

**Part I: Lab Practical**

**1. Types of Leukocytes**



**2. Identify the Following Tests and answer the questions (probably):**

NAME:	Catalase Test	Oxidase Test	Phenol Red (both 24hr) Fermentation Test Dextrose: Lactose: Sucrose:	MR / VP (both 48hr) Fermentation Test	Citrate Utilization Test (slant 48hr)	Urea Hydrolysis Test (slant 24hr)	Nitrate Reduction Test (both 48hr)	Phenylalanine De-aminase Test (slant 24hr)	
PURPOSE: (test for)	aerobic bacteria utilize O <sub>2</sub> as final e- in ETC, MO can synthesize catalase	Identify presence or absence of cytochrome C oxidase	utilize various carbohydrates (glucose, lactose, sucrose)	MO perform mixed acid fermentation	MO ferment glucose	MO utilizes citrate as members of Enterobacteria base	MO hydrolyze urea	presence of phenylalanine deaminase diff. members of enterobacteriaceae fam: Morganella sp, Proteus sp, Providencia sp	
RESULTS:	2H <sub>2</sub> O + O <sub>2</sub>	catalyze reduction of cytochrome C by tetramethyl-p-phenylene diamine	pH color change indicator, gas production	stable acid products	acid to acetoin & 2,3-butanediol	citrate permease & citrate lyase	ammonia	removal of amine group	
MEDIA:	slide	Q-sp	differential phenol red broth, Durham tube	MR/VP broth	Simmons citrate agar	urea agar	beef extract, peptone, KNO <sub>3</sub> , Durham tube	phenylalanine agar	
SUBSTRATE:			glucose lactose sucrose	glucose	sodium citrate (C source) & ammonium phosphate (N source)			phenylpyruvic acid	
REAGENT/ pH ind.	Hydrogen peroxide 2H <sub>2</sub> O <sub>2</sub>	chromogenic reducing agent (chrom. therefore color at 8-9 is better indicator)	Phenol red pH indicator	methyl red	1% α-naphthol & 40% potassium hydroxide	bromothymol blue pH inc. (in slant)	phenol red pH ind.	sulfanilic acid & 3-naphthylamine, zinc	12% ferris chloride
POS. appearance	bubbles	dark blue/purple	yellow = acidic (ferments) bubbles in Durham tube	red color	red	Blue = alkalization	yellow = < 6.8 red = 7.4-8.4	red (both reagents) no color (after adding zinc)	green
NEG. appearance	no bubbles	no color change	No color change, no bubbles	no color change	no color change	no color change	pink = >8.4	red (both reagents + zinc)	yellow
Oxygen Requirement	Obligate aerobe =				Facultative anaerobe =				
	Obligate anaerobe =				Microaerophile =				

# Microbiology Lab Study Guide

**Ying Liu**



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