTTED</b> or <b>ANTICOAGULATED BLOOD</b>
clear & transparent	Straw colored & slightly hazy
Has no FII	Has FII—has complete set of unconsumed PCF
Has FII, FIV, FVIII:C, FXIII—completely consumed in the coagulation; forms as a part of the clot	
FII—not completely consumed > 80% is consumed < 20% remains in serum & is called "Residual Prothrombin"	

# Hematology Lab Manual

**Oreta Marie Samples, M. Scott Echols**



## **Hematology Lab Manual:**

**Hematology Laboratory Manual** Maurine J. Corsaut,1982      **Hematology** Allan Paul Russell,1997 As part of Delmar's Clinical Laboratory Manual Series this lab manual provides hands on instruction in hematology for students in medical laboratory technician programs Clinical laboratory test methods and numerous case study presentations provide students with the essentials for learning hematology laboratory techniques These lab techniques can also be used as reference in today's medical research or reference laboratories safety case study Allied Health MLT hematology lab manual Medical Laboratory Technician      Hematology Laboratory Manual, 1968 ,1968      **Clinical Hematology Laboratory Manual** Marian Schwabbauer,1988      **Mouse Hematology** Michael P. McGarry,Cheryl A. Protheroe,James J. Lee,2010 Accompanying DVD ROM includes short video demonstrations of the laboratory techniques      *Practical Manual of Hematology* Kamat Girish,      **Clinical Hematology Laboratory Manual** Marian Schwabbauer,1988      **Hematology I : Laboratory Manual, 88510** Collège Algonquin,Way, Elaine,1981      Laboratory Manual of Clinical Pathology and Hematology Mr. Rohit Manglik,2024-07-24 A hands on manual detailing routine tests in clinical pathology and hematology with clear procedures result interpretation and laboratory safety practices      **Practical Hematology** Bong H. Hyun,John K. Ashton,Kathleen Dolan,1975-03      *Comprehensive Lab Manual of Pharmacology and Biochemistry -Two in one* Dr Mohd Mazhar, Dr Saroj, Dr. Renu Sehrawat, Ms. Preeti,2025-07-30 The Comprehensive Lab Manual of Pharmacology and Biochemistry Two in One is a concise and practical guide designed for students and professionals in the pharmaceutical and biomedical sciences This manual combines essential laboratory procedures experiments and theoretical concepts from both pharmacology and biochemistry offering a unified resource for hands on learning With clear instructions illustrative diagrams and step by step protocols it supports academic coursework and practical exams making it an ideal companion for laboratory training and foundational skill development      **Standard Operating Procedures (Sops) in a Hematology Laboratory** Dr. BHUSHAN M. WARPE, Dr. SHWETA S. JOSHI,2025-09-02 This SOP manual authored by Dr Bhushan and Dr Shweta details essential practices in a Hematology Laboratory to uphold accuracy quality and regulatory compliance It covers core diagnostic procedures including complete blood counts peripheral smear examination ESR reticulocyte counts coagulation profiles and advanced hematology tests alongside critical quality assurance protocols such as delta checks IQC TAT monitoring sample rejection and disposal guidelines The manual also addresses laboratory safety equipment calibration contingency measures and outsourcing to NABL accredited centers Compliant with NABL 112 NABH 6th edition and ISO 15189 standards it serves as a vital training and operational guide for DMLT BPMT and MD Pathology students With an emphasis on consistency audit preparedness and professional excellence it reflects Swami Vivekananda's insight All knowledge that the world has ever received comes from the mind underscoring the role of mindful structured practice in delivering reliable hematology services      *Hematology Laboratory Manual* ,1970      **Hematology II : Laboratory Manual**

**88610** Way, Elaine, Algonquin College, 1982      *Clinical Hematology* Mary Louise Turgeon, 2005 This established entry level hematology text enters its Fourth Edition with even more of the focused coverage and learning tools that have made it so successful Well illustrated and reader friendly the book features extensive study and review tools including learning objectives case studies procedure boxes and review questions The fully updated Fourth Edition includes new material on safety issues transplants sickle cell anemia and genetic diagnostics New chapters address flow cytometry cytochemistry and hemostasis and coagulation Chapter summaries have been boxed for rapid reference and this edition includes an expanded 16 page color insert Midwest      **Laboratory Manual for Clinical Veterinary Technology** Oreta Marie Samples, M. Scott Echols, 2022-09-09 Veterinary students and practicing technicians will find this book to be an important bench manual as well as an educated tool to have on their desk Also included in the package is a free online resource for testing and additional information      **Hematology & Urinalysis 265** Palmer College of Chiropractic. Curriculum Center, 1972      **Laboratory Manual of Hematology and Urinalysis** Stanley Lawrence Lamberg, Robert Rothstein, 1978 Presents manual automated procedures      *Clinical Laboratory Manual* St. Marys Hospital Medical Center, 1975      Laboratory Manual of Hematology and Urinalysis S. L. Lamberg, 1978

## Reviewing **Hematology Lab Manual**: Unlocking the Spellbinding Force of Linguistics

In a fast-paced world fueled by information and interconnectivity, the spellbinding force of linguistics has acquired newfound prominence. Its capacity to evoke emotions, stimulate contemplation, and stimulate metamorphosis is really astonishing. Within the pages of "**Hematology Lab Manual**," an enthralling opus penned by a very acclaimed wordsmith, readers attempt an immersive expedition to unravel the intricate significance of language and its indelible imprint on our lives. Throughout this assessment, we shall delve into the book's central motifs, appraise its distinctive narrative style, and gauge its overarching influence on the minds of its readers.

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