



Medical laboratory techniques
Human physiology practical
DR Sara Fadhil Bunea

Blood tubes Collecting

A vacutainer blood collection tube is a sterile glass or plastic test tube with a colored rubber stopper creating a vacuum seal inside of the tube, facilitating the drawing of a predetermined volume of liquid. Vacutainer tubes may contain additives designed to stabilize and preserve the specimen prior to analytical testing. Tubes are available with a safety-engineered stopper, with a variety of labeling options and draw volumes. The color of the top indicates the additives in the vial.



Medical laboratory techniques

Human physiology practical

DR Sara Fadhil Bunea

Tube cap color or type	Additive	Usage and comments
Blood culture bottle	Sodium polyanethol sulfonate (anticoagulant) and growth media for microorganisms	Usually drawn first for minimal risk of contamination. ^[8] Two bottles are typically collected in one blood draw; one for aerobic organisms and one for anaerobic organisms. ^[9]
Light blue	Sodium citrate (anticoagulant)	Coagulation tests such as prothrombin time (PT) and partial thromboplastin time (PTT) and thrombin time (TT). Tube must be filled 100%.
Plain red	No additive	Serum: Total complement activity, cryoglobulins
Gold	Clot activator and serum separating gel ^[10]	Serum-separating tube: Tube inversions promote clotting. Most chemistry, endocrine and serology tests, including hepatitis and HIV.
Dark green	Sodium heparin (anticoagulant)	Chromosome testing, ammonia, lactate, HLA typing
Mint green	Lithium heparin (anticoagulant)	Plasma. Tube inversions prevent clotting
Lavender ("purple")	EDTA (chelator / anticoagulant)	Whole blood: CBC, ESR, blood levels of tacrolimus and cyclosporin, platelet antibodies, Coombs test, flow cytometry



Medical laboratory techniques Human physiology practical DR Sara Fadhil Bunea

Pink	EDTA (chelator / anticoagulant)	Blood typing and cross-matching , direct Coombs test , HIV viral load
Royal blue	EDTA (chelator / anticoagulant)	Trace elements, heavy metals, most drug levels, toxicology
Tan	EDTA (chelator / anticoagulant)	Lead
Gray	<ul style="list-style-type: none"> • Sodium fluoride (glycolysis inhibitor) • Potassium oxalate (anticoagulant)^[11] 	Glucose , lactate ^[12]
Yellow	Acid-citrate-dextrose A (anticoagulant)	Tissue typing , DNA studies, HIV cultures
Pearl ("white")	Separating gel and (K ₂)EDTA	PCR for adenovirus , toxoplasma and HHV-6





Medical laboratory techniques
Human physiology practical
DR Sara Fadhil Bunea

CBC

WBC	5.88	[10 ⁹ /L]
RBC	4.45	[10 ¹² /L]
HGB	136	[g/L]
HCT	0.396	[L/L]
MCV	89.0	[fL]
MCH	30.6	[pg]
MCHC	343	[g/dL]
RDW-CV	12.0	[%]
PLT		[10 ⁹ /L]
MPV		[fL]
PdW		[fL]

Differential

NEUT	3.47	[10 ⁹ /L]
LYMPH	1.96	[10 ⁹ /L]
MONO	0.31	[10 ⁹ /L]
EO	0.11	[10 ⁹ /L]
BASO	0.02	[10 ⁹ /L]
IG	0.01	[10 ⁹ /L]
NRBC	0.0	[/100WBC]