

Welcome to Mt. SAC Microbiology 22: 9 Pathogen Groups

Group (PG) 1 *Clostridium botulinum* (Gram + rod)
Clostridium perfringens (2 charts: foodborne diarrhea and gas gangrene) (Gram + rod)
Clostridium tetani (Gram + rod)
Clostridioides (Clostridium) difficile (Gram + rod)
Corynebacterium diphtheriae (Gram + rod)
Bordetella pertussis (Gram-negative rod)

Group (PG) 2 Rubeola (Measles) virus (single stranded RNA with envelope) (Paramyxoviridae family)
Rubella (German measles) virus (single stranded RNA with envelope) (Togaviridae family)
Mumps virus (single stranded RNA with envelope) (Paramyxoviridae family)
Poliomyelitis (polio) virus (single stranded RNA without envelope) (Picornaviridae: *Enterovirus*)
*Hepatitis A virus (single stranded RNA without envelope) (Picornaviridae family)
*Hepatitis B virus (double stranded DNA with envelope) (Hepadnaviridae family)
*Hepatitis C virus (single stranded RNA with envelope) (Flaviviridae family)
* See **Diseases in Focus** 25.3 (our Tortora's 13th ed. textbook) on pg. 743

Group (PG) 3 *Candida albicans* (fungus)
Ringworm (tinea) fungi (*Trichophyton* spp., *Microsporum* spp., *Epidermophyton* spp.)
Cryptococcus neoformans (fungus)
Mycobacterium tuberculosis (Gram +, acid-fast rod)
Mycobacterium leprae (Gram +, acid-fast rod)

Group (PG) 4 *Plasmodium vivax* (protozoan)
Entamoeba histolytica (protozoan)
Trypanosoma cruzi (protozoan)
Yellow fever virus (single stranded RNA with envelope) (Flaviviridae family)
Dengue virus (single stranded RNA with envelope) (Flaviviridae family)
Zika virus (single stranded RNA with envelope) (Flaviviridae family)
Rabies virus (single stranded RNA with bullet-shaped envelope) (Rhabdoviridae family)
Epstein-Barr virus (double stranded DNA with envelope) (Herpesviridae family,
human herpesvirus 4 or HHV-4)

Group (PG) 5 *Yersinia pestis* (Gram negative rod)
Francisella tularensis (Gram negative rod)
Borrelia burgdorferi (Gram negative spirochete)
Rickettsia rickettsii (Gram negative rods that are obligate intracellular)
Rickettsia prowazekii (Gram negative rods that are obligate intracellular)
Arthropod-borne encephalitis viruses (single stranded RNA with envelope)
(Togaviridae & Flaviviridae families) See **Diseases in Focus** 22.2 (Tortora's 13th ed.) pg. 641

Group (PG) 6

Bacillus anthracis (Gram + rod)
Neisseria meningitidis (Gram negative cocci)
Haemophilus influenzae (Gram negative rod)
Helicobacter pylori (Gram negative spiral-shaped)
Common cold viruses (over 200); about half are Picornaviridae: *Rhinovirus* (single stranded RNA without envelope)
Influenza (flu) viruses (eight separate RNA segments with envelope) (Orthomyxoviridae family) – Don't forget to include the Clinical Focus on pg. 367 in your textbook readings!

Group (PG) 7

Staphylococcus aureus (clusters of Gram + cocci)
(2 charts: staphylococcal infections including understanding of MRSA, food poisoning)
Streptococcus pyogenes (chains of Gram + cocci)
(3 charts: streptococcal infections, scarlet fever and rheumatic fever)
Streptococcus pneumoniae (Gram + cocci)
Enterococcus faecium (Gram + cocci) including understanding of VRE strains
Escherichia coli (Gram negative rod)
Pseudomonas aeruginosa (Gram negative rod)
Klebsiella pneumoniae (Gram negative rod)
Acinetobacter baumannii (Gram negative rod)

Group (PG) 8

Brucella abortus (Gram negative coccoid rods)
Salmonella enterica Typhi or *Salmonella* Typhi (Gram negative rod)
Salmonella enterica serovars causing salmonellosis (Gram negative rod)
Shigella sonnei (Gram negative rod)
Vibrio cholerae (Gram negative curved rod)
Campylobacter jejuni (Gram negative curved rod)
Listeria monocytogenes (Gram + rod)
Rotavirus (double stranded RNA without envelope) (Reoviridae family)

Group (PG) 9

Human herpesviruses 1 and 2 (herpes simplex viruses: HSV-1 or HHV-1 & HSV-2 or HHV -2)
(double stranded DNA with envelope) (Herpesviridae family, genus *Simplexvirus*)
Varicella-zoster virus (HHV-3) (chickenpox and shingles) (double stranded DNA with envelope)
(Herpesviridae family: genus *Varicellovirus*)
Cytomegalovirus (CMV) (HHV-5) (double stranded DNA with envelope) (Herpesviridae family)
Neisseria gonorrhoeae (Gram-negative diplococci)
Chlamydia trachomatis (2 charts: trachoma, genital chlamydia) (gram neg. obligate intracellular)
Treponema pallidum (Gram-negative spirochete)
Human papillomaviruses (HPV) (genital warts and cervical/anal/penile cancers) (double stranded DNA without envelope) (Papovaviridae family)
Human immunodeficiency virus (HIV) (single stranded RNA with envelope)
(Retroviridae family, genus *Lentivirus*)

THE PATHOGEN GROUPS of MICROBIOLOGY 22

You have 9 pathogen groups to research throughout the semester!

The sequence of pathogen groups coincides with the lab quizzes, so you'll want to study them in that order and refer to the lab schedule for important due dates this semester. Beginning with the second lab quiz, each quiz will include multiple choice and matching type questions (scantron graded) about a group of important pathogens. You will research these pathogens *outside of class time* and compile your information either on the pathogen charts provided (the blank **viral and nonviral charts** are included in this packet for you to copy, as needed),

or... you can download your own copies at

<https://faculty.mtsac.edu/canderson/> [on left margin]

or... you can make your own design. For those pathogens that infect humans as well as other animals, use humans as your point of reference in compiling the data.

Here are suggestions for where to begin:

1. Your textbook index is a great place to start!

2. Research online. Reputable websites include:

<http://www.cdc.gov/> (Centers for Disease Control and Prevention)

<https://www.nlm.nih.gov/> (U.S. National Library of Medicine)

<http://who.int/en/> (World Health Organization)

<http://www.fda.gov/> (U.S. Food and Drug Administration)

Various foreign health agencies, such as the *Public Health Agency of Canada*

(www.publichealth.gc.ca)

Our Southern California Branch of the American Society for Microbiology resources

(<https://www.scasm.org/resources/links>)

Also check out www.microbelibrary.org and www.microbeworld.org for visual images and searches for more of these amazing microbes you're learning.

3. [These optional resources at the Mt. SAC bookstore are very useful, too:](#)

Heymann, David's 2015 Control of Communicable Diseases Manual, 20th ed., APHA

ISBN: 978-0-87553-018-5

A Photographic Atlas for the Microbiology Laboratory, 4th ed. by Michael Leboffe & Burton Pierce (0-89582-872-3) at the Mt. SAC bookstore with full-color photographs, if desired.

Save all your charts! At the end of the semester **THE PATHOGEN TEST**, an oral presentation of 20 case histories in which you become the microbe detectives, will be given. It will include only pathogens from these 9 groups, is 100 points towards your lab grade, and is taken with *open charts* (as long as the information you've compiled is in your *own* handwriting... to reward *you* for *your* hard work!)

Let's begin; the microbes are anxious to meet you!