

IQRA NATIONAL UNIVERSITY

(ALLIED HEALTH SCIENCES)

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PROGRAM: BS DENTAL

SEMESTER: 4th

(ASSIGNMENT)

SUBJECT: MICROBIOLOGY

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ASSIGNMENT No1

PATHOGENIC BACTERIA NAME STARTING FROM ALPHABET "A"

ACHROMOBACTER XYLOSOXIDANS

- Motile bacterium with peritrichous flagella
- Found in wet environment
- From the genus achromobacter
- Formerly alcaligenes xylosoxidans
- Gram negative
- Aerobic
- Oxidase
- Catalase positive

- *Achromobacter xylosoxidans* can cause infections such as bacterimia, especially in patients with cystic fibrosis



Scientific Classification

Kingdom:	Bacteria
Phylum:	Proteobacteria
Class:	Beta Proteobacteria
Order:	Burkholderiales
Family:	Alcaligenaceae
Genus:	<i>Achromobacter</i>
Species:	<i>A. xylosoxidans</i>

➤ BACTEROLOGY:

- *A xylosoxidans* is a Gram-negative rod that does not form spores
- It is motile, with peritrichous flagella that distinguish it from *Pseudomonas* species, and is oxidase-positive, catalase-positive, and citrate-positive
- It is urease and indole-negative
- It produces acid oxidatively from xylose, but not from lactose, maltose, mannitol, or

sucrose

- **Growing:** It grows well on MacConkey agar and other inhibitory growth media such as deoxycholate, Salmonella-Shigella, and nalidixic acid-cetrimide agars
 - **Resistant to drugs:** It is usually resistant to a variety of antibiotics including penicillins; cephalosporins, quinolones, and aminoglycosides. Ampicillin and carbenicillin
 - **Susceptible:** It is variably susceptible to tetracyclines, chloramphenicol, trimethoprim-sulfamethoxazole, and colistin
- **Pathogenesis And Clinical Characteristics:**
- Originally isolated from patients with otitis media
 - *A xylooxidans* has since been periodically described as a pathogen of humans
 - **Causes:** In addition to otitis, it can cause a variety of other infections, including pneumonia, pharyngitis, peritonitis in association with catheters used for peritoneal dialysis, and urinary tract infections
 - **Infection sometime associated:** Infection is sometimes associated with underlying immunodeficiency, including immunoglobulin M deficiency, various cancer chemotherapies, inhaled steroids, surgical procedures, prolonged or broad-spectrum antimicrobial treatment for other infections, and cystic fibrosis
 - It has also been the cause of hospital-acquired infections

ASSIGNMENT No 2

Q 1: what are laboratory protocols? Write down in detail all instructions required for lab staff to working medical lab according to standard protocols?

Q 2: Write the prevalence statistical data of SARS COV2 (COVID 19) around the globe?

QUESTION No 1

➤ LABORATORY PROTOCOLS



Used primarily in the life sciences, protocols provide individual sets of instructions that allow scientists to recreate experiments in their own laboratory. They provide instructions for the design and implementation of experiments that include:

- The safe bias
- Procedural equipment
- Statistical method
- Reporting and troubleshooting standards for experiments
- They have ingredients: reagents and sample
- They have appliances: equipments, instruments
- They have a list of instructions
- They have time
- They have critical steps
- The laboratory protocols are “the how to do” an experiment

➤ GUIDELINES/INSTRUCTIONS for MEDICAL LAB STAFF

1. Always wear appropriate personal protective equipment. Change gloves when contaminated, and dispose of used gloves with other contaminated laboratory waste.
2. Wash your hands after working with potentially hazardous materials and before leaving the laboratory.
3. Do not eat, drink, smoke, handle contact lenses, apply cosmetics, or store food for human consumption in the laboratory.
4. Follow the institutional policies regarding safe handling of sharps (i.e., needles, scalpels, pipettes, and broken glassware).
5. Take care to minimize the creation of aerosols and/or splashes.
6. Decontaminate all work surfaces before and after your experiments, and immediately after any spill or splash of potentially infectious material with an appropriate disinfectant. Clean laboratory equipment routinely, even if it is not contaminated.
7. Decontaminate all potentially infectious materials before disposal.

8. Report any incidents that may result in exposure to infectious materials to appropriate personnel (e.g., laboratory supervisor, safety officer)

- **Wear protective clothing (gloves, lab coats, safety glasses)**

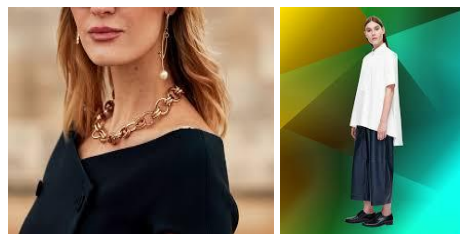


- **Laboratory personnel should not wear sandals**

SHOES/SANDALS
(Do Not Wear)



- **Do not wear jewelry, loose/boggy clothing in lab**



- **Avoid touching objects (e.g. pencils, cell phones, door handles) while wearing gloves**



- **Pencils, labels, or any other materials should never be placed in your mouth**



- **Cautions must be taken when using gas burners. Be sure gas burners are turned off when finished**



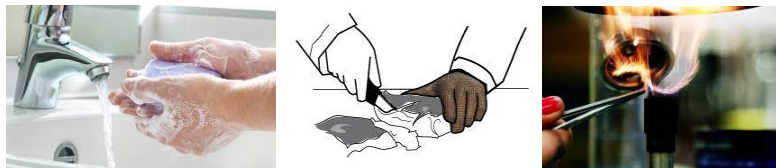
- **Long hair must be tied back or covered to minimized fire hazard or contamination of experiments**



- **Do not eat food or drink water in the lab, do not use lab glassware as food or water containers**



- **Protect your hands safety:- wash hands after every lab:- handle glassware, sharp tools and heated containers carefully**



- **Electrical safety:- unplug electrical equipments after use :- keep all electrical cords and wires away from water**



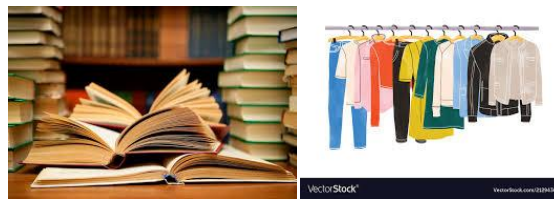
- **Chemical safety:-** never touch, taste/smell a chemical unless instructed to do so:- never mix chemicals unless instructed to do so:- keep lids on chemical containers when not in use



- **Do not engage in practical jokes or horseplay in the lab**



- **Keep non-essential books and clothing far away from your work**



- **Wipe the bench tops don with disinfectant both before you begin your work and after you have completed your work**



- **Dispose of waste products according to instructions**



- **Report all accidents, no matter how minor, to your supervisor!**



- **Safety shower, eye wash, fire blanket, fire extinguisher**



QUESTION No 2

➤ prevalence statistical data of SARS COV2 (COVID 19) around the globe



Prevalence is a statistical concept referring to the number of cases of a disease that are present in a particular population at a given time, whereas incidence refers to the number of new cases that develop in a given period of time

- A part of a Epidemiology

➤ PREVALENCE RATE of SARS COVID 19 AROUND THE GLOBE



SINCE THE CORONA VIRUS IS THE PANDEMIC DISEASE SO WE WILL FIND THE GLOBAL VICE DATA FOR IT:

Corona virus CASES: 12847288

Deaths: 567734

Recovered: 7483246

Active cases of currently infected patients: 4796308

Infected rate: 2.5

Current world population: 7797471754

$$\text{Prevalence rate} = \frac{\text{total numbers of infected person in the given population} \times 10n}{\text{total number of population}}$$

➤ $10^n=100$

$$\bullet \text{ Prevalence rate} = \frac{12847288 \times 100}{7797454717} \quad \Rightarrow \quad 0.165 \%$$

➤ $10^n=1000$

$$\bullet \text{ Prevalence rate} = \frac{12847288 \times 1000}{7797454717} \quad \Rightarrow \quad 1.713 \%$$

➤ MORTALITY RATE of SARS COVID 19 AROUND THE GLOBE



IN MORTALITY RATE WE CAN FIND THE DEATH RATIO or NUMBER OF DEATHS IN A GIVEN AREA or PERIOD or FROM A PARTICULAR CAUSE

Corona virus CASES: 12847288

Deaths: 567734

$$\text{Prevalence rate} = \frac{\text{total numbers of deaths from disease} \times 10n}{\text{total number of infected population or person}}$$

➤ $10^n=100$

- Mortality rate = $\frac{567734 \times 100}{12847288}$ ➤ 4.253 %

➤ $10^n=1000$

- Mortality rate = $\frac{567734 \times 1000}{12847288}$ ➤ 44.230 %

THANK YOU SO MUCH