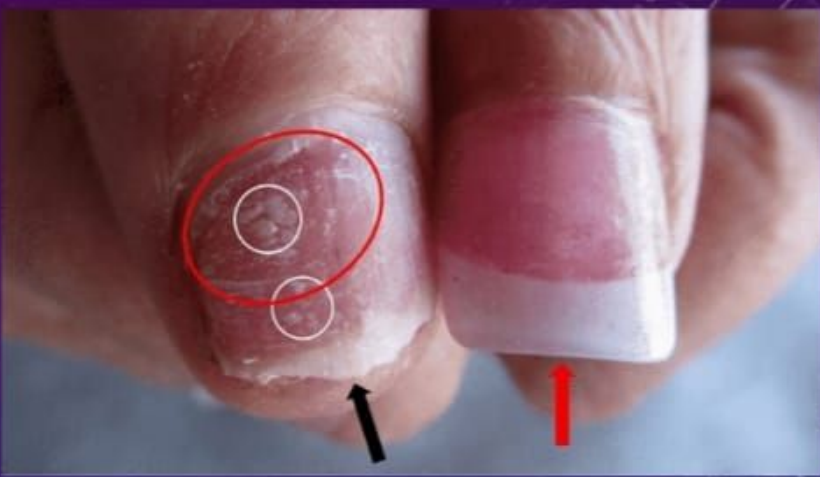


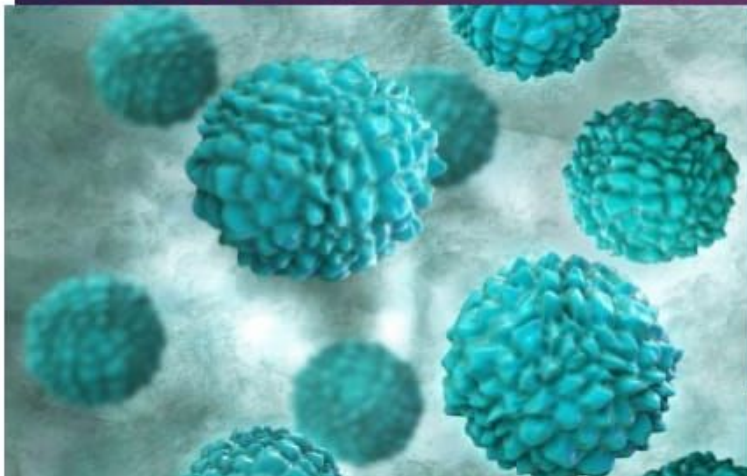
- ❖ *Fungal infections such as **onychomycosis** have been found in*
 - *Patients who use artificial nails*
- ❖ *staphylococcus aureus is usually harmless and found on*
 - *skin ,it sometimes cause necrotizing fasciitis or 'flesh -eating'*
 - *diseases in hospitals*
- ❖ *Acromonium and aspergillus ,which infect the superficial layers*
 - *Of the nail resulting in white patches on the nail*
- ❖ *Arcylic nails harbor more bacteria than natural nails and,*
 - *Wear is not recommended for health care workers*



A.Nikita
btmc
1111-20-487-001

MICROBIAL FACTS

- * **NOROVIRUSES ARE VERY CONTAGIOUS. THEY ARE FOUND IN THE STOOL (FECES) OR VOMIT OF INFECTED PEOPLE. FROM THERE, NOROVIRUSES ARE TRANSFERRED TO FOOD, WATER, OR SURFACES BY THE HANDS OF INFECTED PEOPLE WHO HAVE NOT WASHED AFTER USING THE BATHROOM. ANITIBIOTIC DRUGS WILL NOT HELP TREAT NOROVIRUS INFECTION.**
- * *Norovirus causes an acute illness that commonly lasts 1 to 2 days for most people, some people may be ill or feel the effects for up to 6 days. After the period of illness your body gradually gets rid of the entire virus.*
- * *If eaten raw, oysters can contain viruses and bacteria that can cause illness or death. Anyone who consumes raw shellfish is at risk of contracting norovirus. Children and elders, and those people with weakened immune systems are more likely to have infections. Food contaminated with norovirus may look, smell, or taste normal. To avoid food poisoning from oysters, cook them well to a temperature of at least 145 degrees F.*



protect yourself from norovirus

- ▶ wash your hands often
- ▶ cook shellfish to 145°F or higher
- ▶ when you are sick, don't prepare food or care for others
- ▶ rinse fruits & vegetables thoroughly
- ▶ after vomiting or having diarrhea, immediately clean & disinfect surfaces & wash soiled laundry

The infographic includes icons for handwashing, a person not preparing food while sick, rinsing produce, and cleaning a surface. It also features the CDC logo at the bottom left.

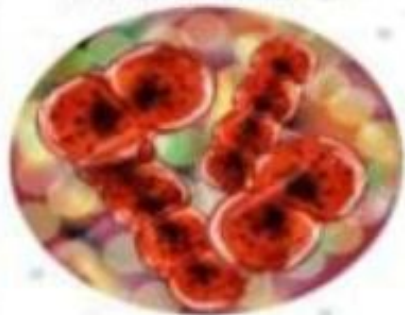


MICROBIOLOGY FACTS

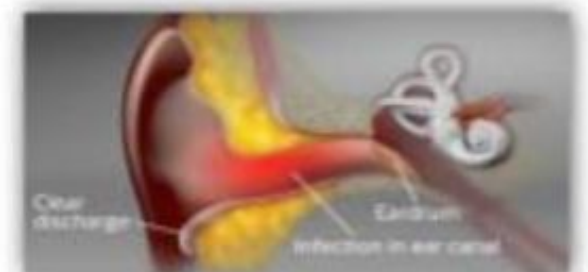
Microorganisms In Ear



Moraxella catarrhalis



- The Microorganisms that are present in ear are streptococci, haemophilus, pneumoniae, moraxiella, catarrhali.
- There are few mycobacterium.
- Staphylococcus aureus bacteria is one cause of an ear infection called Acute Otitis Externa(AOE).
- An ear infection is caused by a bacterium or virus in the middle ear.
- Here are some options to cure ear infections:
- Over The Counter(OTC) pain and fever reliever
- Warm compress
- Rest
- Salt water gargle



Alli Anusha
111120487003

MICROBIAL

INFECTIONS

AND

DISEASES

Hanhart syndrome is a rare condition characterized by a short, incompletely developed tongue (hypoglossia); absent or partially missing fingers and/or toes (hypodactyly); malformed arms and/or legs (peromelia); and an extremely small jaw (micrognathia). The severity of these physical abnormalities varies greatly from person to person. Children with this disorder often have some, but not all, of these symptoms. The cause of Hanhart syndrome is not fully understood.



The exact cause of Hanhart syndrome is not known. Cases tend to occur randomly, with no apparent cause (sporadic). Some researchers believe that the disorder, which has been reported in the children of blood relatives (consanguinity) in a number of cases, may be inherited in an autosomal recessive pattern.

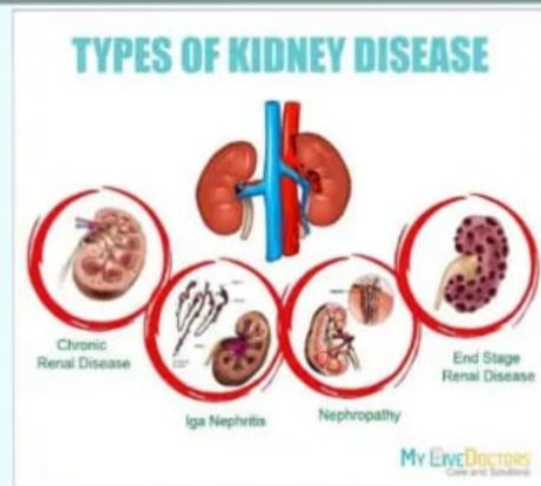


Figure 1: Hyperkeratotic plaques over soles.

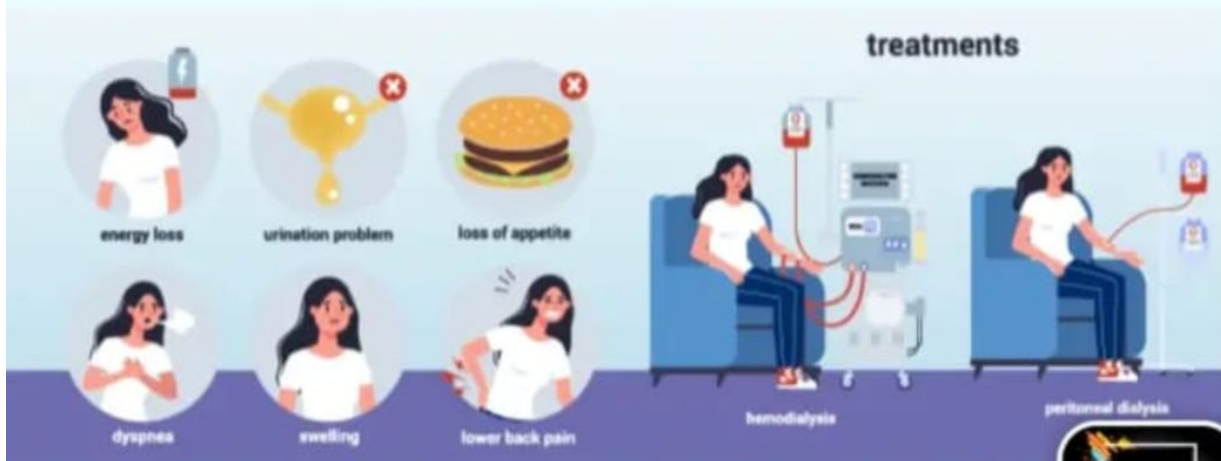
Name: Avishkara
Roll no:04

MICROORGANISMS IN KIDNEY

A bacteria called Escherichia Coli (E Coli) causes about 90 percent of kidney infections. The bacteria migrate from the genitals through the urethra (the tube that removes urine from the body) into the bladder and up the tubes (ureters) that connect the bladder to the kidneys.



SYMPTOMS



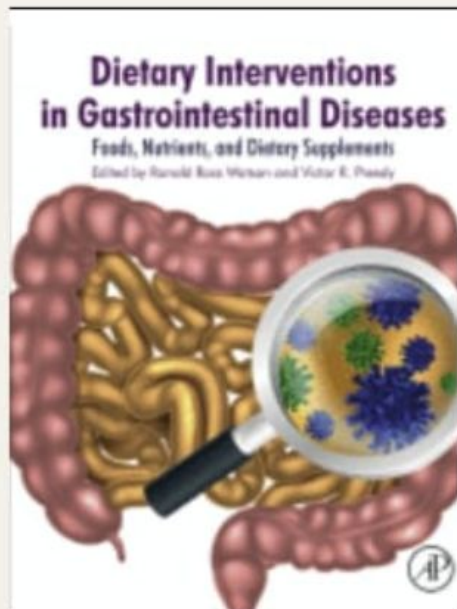
A. Yogeshwari
11120487005
BTMC



MICROBIOLOGY FACTS

MICROORGANISMS IN GASTROINTESTINAL TRACT

The Bacteria in Our Gastrointestinal Tract Fall Into Five Main Phyla÷ Bacteroidetes, Firmicutes, actinobacteria, Proteobacteria And Verrucomicrobia.



- » Bacteroidetes And Firmicutes Are Usually Most Common
- » There Are An Enormous Number Of Microbes Cause Diseases. Bacteria(E.Coli,Salmonella,Shigella,Campylobacter,Clostridium), Viruses(Norwalk agent, Rotaviruses) And Parasites(Giardia,Entamoeba,Ascaris).

☆ MOST COMMON

GASTROINTESTINAL DISEASES ARE:

- > CELIA DISEASE
- > CHRONIC DIARRHEA
- > CONSTIPATION
- > PEPTIC ULCER DISEASE

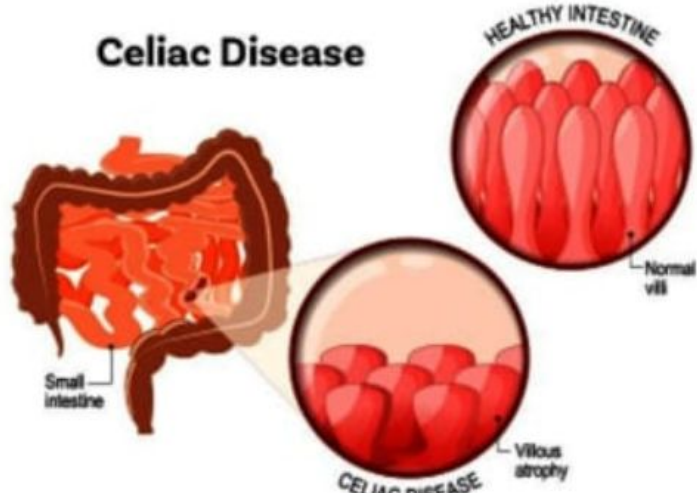


PREVENTIONS:

- * Resting And Drinking Plenty Of Fluids.
- * Following The BRAT Diet
B-Bananas ,R-Rice A-Applesauce,
T-Toast
- * Taking Over-The-Counter Medications

1111-20-487-006

B.Poojitha



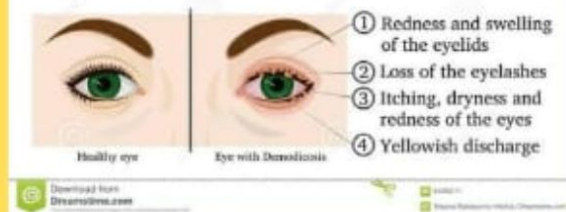
EYELASH MITES

Eyelash mites are caused by two types of Demodex mites. The two types are called Demodex folliculorum and Demodex brevis. Both types of mites are microscopic. They are not typically dangerous and can actually serve helpful functions for the human skin. If there are too many, however, they can cause inflammation and infection around the eyes that need to be treated before your vision is affected. Eyelash mites occur naturally on the face. An infestation, has been linked to certain conditions, such as rosacea, dermatitis, inflammatory acne, and skin infections, among others.



SYMPTOMS

Symptoms of Demodicosis



- ITCHINESS IN THE EYELASHES AND SURROUNDING SKIN
- SCALY, ROUGH PATCHES OF SKIN
- REDNESS AROUND THE EYES
- BURNING SENSATION IN YOUR EYES
- WORSENING SKIN SYMPTOMS OR FLARE-UPS, SUCH AS IN ROSACEA AND ECZEMA (DERMATITIS)

What treatments usually work? Your doctor might recommend:

Tea tree oil: Soaked into wipes or cleansers, rub this over your closed eyelids and face. Don't open your eyes quickly after wiping or they may sting. Make sure you are diluting the oil if it is full strength, as that will be too strong and harmful for your thin eyelid skin.

Creams or ointments: They're made from substances like sulfur, permethrin, ivermectin, and mercury oxide. You spread these medicines at the base of your lashes.

PREVENTION

THE BEST THING TO DO IS KEEP YOURSELF AND YOUR SURROUNDINGS CLEAN. TO DO THAT, YOU CAN LATHER UP YOUR HAIR AND ENTIRE BODY WITH SOAP OR SHAMPOO EACH DAY. YOU CAN ALSO WASH YOUR TOWELS AND SHEETS WITH HOT WATER AND DRY ON HIGH HEAT.

BEERAM SHANMUKHI

11111-20-487-007

BTMC

MICROBIAL FACTS

Soil Microorganisms

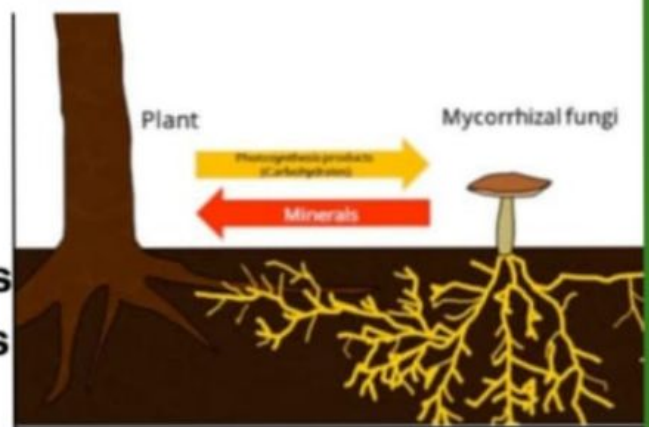


Actinomycetes are aerobic, spore forming gram-positive bacteria and they are responsible for characteristically "earthy" smell of freshly turned healthy soil

Streptomyces griseus - earthy smell

Actinomycetes

Mycorrhizae is a fungi that facilitate water and nutrient uptake by the roots and plants to provide sugars, amino acids and other nutrients.



Mycorrhiza

Protozoa are larger microbes that love to consume and be surrounded by bacteria. In fact, nutrients that are eaten by bacteria are released when protozoa in turn eat the bacteria.

-Colpoda steinii



Protozoa

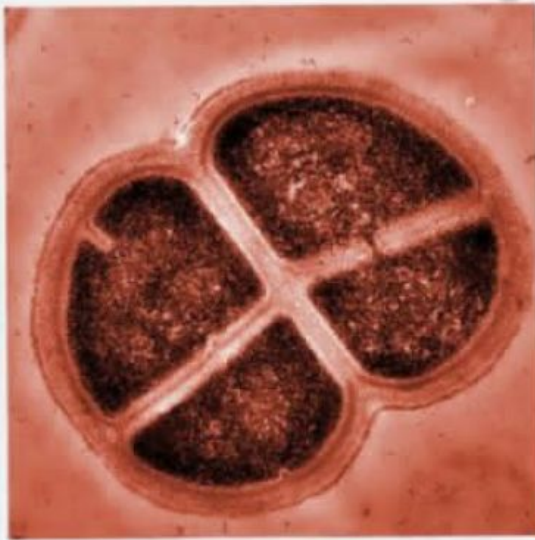
Begari Sunidhi

1111-20-487-008

BTMC 3rd year

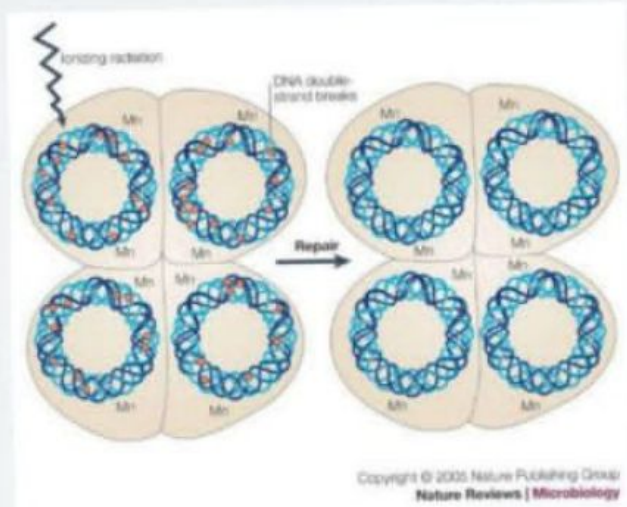
MICROBIAL FACTS

Deinococcus radiodurans



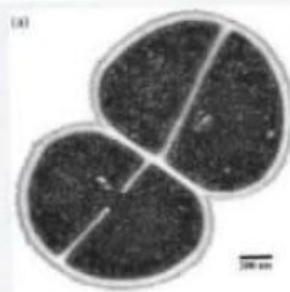
- ➔ **Deinococcus radiodurans is an extremophilic bacterium and radiation-resistant organisms**
- ➔ **It is a polyextremophile.**

- **Deinococcus radiodurans also has a unique ability to repair damaged DNA.**
- **Deinococcus radiodurans has a unique quality in which it can repair both single- and double-stranded DNA.**

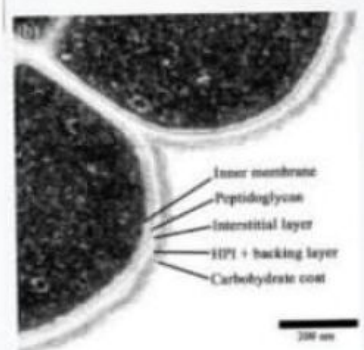


Applications:-

1. *D. radiodurans* been genetically modified for bioremediation
2. *Deinococcus radiodurans* has been genetically engineered to digest solvents and heavy metals in these radioactive environments.
3. *Deinococcus radiodurans* is used as a model to study the processes that leads to aging and cancer.



Bhavishya
Roll no:111120487009
Btmc



Eczema

- > When your body comes into contact with something that could make you sick, your **"immune system"** Promotes chemical changes to help your body ward off disease.
- > In other people atopic dermatitis is caused by too much of the bacteria **Staphylococcus aureus** on the skin . This displaces helpful bacteria and disrupts the skin's barrier function . A weak skin barrier function might also trigger an immune system response that causes the inflamed skin and other symptoms .
- > **Staphylococcus aureus** is the bacterium that is the most commonly responsible for secondary infection of **eczema** .

Symptoms

- * Rash
- * Itching
- * Inflammation
- * Red bumps that may ooze, drain or crust .
- * Burning sensation or pain

Eczema (skin condition)



BTMC
111120487010
Bikasinimallick

Microbial facts

Halomonas titanicae

- It is known as a "steel munching" bacteria
- Halomonas titanicae is a gram-negative bacteria.
- Bacilli shaped bacteria
- These bacteria eat iron in the ship's hull and they will eventually consume the entire ship, recycling the nutrients into the ocean ecosystem.



Uses:-

- The potential to be used in bioremediation to accelerate the decomposition of shipwrecks littering the ocean floor.

One of the researchers, Henrietta Mann has estimated that the action of microbes like Halomonas titanicae may bring about the total deterioration of the Titanic by 2030

B. Likitha

btmc

roll no: 111120487011

Microbial Facts

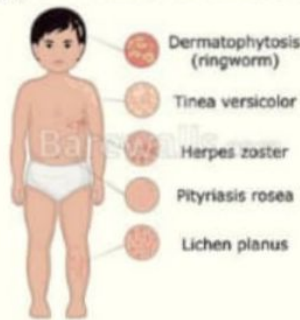
Ringworm

> Ringworm, also known as dermatophytosis, is a fungal infection of the skin.

> The ringworm fungus grows well in moist environment such as showers, bathroom floors and walls, swimming pools and also in between the skin folds.



Types of skin rash in a child



Causes of Ringworm

> It spreads by skin contact with an infected person.

> These fungi are mainly present in the spores of soil. Coming into contact with such soil will result in an infection.

symptoms

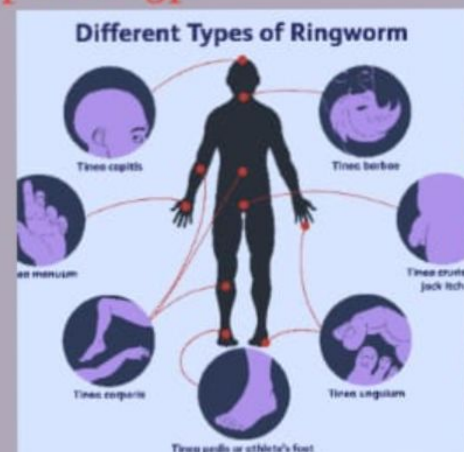
Itchy skin
Ring-shaped rash
Red, scaly
Cracked skin.
Hair loss.

prevention

> Maintain cleanliness and hygiene
> Wear clean ironed clothes
> Touching or scratching the itchy red patches would help to prevent it from spreading

Treatment

> Amphotericin B is a very powerful fungicide that is used in the most serious cases of fungal infections
> Using talcum powder is recommended as it helps to control sweating



shreya

111120487012

Btmc

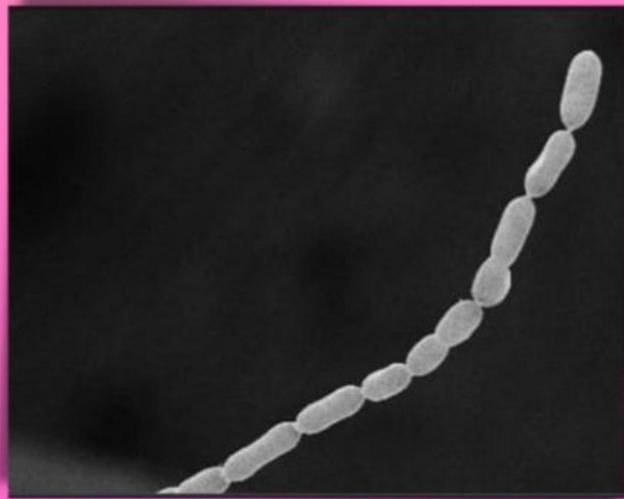
Microbial facts

Thiomargarita magnifica

It is the largest known bacterium with an average length of 10 mm and some individuals reaching 20 millimetres (0.79 in w)

It is filament shaped ,sulfur-oxidizing gammaproteobacteria and visible to the naked eye.

It is discovered in the early 2010s by Olivier Gros from the University of the French Antilles. It was found growing underwater on the detached leaves of red mangroves from the Guadeloupe archipelago in the Lesser Antilles



These bacteria are about 5,000 times larger than most bacteria.

It is the first and only bacteria known to date to unambiguously segregate their genetic material in membrane-bound organelles in the manner of eukaryotes.

D.Viharika

BtMC

1111-20-487-013

Thiomargarita means "sulfur pearl"and magnifica means "magnificent".

They contain microscopic sulfur granules that scatter incident light, lending the cell a pearly lustre.

It has a large central compartment, or vacuole.



Microbial facts

BACILLUS LICHENIFORMIS

- *Bacillus licheniformis* is a rod shaped gram positive, Mesophilic bacteria found in soil.
- It is found on bird feathers; especially chest and back plumage, like sparrows.



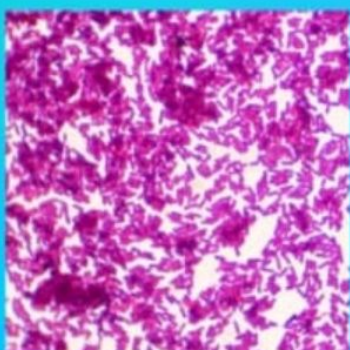
- *Bacillus licheniformis* cause infection in immunocompromised patients such as bacteremia, ventriculitis.

Applications

- **Biomining**
- **Industrial enzymes**
- **Bioremediation**
- **Biofuels**



- B. Licheniformis is also called as spore forming bacteria
- B. Licheniformis is used as probiotic in animal feed



D. Karthika
Btmc
111120487014

MICROBIAL FUEL CELLS

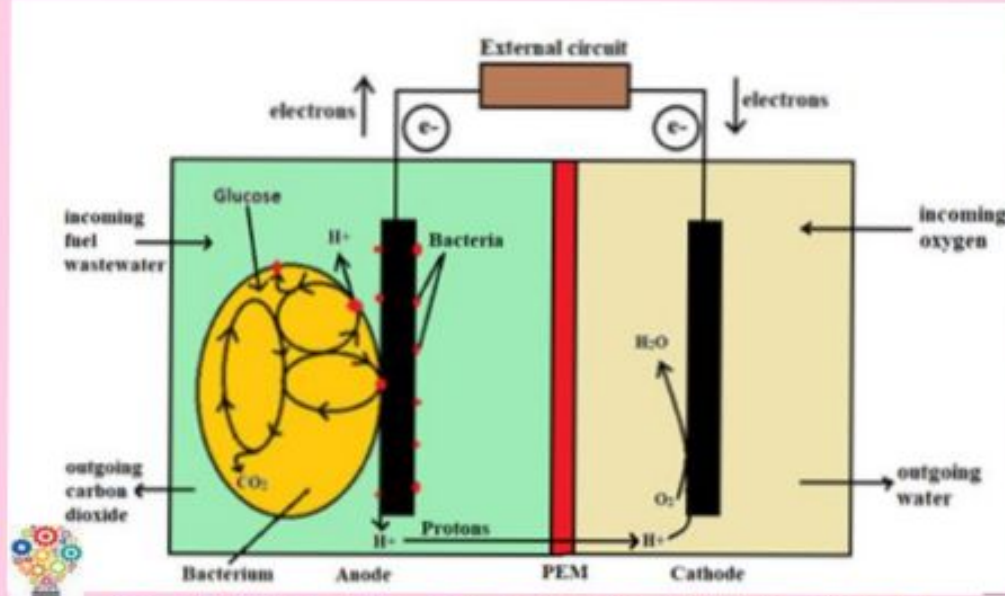
Devices that use bacteria as the catalysts to oxidize organic and inorganic matter and generate current

PRINCIPLE:

- Based on redox reaction
- Natural metabolism of microbes produce electricity
- Bacteria converts substrate into electrons
- Electrons run through circuit to generate power

Applications of MFC

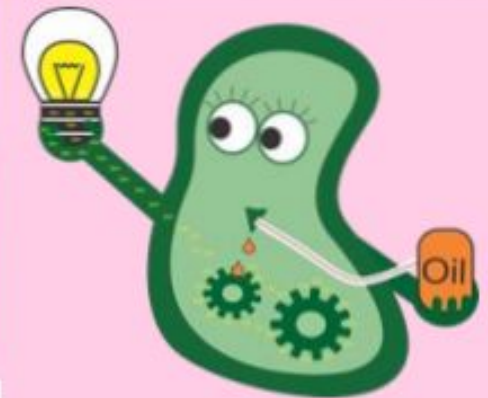
- Waste water treatment
- Power generation
- Secondary fuel production
- Bio-Sensors
- Desalination
- Educational tool



WORKING MODEL

D WILCINA GENEVIEVE -- BTMC FINAL YEAR

111120487015



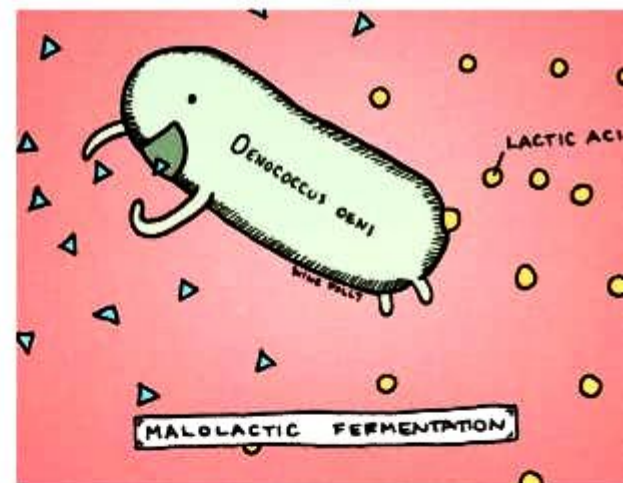
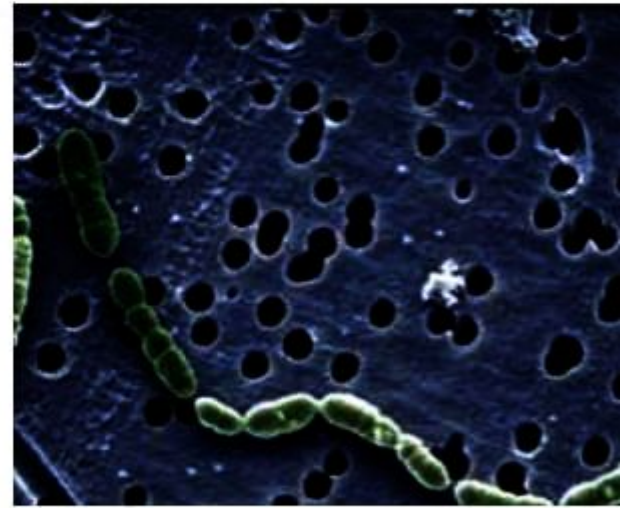
Microbes used in MFC

- Axenic bacterial culture
 - Metal reducing bacteria
 - *Shewanella putrefaciens*
 - *Geobacter sulfurreducens*
 - *Rhodospirillum rubrum*
 - *Clostridium beijerinckii*
- Mixed bacterial fuel culture
 - *Desulfuromonas*,
 - *Alcaligenes faecalis*,
 - *Enterococcus faecium*,
 - *Pseudomonas aeruginosa*,
 - Proteobacteria,

Microbial facts

OENOCOCCUS OENI

- Oenococcus oeni is gram-positive facultative anaerobic bacteria.
- They survive under acidic conditions below pH-3.0
- It is a species of lactic acid bacteria most frequently associated with malolactic fermentation (MLF) on wine
- MLF can be beneficial or detrimental based on the production of wine depending on climate and style of wine
- Oenococcus oeni stabilises wine communities by consuming available nutrients and lowering potential growth of other microbes
- They can also negatively affect the wine quality by removing desirable aroma and giving mousy off-flavour (or) bitterness



LYME DISEASE

LYME DISEASE IS CAUSED BY THE BACTERIA BORRELIA BURGDORFERI AND BORRELIA MAYONII

IT IS THE MOST COMMON VECTOR-BORNE DISEASE

IT IS TRANSMITTED TO HUMANS THROUGH THE BITE OF INFECTED BLACKLEGGED TICKS.

SYMPTOMS

- FEVER, HEADACHE, FATIGUE, IRREGULAR HEARTBEAT, DIZZINESS, BULLS EYE, WEAKNESS, NAUSEA, MUSCLE PAIN
- VOMITING



PREVENTION

WEAR REPELLENT THAT CONTAINS DEET
SHOWER WITHIN 2 HOURS OF BEING OUTDOORS
CONSULT DOCTOR IF YOU GET FEVER OR RASH

TREATMENT

USUALLY DOXYCYCLINE OR AMOXICILLIN, ARE EFFECTIVE TREATMENTS FOR LYME DISEASE.

G. SRIJITHA (BTMC 3RD YR)

111120487017

MICROBIAL FACTS

Tardigrades known colloquially as water bears or moss piglets are of eight-legged. Their ability to withstand extremely low temperatures and desiccation. They can go more than 30 years without any food or water.



polio vaccine is cultured on kidneys of monkeys and cells of aborted fetuses.

Rubella, Chickenpox and Hepatitis A vaccines are cultured on cells of aborted fetuses.



In the womb, humans are free of microbes. Colonization begins during the journey down the birth canal, which is riddled with bacteria, some of which make their way onto the newborn's skin.



G.Shivani

111120487018

Microbiota: Early Life

Gut microbiota is the name given today to the tens of trillions of microorganisms living in our intestine. Even though each of us has a unique microbiota one thing we know for sure is that it plays a major role in health and disease in all humans.



=



Everyone's microbiota is unique as a fingerprint!

Factors that affect the microbiota at birth:



Delivery Mode: caesarean vs vaginal

breast milk vs. formula feeding



antibiotic usage



timing of the introduction of solids foods and cessation of milk feeding.



As a future mom, you'll want the best for you and your baby. Did you know your baby's first contact with microbes is via the placenta? As you find out what's good for yourself, you will find ways you can help encourage your baby's microbiota to develop healthy diversity.

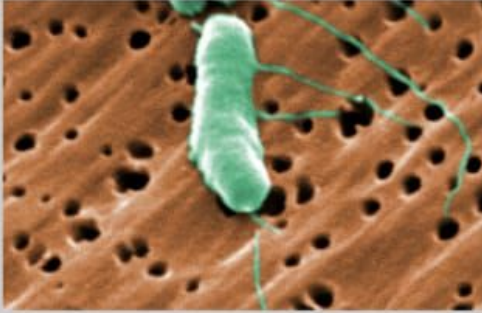


By about the age of three, a child's microbiota looks a lot like an adult's, and it becomes much more stable.



Akhilajadhav
111120487019 BTMC

VIBRIO VULNIFICUS



Vibrio vulnificus is species of gram negative, Motile, curved rod shaped, pathogenic bacteria of the genus Vibrio

Present in marine environments such as estuaries, brackish ponds or coastal areas



- Some vibrio vulnificus infections lead to necrotizing fasciitis, a severe infection in which the flesh around an open wound dies
- Failure to recognize and treat this infection promptly leads to high morbidity and mortality
- Most vibrio infections are caused by eating raw or undercooked oysters or shellfish
- Hurricanes, storm surges and coastal flooding have been linked to Vibrio vulnificus infections

SYMPTOMS:

Watery diarrhoea often accompanied by stomach cramping, nausea, vomiting and fever

TREATMENT

The infection is treated with antibiotics like Ceftriaxone plus doxy cycline or Ceftriaxone plus ciprofloxacin

Non- spore forming, facultative, anaerobic, catalase +ve & oxidase -ve organisms



Listeria spp. are small & gram - positive rod.

Genus of bacteria

This bacteria can be found in moist environments , soil ,water & etc.



L I S T E R I A



Causes :

** Caused by eating contaminated food with listeria monocytogenes*

Treatment :

** Infection varies depending on signs & symptoms.
* Serious infections can be treated with antibiotics.
* Who have mild symptoms have no treatment .*

Prevention :

** Avoid eating lunch meats, cold cuts (or) fermented (or) dry sausages unless they are heated to an internal temperature of 165° F. (or) until steaming hot just before serving.*

*Done by
K. Pallavi Reddy*

Ht.no. 111120487021

*From Bsc. Btmc
Final Year.*

CLOSTRIDIODES DIFFICILE



Formerly known as *Clostridium difficile*

Clostridium difficile is a rod-shaped, motile, obligate anaerobic, Gram-positive, spore-forming bacterium

It is a germ bacterium that can cause diarrhoea and colitis, a serious inflammation of the colon

It is highly contagious as infecting spores easily spread and can last on surfaces for longer period

• RISK FACTORS:

Overuse of Antibiotics, Old Age, Weak Immune system

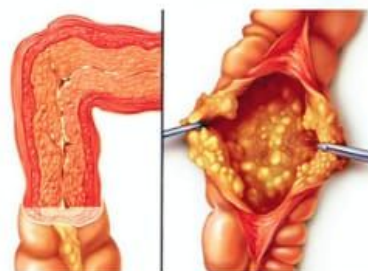
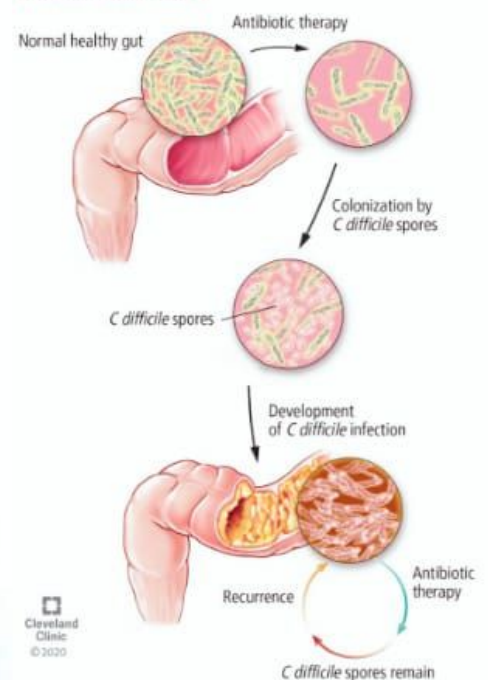
• SYMPTOMS:

Diarrhoea, Fever, Stomach pain, Loss of appetite, Nausea

• TREATMENT:

Use of Antibiotics like Vancomycin, Fidaxomicin and Surgery to remove diseased portion

C. difficile infection



K.Sharanya
111120487022
BTMC III Year

Pseudomonas aeruginosa

Formerly known as **Pseudomonas aeruginosa**.

Pseudomonas aeruginosa is a common encapsulated, gram-negative, aerobic- facultatively anaerobic , rod shaped bacterium.

Pseudomonas aeruginosa which can cause infections in the blood, lungs, others parts of the body after surgery.

Risk Factors:

- Have a wound from surgery
- Use breathing machine, catheter or other medical devices.
- Have diabetes or cystic fibrosis.

Symptoms:

- Ears: pain and discharge.
- Skin: rash, pimples filled with pus.
- Eyes: Pain, redness, swelling.
- Wounds: green pus or discharge that may have fruity smell.



Treatment:

Infections are generally treated with antibiotics. An aminoglycoside with a beta-lactam penicillin is usually considered to be the first line treatment.

K.Divya
111120487023

Campylobacter

Formerly known as campylobacter



Campylobacter species are gram negative Bacteria morphology varying from spiral to rod or curved in shape depending on the species

Campylobacter 1 of 14 global causes of diarrhoeal disease

. Campylobacter Risk factors

Most cases of campylobacter infection occur after someone eats raw or undercooked poultry or another food that has been contaminated by raw or undercooked poultry .

. Campylobacter symptoms

People with campylobacter infection usually have diarrhea fever and stomach cramps . Nausea and vomiting may accompany the diarrhea . These symptoms usually start 2 to 5 days after person ingests campylobacter and last about one week

. Campylobacter Treatment

Most people recover from campylobacter infection without antibiotics treatment . patients should drink extra fluid as long as diarrhea lasts .



Streptococcus pneumoniae

INFECTION

Streptococcus pneumoniae is part of the normal upper respiratory tract flora. As with many natural flora, it can become pathogenic under the right conditions, typically when the immune system of the host is suppressed. Invasins, such as pneumolysin, an antiphagocytic capsule, various adhesins, and immunogenic cell wall components are all major virulence factors. After *S. pneumoniae* colonizes the air sacs of the lungs, the body responds by stimulating the inflammatory response, causing plasma, blood, and white blood cells to fill the alveoli. This condition is called pneumonia

RISK FACTORS

- Alcoholism.
- Cerebrospinal fluid leak.
- Chronic heart, lung, liver, or renal disease.
- Cigarette smoking.
- Cochlear implant.
- Decreased immune function from disease or drugs.
- Diabetes.
- Functional or anatomic asplenia, including sickle cell diseases

Streptococcus pneumoniae, or pneumococcus, is a Gram-positive, spherical bacteria, alpha-hemolytic (under aerobic conditions) or beta-hemolytic (under anaerobic conditions), aerotolerant anaerobic member of the genus Streptococcus.[1] They are usually found in pairs (diplococci) and do not form spores and are non motile.[2] As a significant human pathogenic bacterium *S. pneumoniae* was recognized as a major cause of pneumonia in the late 19th century, and is the subject of many humoral immunity studies

DISEASES AND SYMPTOMS

Pneumonia is the most common of the *S. pneumoniae* diseases which include symptoms such as fever and chills, cough, rapid breathing, difficulty breathing, and chest pain. For the elderly, they may include confusion, low alertness, and the former listed symptoms to a lesser degree.[citation needed] Pneumococcal meningitis is an infection of the tissue covering the brain and spinal cord. Symptoms include stiff neck, fever, headache, confusion, and photophobia.[citation needed] Sepsis is caused by overwhelming response to an infection and leads to tissue damage, organ failure, and even death. The symptoms include confusion, shortness of breath, elevated heart rate, pain or discomfort, over-perspiration, fever, shivering, or feeling cold.

DIAGNOSIS

The recent advances in next-generation sequencing and comparative genomics have enabled the development of robust and reliable molecular methods for the detection and identification of *S. pneumoniae*. For instance, the Xisco gene was recently described as a biomarker for PCR-based detection of *S. pneumoniae* and differentiation from closely related species.[33]

Atromentin and leucomelone possess antibacterial activity, inhibiting the enzyme enoyl-acyl carrier protein reductase, (essential for the biosynthesis of fatty acids) in *S. pneumoniae*.[

TREATMENT

Penicillin (or amoxicillin because of more reliable absorption after oral administration and a much longer half-life) remains the drug of choice for treating susceptible pneumococcal infection.

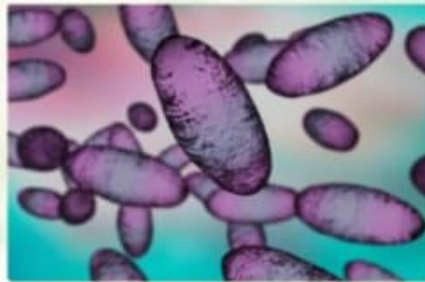
BUBONIC PLAGUE

> INFECTION :

Bubonic plague is one of the three types of plague bacterium known as *Yersinia pestis*.

One to seven days after exposure to the bacteria flu like symptoms develop. The three types of plague are the results of the route of infection: bubonic plague, septicemic plague and pneumonic plague. Bubonic plague is mainly spread by infected fleas from small animals.

It may also result from exposure to the body fluid from a dead plague-infected animal.



> SYMPTOMS:

Symptoms appears 2-7 after getting bitten and they include :

- * Chills
- * General ill feeling(malaise)
- * Muscle cramps
- * Seizures
- * Pain may occur in the area before the swelling appears.
- * Gangrene of the extremities such as toes, fingers lips, and tip of the nose.

> DIAGNOSIS:

Laboratory testing is required in order to diagnose and confirm plague. Ideally confirmation is through the identification of *Yersinia pestis* culture from a patient sample. Confirmation of infection can be done by examining serum taken during the early and late stages of infection. To quickly screen for the *Y. pestis* antigen in patients, rapid dipstick tests have been developed for field uses

> TREATMENT:

Several classes of antibiotics are effective in treating bubonic plague. These include aminoglycosides such as streptomycin and the fluoroquinolone ciprofloxacin.

Leptospirosis

-Also called : Weil's disease.

INFECTION :-

A bacterial disease spread through the urine of infected animals.

Humans can get leptospirosis through direct contact with urine from infected animals or through water ,soil or food contaminated with their urine.It's most common in warm climates



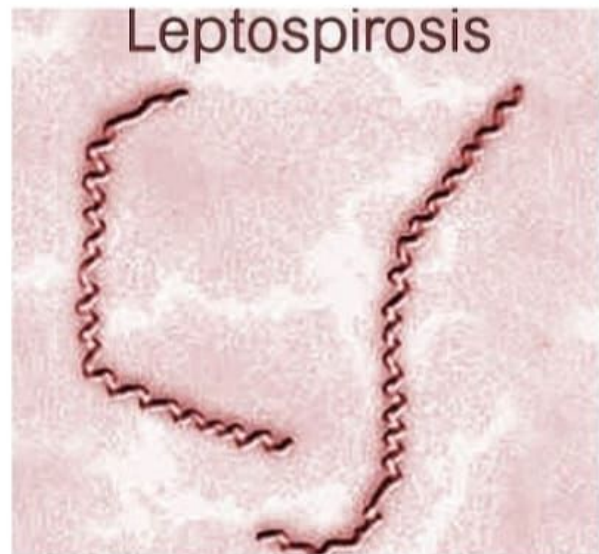
Fig-1: Leptospirosis

Symptoms :-

- Some infected persons however may have no symptoms at all.
- Without treatment leptospirosis can lead to kidney damage, meningitis, liver failure, respiratory distress & even death

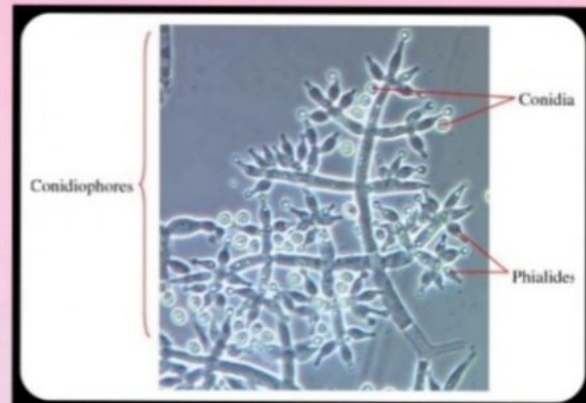
Diagnosis:-

The most common way to diagnose leptospirosis is through serological tests either the Microscopic Agglutination Test (MAT) which detects serovar-specific antibodies ,or a solid-phase assay for the detection of immunoglobulin M (Igm) antibodies.



TRICHODERMA

- TRICHODERMA is a genus of fungi in the family HYPOCREACEAE that is present in all soils.
- They are the most prevalent Culturable fungi.
- Many species in this genus can be characterized as opportunistic avirulent plant symbionts.
- They are frequently isolated from forest or agricultural soil and from wood.
- Some also have been found growing on other fungi.



APPLICATIONS:-



- Trichoderma are used as successful plant growth enhancers, biofertilizers
- Used as effective biocontrol agents against various pathogens.
- They reduces the occurrence of plant diseases.
- They synthesis the antifungal metabolites.
- They produce lytic enzymes that degrade cell walls of fungal plant pathogen.
- Recent works have shown that common plant disease such as root rot disease, damping off, wilt, fruit rot can be controlled by Trichoderma spp.



K. Charishma
Ht no:- 111120487028



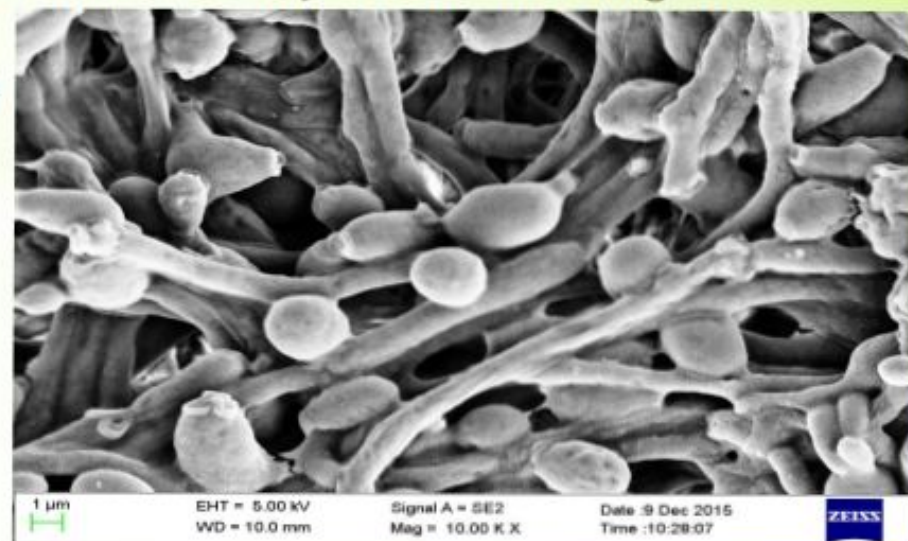
Candida albicans



- Candida albicans is an opportunistic pathogenic yeast that is a common member of the human gut flora
- Candida albicans belongs to saccharmycetaceae
- Candida albicans is a small, oval, unicellular, encapsulated, diploid, true hyphae fungus
- C.albicans lives as a harmless commensal in the gastrointestinal and genitourinary tract
- Candida is a polymorphic or pleomorphic organism it has a ability to take on a range of morphologies
- C.albicans causes candidiasis or candida infection
- The main cause for candida infection is over usage of antibiotics
- In candidiasis overgrowth of the yeast in mouth and appears to be white and lumpy patches
- Virulence factor of candida is formation biofilms
- Candida albicans forms green colour colonies

Application :-

- C.albicans has been used in combination with carbon nanotubes to produce stable electrically conductive bio-nano-composite tissue materials that have been used as temperature-sensing element



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HAY BACILLUS:

1. Hay bacillus is a bacteria which is present in the soil.
2. It is also called as Bacillus Subtilis or grass bacteria.
3. Usually found in soil, gastrointestinal tract of ruminants, humans and marine sponges.



APPLICATIONS:

1. Hay bacillus is an ideal multifunctional probiotic with great potential for preventing the growth of pathogenic bacteria.
3. Hay Bacillus is also commonly used in the production of vitamins, inositol, hyaluronan and other chemicals.
 - Vitamins such as :B1, B2, B5, B6, B7
 - Inositol- Bacillus Subtilis is responsible for myoinositol catabolism involving multiple and step wise reaction
 - Hyaluronan-The HasA gene from streptococcus equisimilis which encodes the enzyme hyaluronan synthase has been expressed in Hay Bacillus resulting in the production of hyaluronic acid(HA)



NAME: PAVANI

ROLL. NO:111120487030



AZOSPIRILLUM

MURIKI SRAVYA
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AZOSPIRILLUM

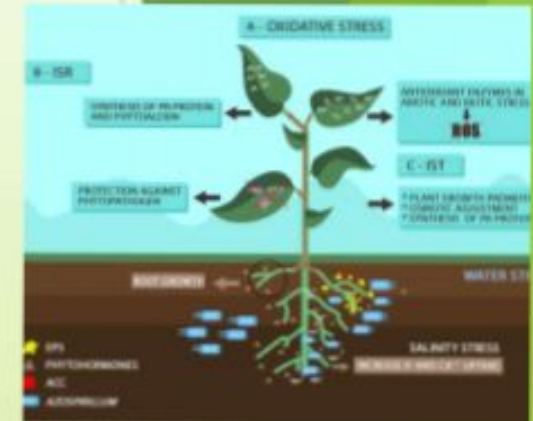
- It is a Gram-negative, microaerophilic, non-fermentative and nitrogen-fixing bacterial genus from the family of Rhodospirillaceae.
- Azospirillum is a Plant Growth-promoting bacteria (PGPB).
- The genus Azospirillum belongs to Alpha-Proteobacteria class of bacteria.
- Azospirillum are facultative anaerobes, do not form spores and have a slightly-twisted oblong-rod shape. These are primarily found in fresh water, soil and terrestrial habitats, they colonize roots and promote plant growth.
- Azospirillum displays high degree of pleomorphism with cellular and colony variations.

IMPORTANCE

- They involve in mechanisms such as nitrogen fixation and phytohormone secretion.
- They increase abiotic and biotic stress tolerance capacity thereby assisting in plant growth.
- Azospirillum affect the growth and yield of numerous plant species, many of agronomic and ecological importance.
- Azospirillum also makes antioxidants that protect the plant roots from stresses due to drought and flooding.
- Plant growth can also be promoted indirectly by Azospirillum reducing plant disease and help resist attack by pathogens.

APPLICATIONS

- Plant treatment with Azospirillum increases the number of lateral roots and root hairs length, which maximizes the surface area available for nutrient absorption, resulting in a greater capacity for nutrient uptake and improved water status.





FOOD MICROBIOLOGY

BACTERIA

4 food bacteria found in food
 Lactobacillus - curd
 Bifidobacteria adolaescentis-
 dairy yogurt.
 Streptococcus thermophilous -
 idli batter
 Saccharomyces boulardii



YEAST

Fermentation process
 Yeast is mainly used in baking
 industries.



MOLDS

MOLDS are microscopic fungi that live
 on plant or animal matter. They play
 an important role in the environment
 by breaking down and digesting
 organic material.



*Microbes such as bacteria, molds,
 and yeasts are employed for the
 food production.*

Bacteria

Molds

Yeast

Mushrooms 🍄

Bacteria containing food.

1. Sauerkraut
2. Kefir
3. Kimchi
4. Yogurt.

Molds

*Mostly used in ripening of
 many oriental foods.
 Botrytis cinerea- grape
 for production of wine.*

Yeast

*fermentation includes alcohol
 productions.
 removing anti-nutritional factors
 developing bioactive peptides and
 vitamins.*

List of useful microorganisms used in
 preparation of food and beverages.

1. Acetobacter aceti - bacterium - chocolate
2. Acetobacter cerevisiae- bacterium- beer
3. Acetobacter fabarum- bacterium- coffee
4. Acetobacter lovaniensis- bacterium-
 vegetable pickles.
5. Arthrobacter bergerei - bacterium- cheese
6. Aspergillus oryzae- fungus- soy sauce.

Nanabala

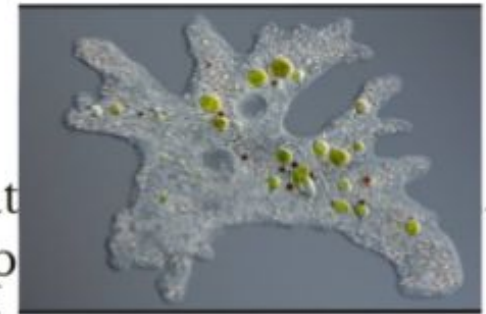
Charishma

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B.Sc 3 yr BtMC

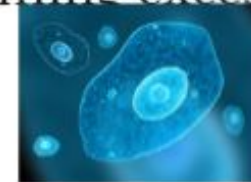


AMOEBÆA



AMOEBÆA

- It is a unicellular organism, it is a taxonomic classification
- These are the simplest and most voracious of all soil protozoa, dominant in numbers, including a variety of species.
- Like other soil protozoa, these microscopic organisms promote Soil decomposition by enhancing bacterial metabolism, Consuming excess bacteria and excreting simple compounds utilized by plants.



IMPORTANCE

- Amoeba is important because it helps recycle nutrients in soil.
- By feeding on bacteria they move the nutrients that were within the bacterial cells into its own cells and the surrounding environment.
- In any ecosystem's food chain, the amoeba is regarded as a key consumer.

APPLICATIONS

- Amoeba have complicated relationships with bacteria covering the whole spectrum of symbiosis.
- They are essential components of aquatic and terrestrial ecosystems. They play a vital role in the dynamics of microbial communities, nutrient cycling and energy flow.



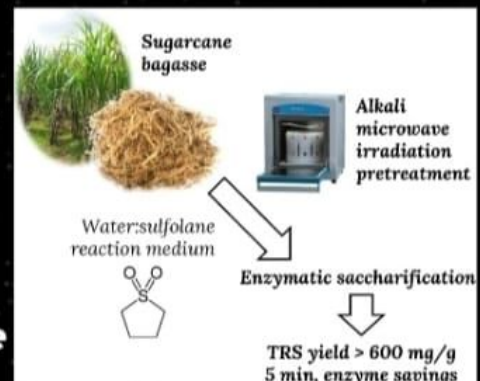
Streptococcus dysgalactiae :



- **Streptococcus dysgalactiae subsp. Equisimilis (SDSE) is a gram positive, beta hemolytic, coccal bacterium belonging to the family Streptococcaceae and belongs to the group c and group G Streptococci.**
 - **Streptococcus dysgalactiae subspecies equisimilis bacteraemia in an HIV-1 patient with HBV/HCV co- infections**
- **Streptococcus dysgalactiae subsp. equisimilis bacteraemia: an emerging infection.**

Applications -

Optimization of metal ions in sugarcane Bagasse Fermenting medium for the production of Streptokinase by Streptococcus equisimilis

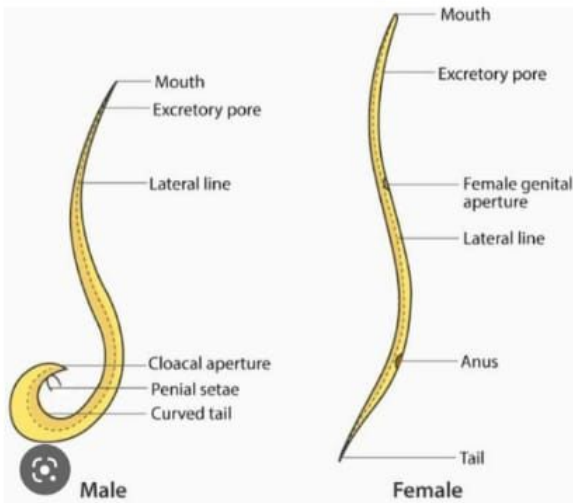


Streptokinase is used to dissolve blood clots that have formed in the blood vessels. It is used immediately after symptoms of heart attack occur to improve patient survival

Streptokinase can be useful in management and treatment of acute ST-segment myocardial infarction deep vein thrombosis, pulmonary embolism, arterial thrombosis or embolism and arteriovenous cannula occlusion



Ascaris lumbricoides



IT'S A LARGEST NEMATODE IN HUMAN.

Females are up to 30cm long and males are smaller. Their eggs may appear in feces. Fertilized, unfertilized and decorticated. The larvae migrate from the intestine to the lung and back to the intestine, where they mature.



Treatment:-

- ✓ Albendazole
- ✓ Mebendazole
- ✓ Ivermectin



Tablets at Rs 100 per box of 10 tablets...

Symptoms: Migrating larvae cause pneumonitis and sometimes allergic reaction. Heavy infection can impair nutrition, diarrhea, and sometimes malnutrition.

Padigam Usha
111-20-487-035



EXTREMOPHILES

P. Manisha

1111-20-487-036

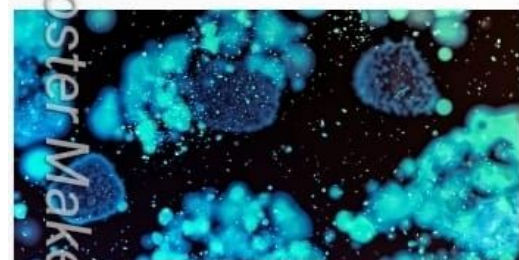
→An extremophile (from Latin extremus meaning "extreme" and Greek philia meaning "love") is an organism that thrives in physically or geochemically extreme conditions.

→Extremophilic microorganisms have the ability to survive under seemingly extreme environments such as extreme pH, temperature, pressure, oxygen levels, radiation etc.

1. Radioresistant - Ex: *Deinococcus radiodurans*

→Organisms resistant to high levels of ionizing radiation, most commonly ultraviolet radiation.

This category also includes organisms capable of resisting nuclear radiation



→It has been listed as the world's toughest known bacterium in The Guinness Book Of World Records.

2. Capnophile - Ex: *Mannheimia succiniciproducens*

→An organism with optimal growth conditions in high concentrations of CO₂.



3. Metallophile - Ex: *Cupriavidus metallidurans*

→Capable of tolerating high levels of dissolved heavy metals in solution, such as copper, cadmium, lead, zinc.



4. Piezophile - Ex: *Shewanella*, *Colwellia*

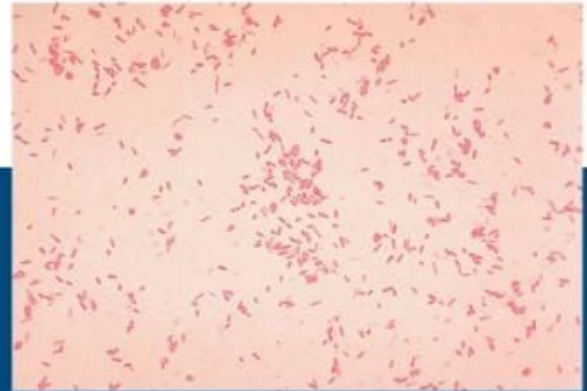
→An organism with optimal growth in hydrostatic pressures above 10 MPa. Also referred to as barophile.





AEROMONAS HYDROPHILA

- Aeromonas hydrophila is a gram - negative rod - shaped bacterium mainly found in areas with a warm climate. (This bacterium can also be found in fresh or brackish water.)
- Aeromonas hydrophila was seen in humans and animals



Treatment in fishes

- Terramycin®
- Remet-30®

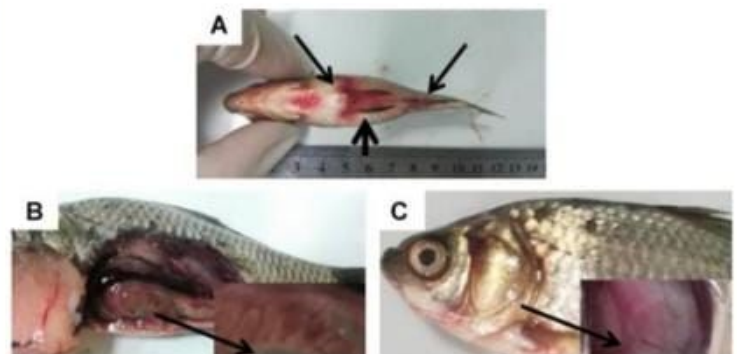


Treatment in fishes

Antibiotics such as chloramphenicol, florfenicol tetracycline, sulfamide, nitrofurantoin derivatives and pyridinecarboxylic acid are used to eliminate and control the infection of aeromonas hydrophila.

Symptoms

can cause wide range of localized, wound and systemic illnesses.





AZOSPIRILLUM

- Azospirillum is a gram-negative and Non-fermentative bacterial genus from the family Rhodospirillaceae
 - It mainly found in large numbers in tropical soils, tundra and semi desert sites of CANADIAN HIGH ARCTIC
- It is N-fixing microbe also called as B. Polymyxa
- It is discovered and reported by Dr. JOHANNA DOBEREINER in Brazil in the 1970s



» APPLICATIONS

- * It activates the soil biology and stimulates the plant growth
- * It is used as key to achieve crop yield potential and improve product quality and economic return for farmers
- * It increases growth and yield of common bean
- * Azospirillum is used for seedling root dip particularly for rice
- * Plant treatment with Azospirillum increases the number of lateral roots and root

hairs length

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TREPONEMA PALLIDUM

Treponema Pallidum:

Treponema pallidum, formerly known as *Spirochaeta pallida*, is a spirochaete bacterium with various subspecies that cause the diseases syphilis, bejel (also known as endemic syphilis), and yaws.

- It is a helically coiled microorganism usually 6–15 μm long and 0.1–0.2 μm wide.
- *T. pallidum*'s lack of either a tricarboxylic acid cycle or oxidative phosphorylation results in minimal metabolic activity.
- The treponemes have a cytoplasmic and an outer membrane. Using light microscopy, treponemes are visible only by using dark field illumination.



Domain	: Bacteria
Phylum	: Spirochaetota
Class	: Spirochaetia
Order	: Spirochaetales
Family	: Treponemataceae
Genus	: Treponema
Species	: <i>T. pallidum</i>

Subspecies:

Treponema pallidum consists of three subspecies. There are

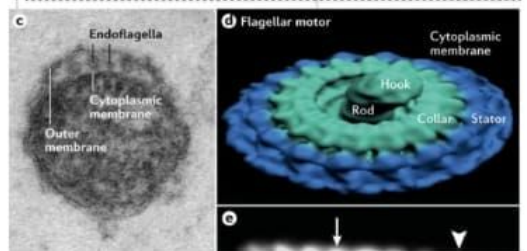
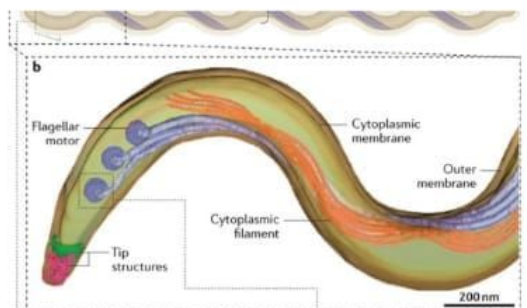
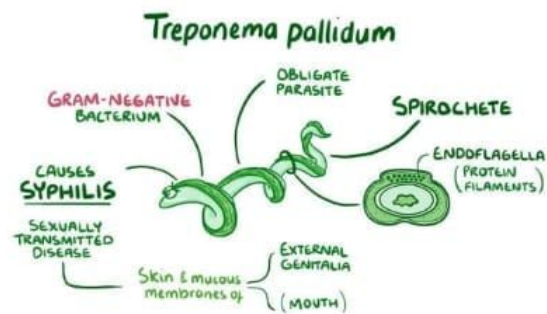
1. *Treponema pallidum pallidum*, which causes syphilis.
 2. *T. p. endemicum*, which causes bejel or endemic syphilis.
 3. *T. p. pertenuis*, which causes yaws.
- The three subspecies causing yaws, bejel, and syphilis are morphologically and serologically indistinguishable.
 - These bacteria were originally classified as members of separate species, but DNA hybridization analysis indicates they are members of the same species.
 - *Treponema carateum*, the cause of pinta, remains a separate species because no isolate is available for DNA analysis.
 - Disease transmittance in subspecies *T. p. endemicum* and *T. p. pertenuis* is considered non-venereal.
 - *T. p. pallidum* is the most invasive pathogenic subspecies while *T. p. carateum* is the least invasive of the subspecies.
 - *T. p. endemicum* and *T. p. pertenuis* are intermediately invasive.

Syphilis:

Syphilis is a sexually transmitted infection caused by the bacterium *Treponema pallidum* subspecies *pallidum*.

Symptoms of Syphilis:

Some people also experience hair loss, muscle aches, a fever, a sore throat and swollen lymph nodes. These signs and symptoms may disappear within a few weeks or repeatedly come and go for as long as a year.



Microbial Facts

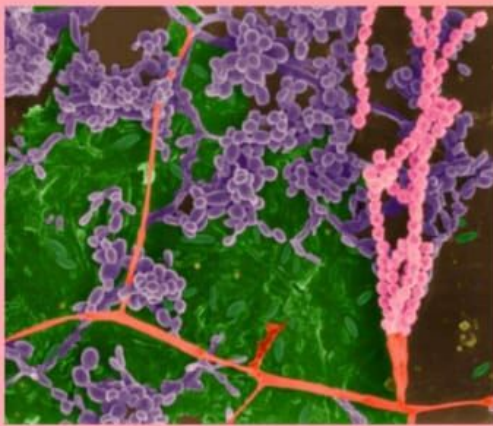
Botulism



- > Botulism is a paralytic disease caused by potent protein neurotoxins elaborated by *Clostridium botulinum*.
- > A rare poisoning caused by toxins produced by *Clostridium botulinum* bacteria
- > *Clostridium botulinum* is a bacterium that produces dangerous toxins (botulinum toxins) under low-oxygen conditions

causes

Clostridium botulinum
Clostridium baratii
Clostridium butyricum
Clostridium argentinense



Symptoms

- > *Eyes: dilated pupil, drooping of upper eyelid, or weak eye muscles*
- > *Gastrointestinal: constipation, nausea, or vomiting*

Treatment

Immediate administration of botulinum antitoxin
heptavalent
aminoglycosides

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Btmc

