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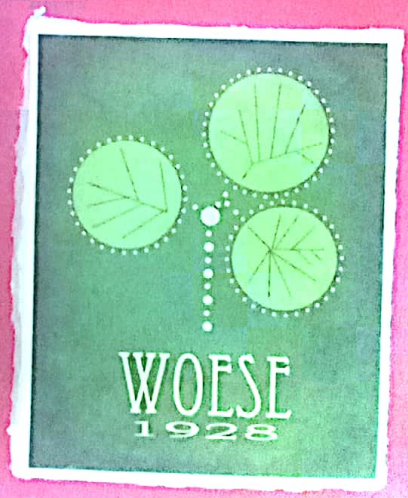

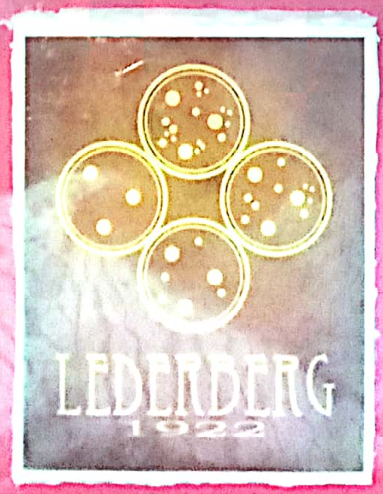

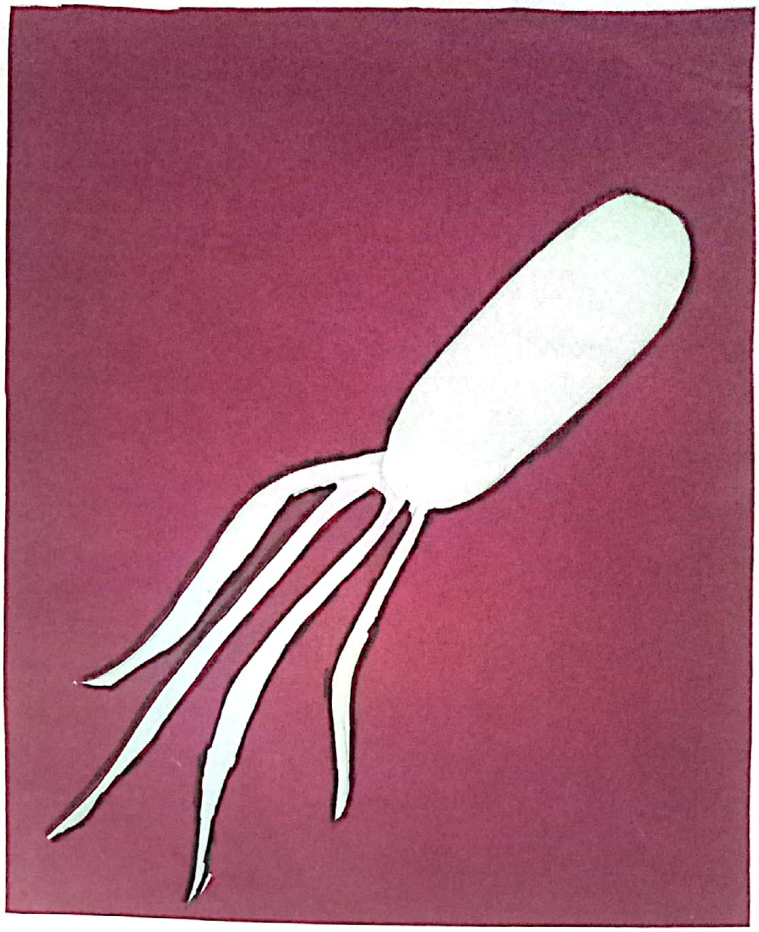

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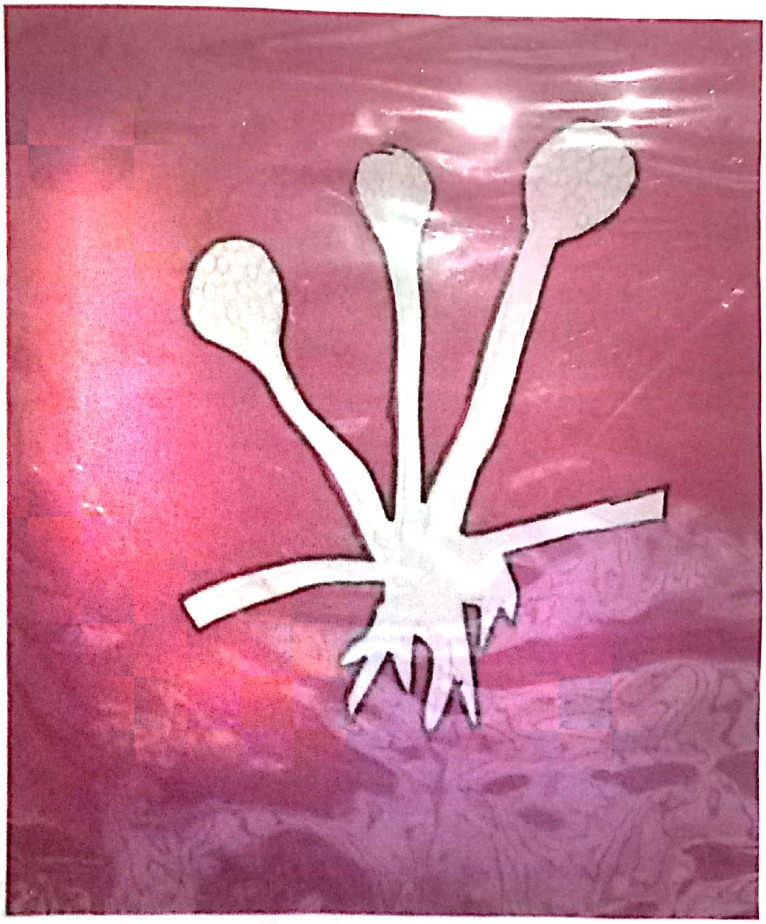

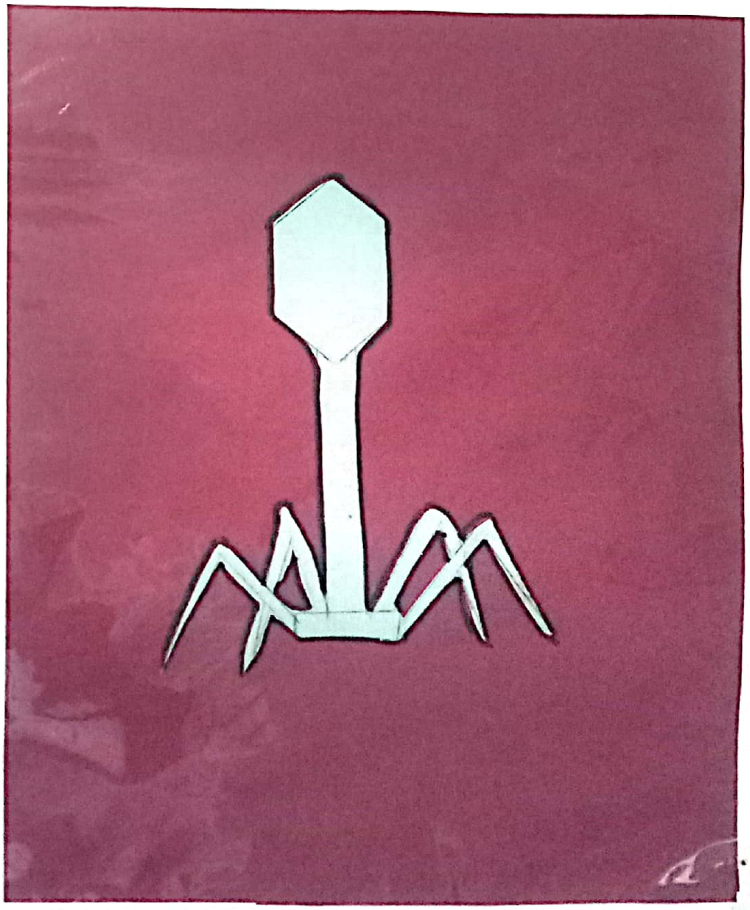

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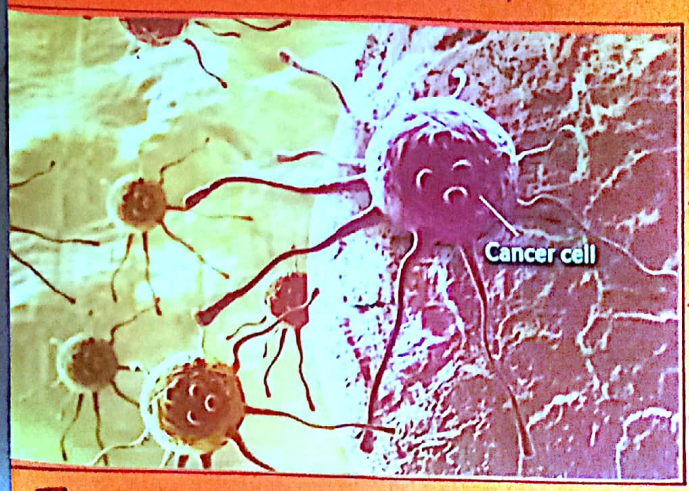
Scientists find what causes spread of Cancer & new way to stop it.



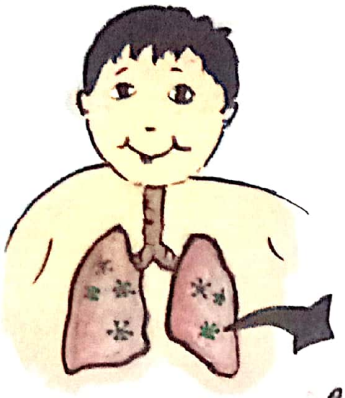
Johns Hopkins University has, for the first time, found what causes the spread of cancer. The 90% of Cancer deaths are caused when cancer cells break off from the origin & start spreading elsewhere in the body. There are no existing drugs for stopping this spread, known as metastasis of cancer.

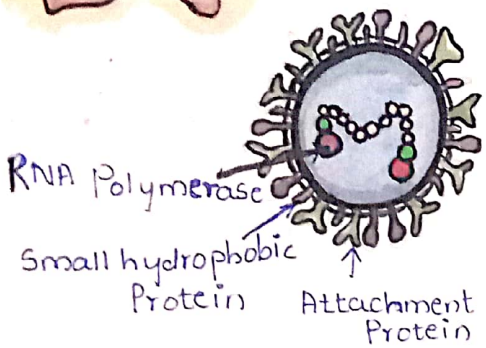
The researchers found that when cancer cells get denesly packed they secret two proteins that deliver a stark message to other cells: go away. This causes the cancer cells to break off from the pack & float through the blood stream or lymphatic system to other sites and start growing afresh. Jayatilaka & her colleagues found a medication mix that kept this microscopic message from being delivered. The team members cautioned that this treatment was tested in animal models, but not yet on human cancer patients.

"The pharmaceutical companies view metastasis as a by-product of tumor growth", said Wirtz. "Our study looked more closely at the steps that actually initiate metastasis. This treatment has the potencial to inhibit metastasis & thus improve cancer patient outcomes". The team found that two existing drugs - Tocilizumab & Reparaxin - prevented cancer cells from getting their marching orders. Tocilizumab is an approved medication for rheumatoid arthritis & in trails for use in ovarian cancer cases. Reparaxin is being evaluted as a possible treatment for breast cancer. "In our eight-week experiment, when we used these two together, the growth of the primary tumor itself was not stopped, but the spred of the cancer cells was significantly decreased," Jayatilaka said. "We discovered a new signaling pathway that, when blocked, could potentially curb cancer's ability to metastasize."

Source: Times of India
Dated May 31st 2017.

Respiratory Syncytial Virus





Highest Risk Population :-

Young children specially babies younger than 1 year. People with weakened immune systems.

Symptoms :-

Begin 3 to 7 days after exposure

- Fever
- Runny nose or nasal congestion
- Chest congestion
- wheezing
- Difficulty in breathing
- cough

Treatment :-

There is no specific treatment for RSV infections. Symptoms usually improve within one to two weeks. Antibiotics are not helpful for RSV infections. Infants are given an antibody; one antiviral drug, ribavirin has been approved.

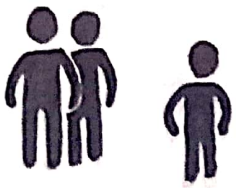
Prevention :-

Cover coughs and sneezes

Wash hands frequently

Do not share cups or utensils

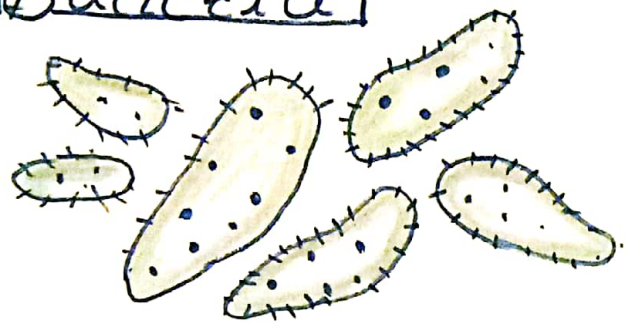
Avoid contact with people who have a cold



MICROBES & DISEASE

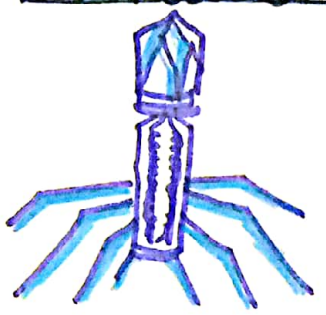
Types of Microbes

Bacteria



- Bacteria play a very important role as decomposers.
- Are classed as living things.
- Bacteria are smaller micro-organisms.

Viruses



- Virus is small infectious agent.
- Virus is a biological agent that reproduces inside the cells of living hosts.

Microbes Can Cause Disease

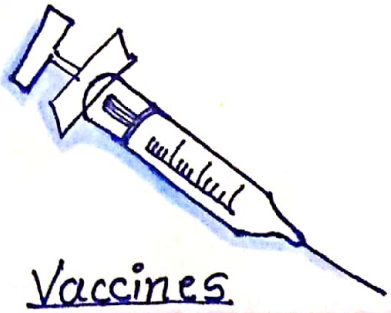
Many microbes do not cause us harm but some can cause illness and disease.

BACTERIA
- Food Poisoning
- Tuberculosis (TB)
- Sore Throat
- Whooping Cough

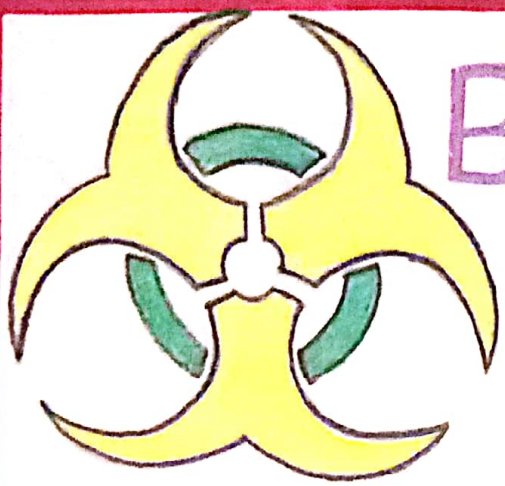
VIRUSES
- Influenza (Flu)
- chickenpox
- Measles
- AIDS

Fighting Disease

Antibiotics



Vaccines

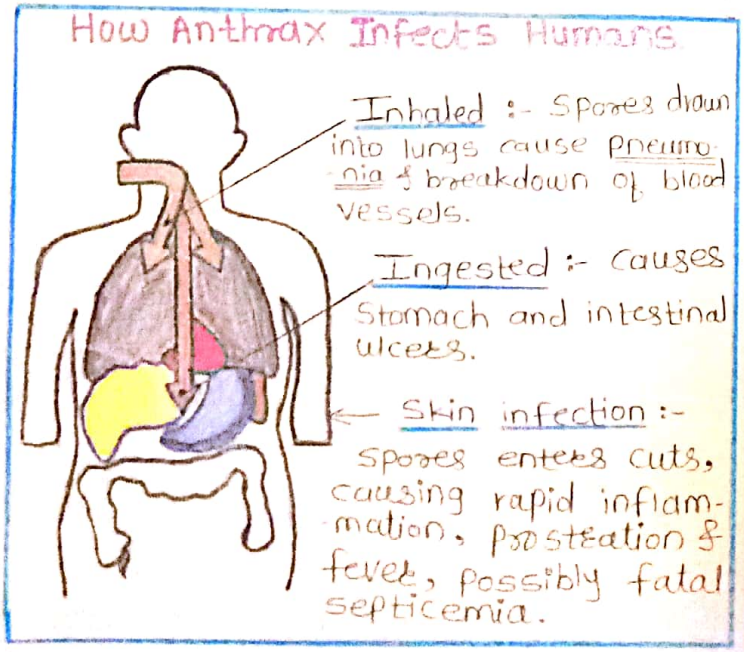


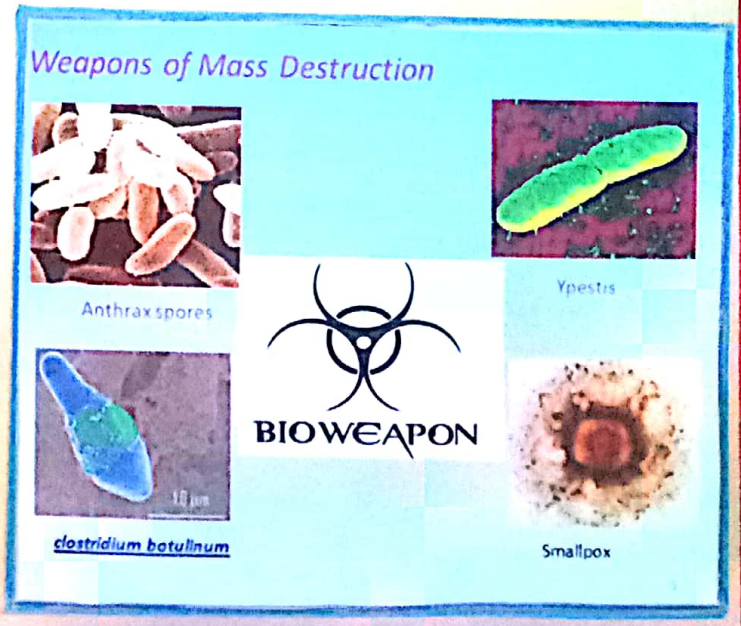
BIOTERRORISM

Bioterrorism is terrorism involving the intentional release or dissemination of biological agents. These agents are bacteria, viruses, or toxins, and may be in a naturally occuring or a human-modified form. For the use of this method in warfare, a biological weapon is useful to terrorists. Biological agents can be spread into the air, food and water. Terrorists tend to use biological agents.

Bioterrorism is an attractive weapon because biological agents are relatively easy and inexpensive to obtain, can be easily disseminated, and can cause widespread fear and panic beyond the actual physical damage.

Anthrax is an infection that caused by the bacteria Bacillus anthracis. And other biological agents are Vibrio cholerae, Yersinia pestis, Brucella suis etc.

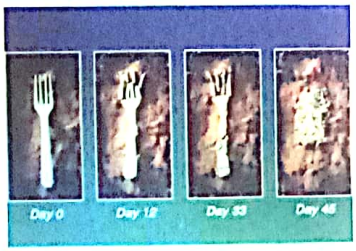




PLASTIC EATING FUNGI

Aspergillus tubingensis

Microscopic examination of A. tubingensis



Degradastion of PHB By Microorganisms

Asianscientists have recently identified a fungs A. tubingensis which helps in degradation of plastic within weeks. Plastic Polymers take many years to decompose as due to their **xenobiotic** nature

A. tubingensis is a fungus which lives in soil. In laboratory trials, the researchers found that it also grows on the Surface of Plastic. It secretes enzymes which breaks the chemical bond between Plastic molecules. This fungus also uses the Physical Strength of its **mycelia** the network of root like filament grown by fungi to help break apart the Polymer.

This could pave the way for large scale use of the fungus in waste treatment Plants or soils already are contaminated by Plastic waste. The discovery of the A. tubingensis appetite for Plastic joins the growing field of '**mycoremediation**' which investigates the use of fungi in removing or degrading waste products including Plastic or Polymer, oil and heavy metals.

THE WORLD'S ART IS UNDERATTACK BY-MICROBES

Organism Name :- Bacteria, fungi, Algae

Bacteria and fungi are a menace to paintings sculptures and ancient artifacts. Microorganisms are big problem for cultural heritage

These tiny invaders have wrough catastrophic damage on historic sites like the Lascaux cave paintings in france and the titanic - the imfamous ship is being devoured by a tenacious species of metal hungry bacteria.

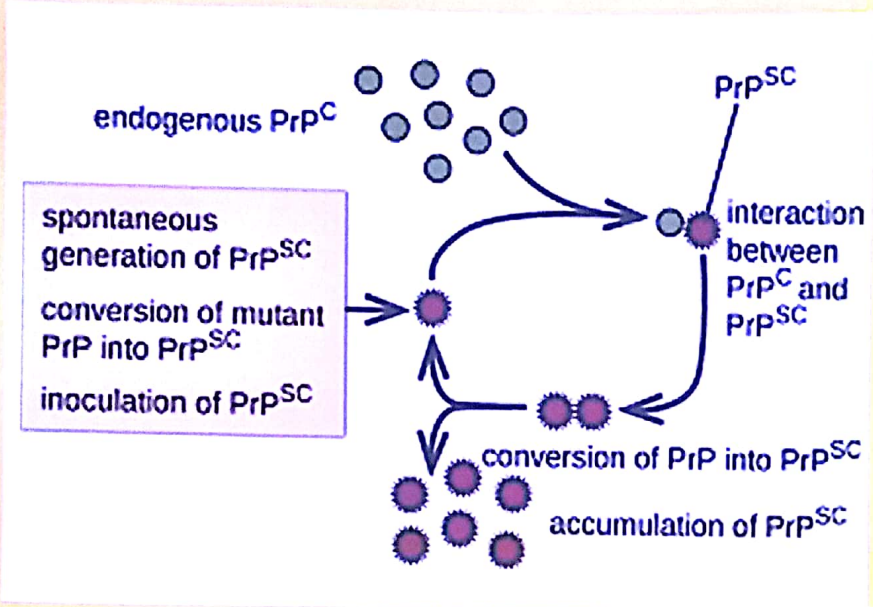
The bacteria are colonizing on artifact, purge them, and make sure they can not return. Some artifact like lether wood, parchment or textiles are made with organic materials the microbes like to feast on. The microbial infestations by storing artifacts in Conditions that don't encourage spore to settle and germinate. These means keeping things cool and dry. Artifacts can also be placed in a chamber filled with gases like argon. The lack of oxygen will defect most lingering microbes.

When bacteria swarming over are is considered a good thing. These bacteria and fungi can be used to break down graffiti on heritage monuments. Bacteria can also help remove black pollution-filled coatings from marble sculptures.

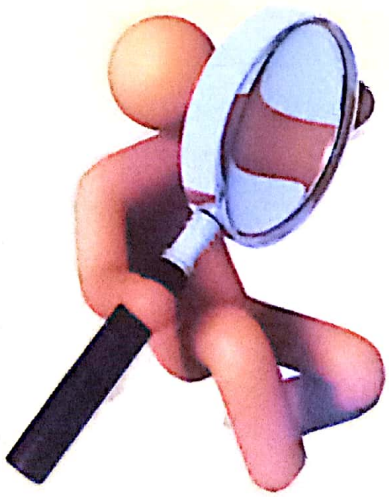
These microbes secrete compounds that alter the chemical makeup of the crusts making them easier to remove. The bacteria as their unorthodox but colourful medium of choice. That is all a matter of perspective.

How the protein causes infection.

The infectious agent different from both viruses and viroids can cause disease in animal and humans. This agents is called prions. The prions are composed of a protein material that can fold in multiple structure abstract. That differs from viruses & viroids. The prion is compsed of protein having mol. weight of 27,000 to 30,000 dalton & no nucleic acid for this infectious agent could be isolated. Prion protein leading to disease in manner that is Epidemiologically comparable to spread of viral infection.



Absence of nucleic acid.



The absence of N.A. is lead to a number of questions :-

i] What is the nature of genome?

ii] Do the violate the basic rule & regulation of central doma?

iii] How can a protein enters a host cell and directs the replication?

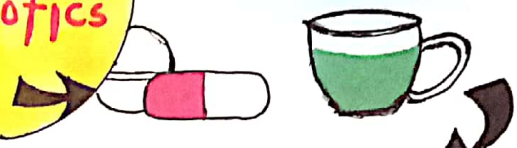
Recently Microbiologi st Discovered

Green Tea

Act as an Antioxidant On UTI

BEAT A URINARY TRACT Infection

Without Antibiotics



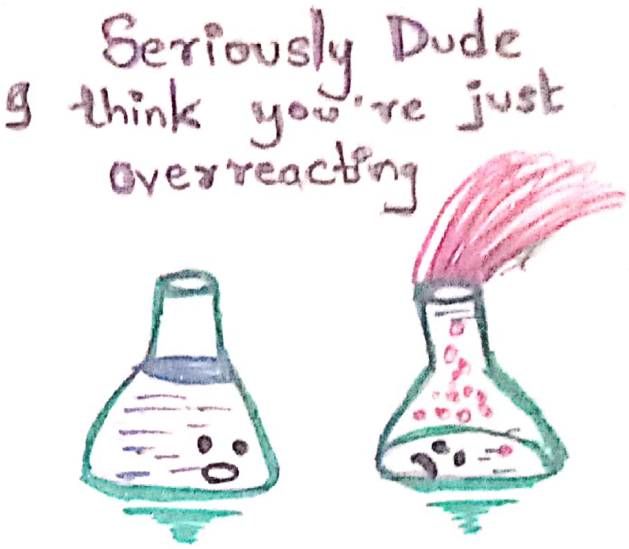
Reasons to drink Green tea :—

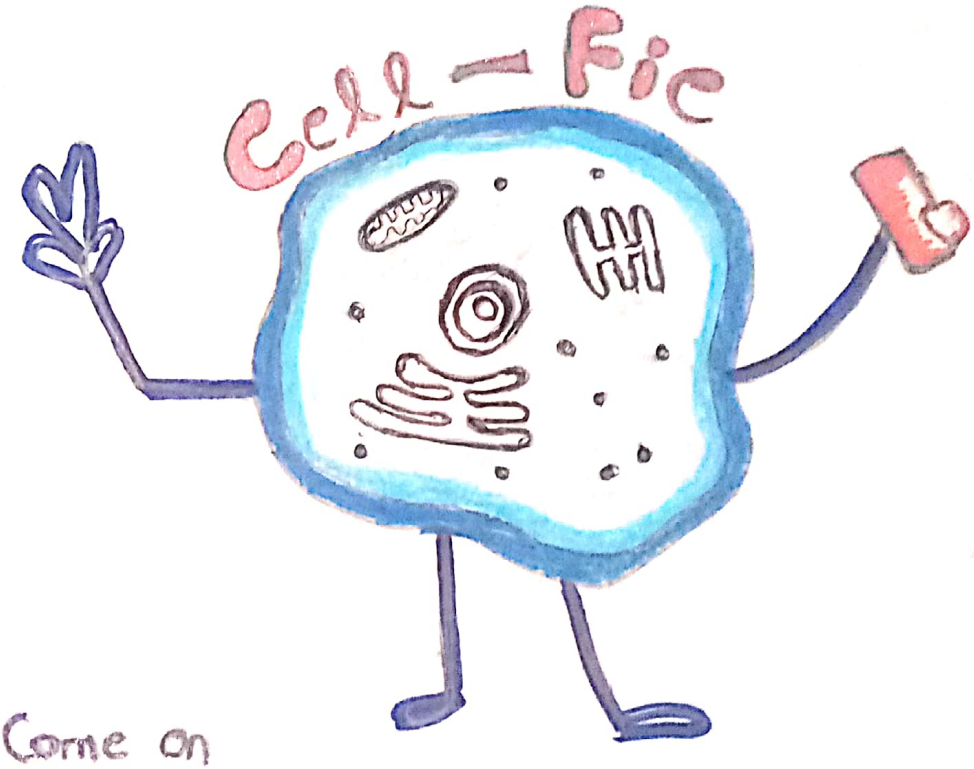
- Maintains a healthy circulatory system.
- Fights Cancer
- Give Healthy Skin
- Protects against Heart Diseases
- Full of antioxidants
- Lowers cholesterol.
- Antiviral agent
- Prevents Diabetes.
- Prevents bad breath.

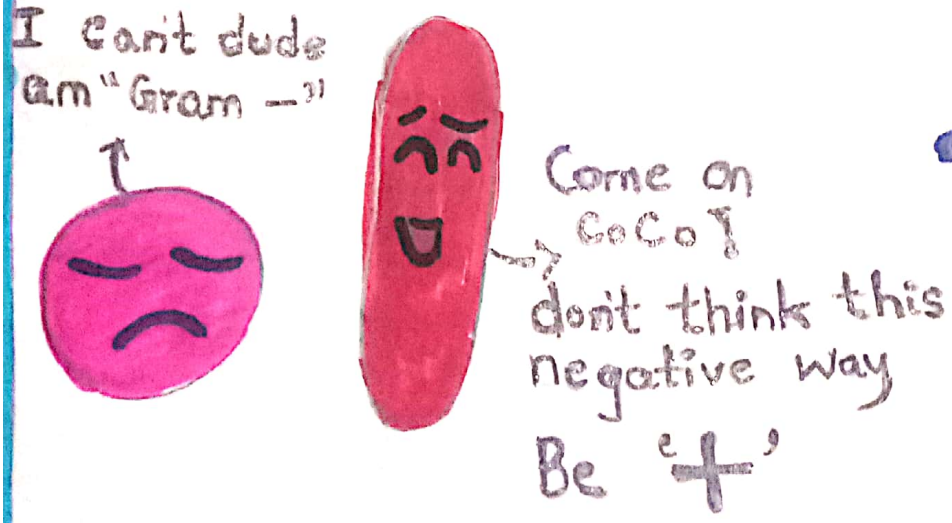
Major Components in Green tea & Their Role :—

- Catechins – Decreases blood cholesterol
- Caffeine – Hangover prevention.
- Theanine – Neuronal cell protection
- Vitamins – Maintenance of healthy skin & acts as an antioxidant
- Saponins – Anti-influenza agent
- Fluorine – Prevention of tooth decay.
- Minerals – Biological regulators.
- Chlorophyll – Deodorizing effect
- Aminobutyric acid (GABA) – Lowering of blood pressure.

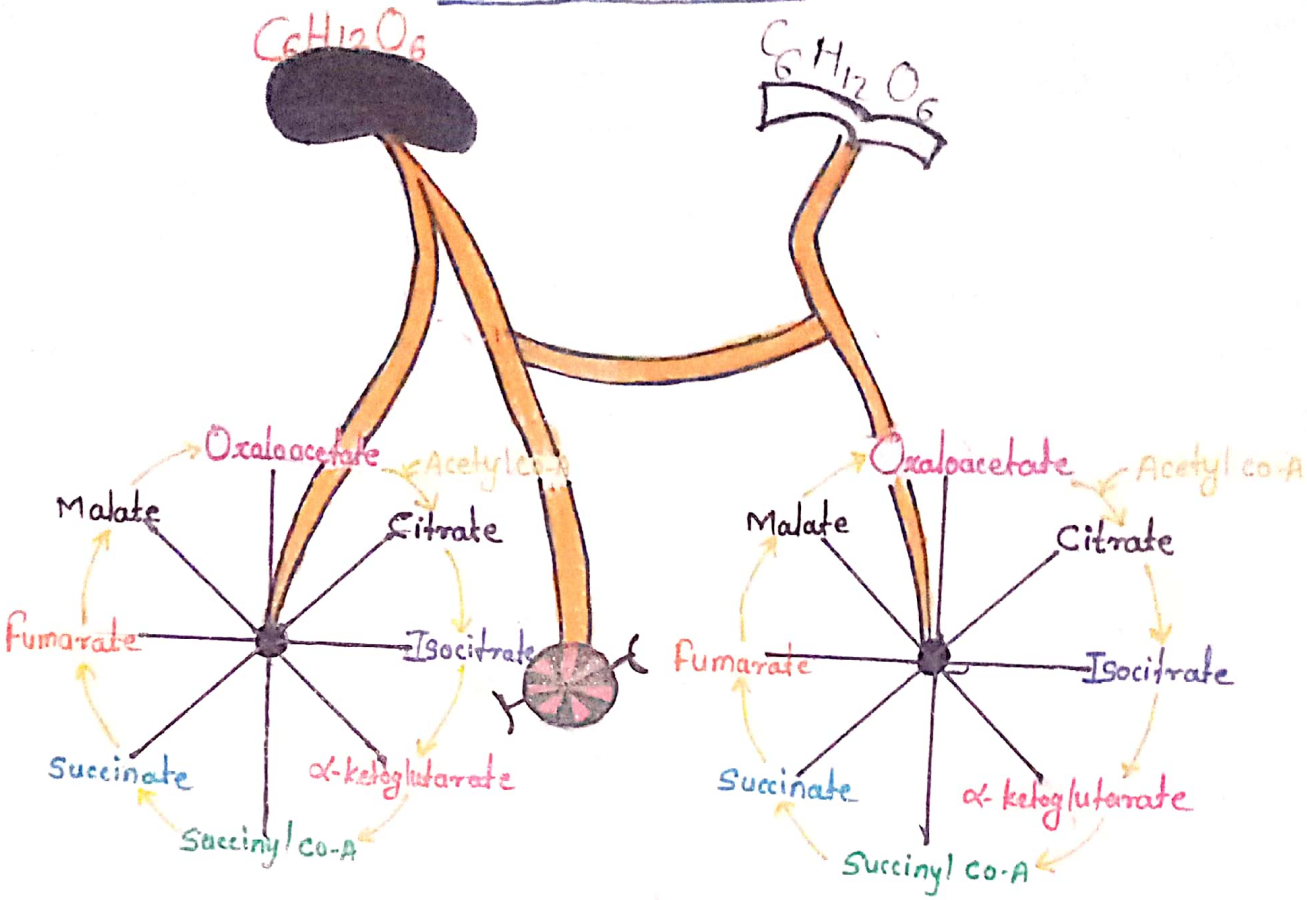
APOPTOSIS

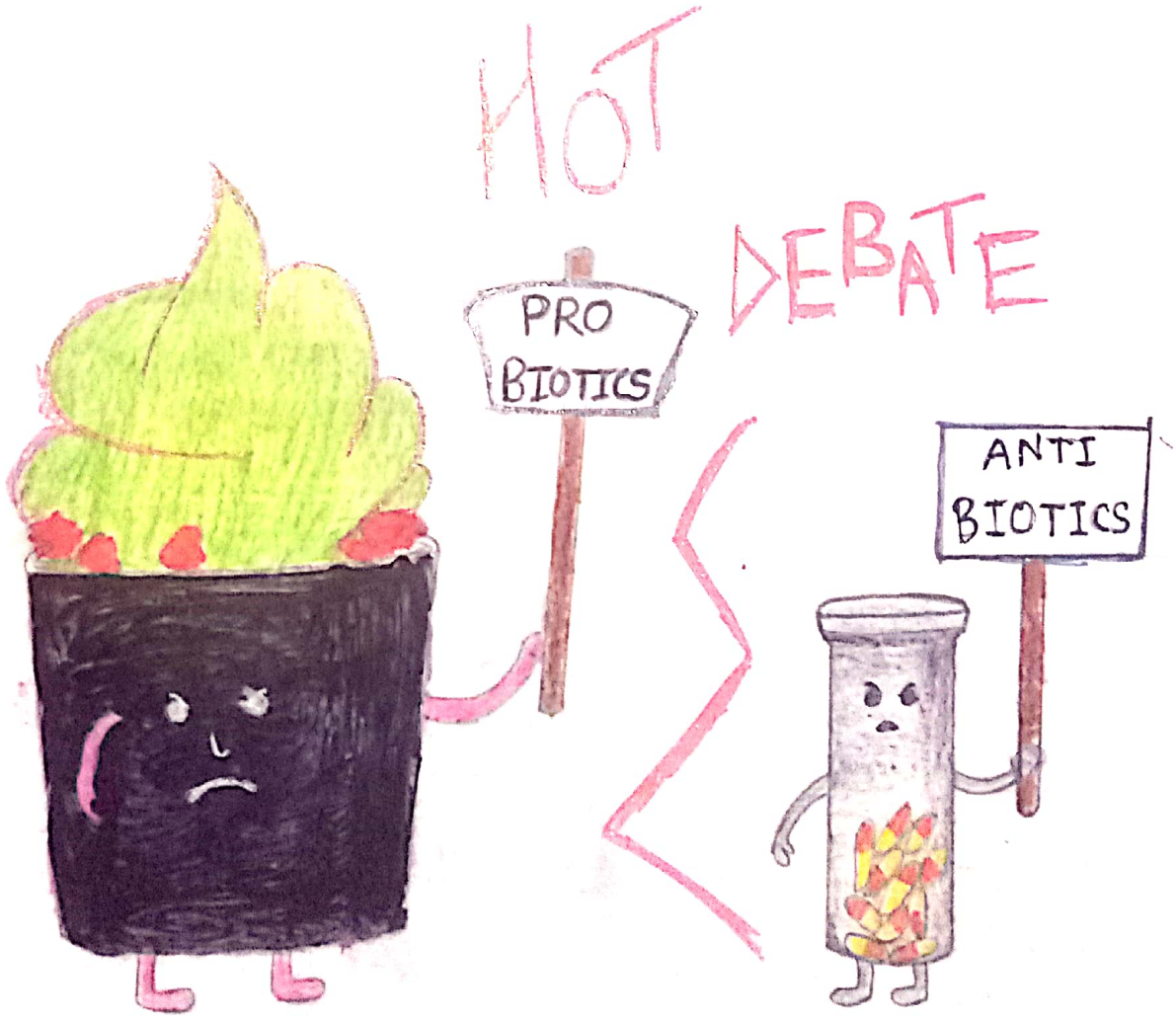






KREBCYCLE





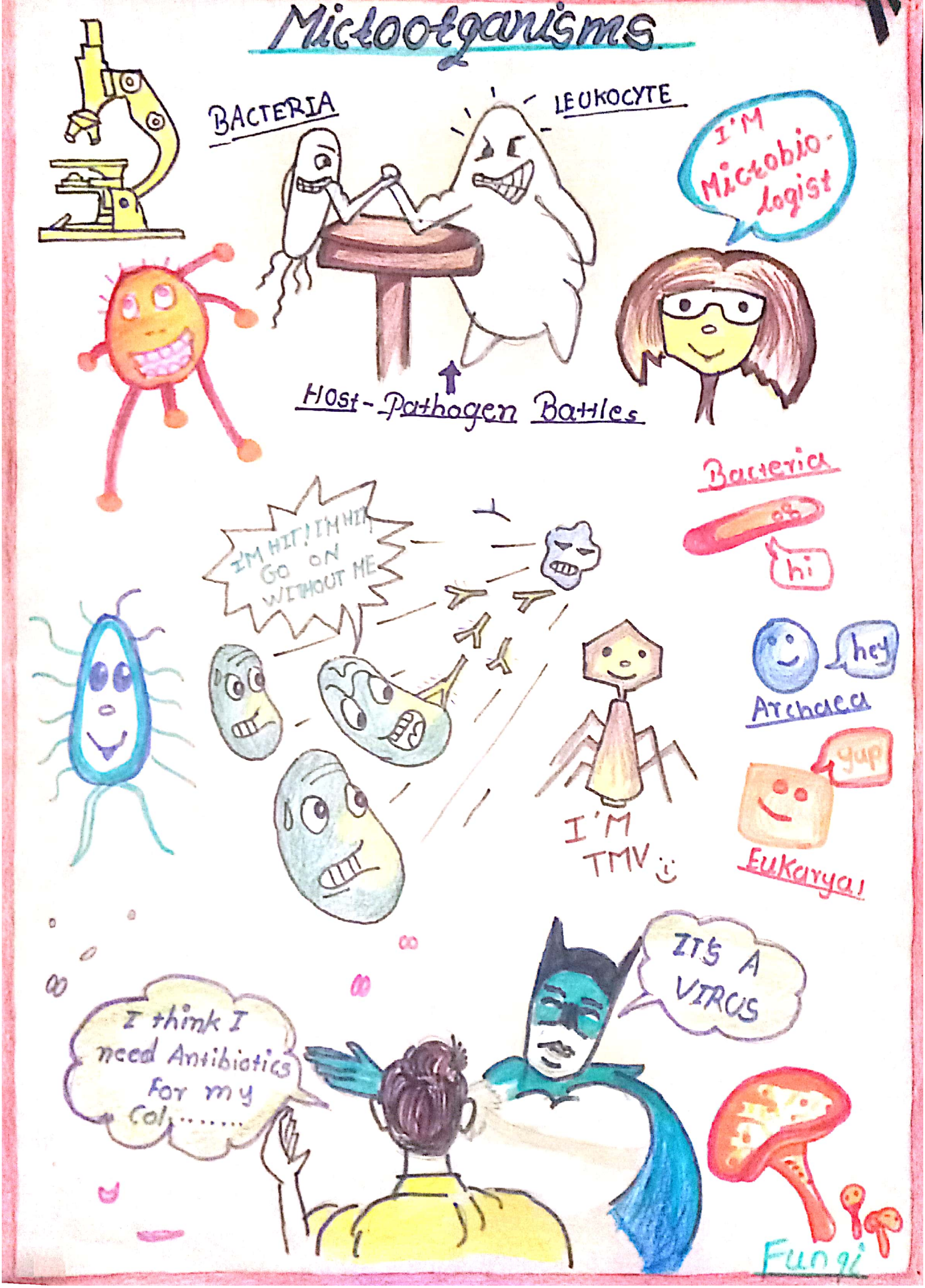
PUZZLE

S	S	K	C	M	B	C	R	E	R	M	R	S	A
U	I	L	L	C	A	T	S	S	O	I	C	L	F
L	F	E	I	P	A	R	A	S	I	T	E	E	G
L	L	B	N	O	I	T	A	L	O	S	I	P	B
I	O	S	S	A	I	R	E	S	S	I	E	N	E
C	R	I	Y	N	E	A	F	I	C	O	S	N	T
A	K	E	C	B	T	U	O	E	A	B	E	A	T
B	L	L	I	R	N	E	I	I	T	I	S	T	E
O	E	L	O	G	U	U	T	A	L	R	M	G	I
T	S	A	I	S	N	A	Y	E	A	S	T	T	M
C	O	R	Y	N	E	B	A	C	T	E	R	I	A
A	I	C	L	O	S	T	R	I	D	I	U	M	O
L	G	R	A	M	P	O	S	I	T	I	V	E	L
S	T	I	A	L	I	C	O	A	C	T	I	S	A

Find the following words :

1. Corynebacteria
2. Clostridium
3. Lactobacillus
4. Klebsiella
5. Neisseria
6. Gram Positive
7. Isolation
8. MRSA
9. Yeast
10. Fungi
11. Parasite.

Microorganisms



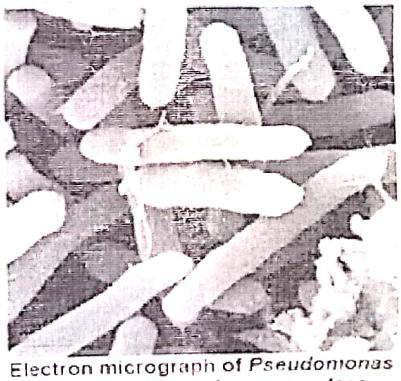
Microbial Ice Makers

Pseudomonas syringae uses a special cell wall protein as a mould for arranging water molecules into ice, even at temperature above water normal freezing point.

In lab P. syringe was able to crystalize water at 4°c; In nature they are able to freeze water at around -2°c.

People have tried to understand how (the bacteria) Control ice nucleation. They done therotical & computational.

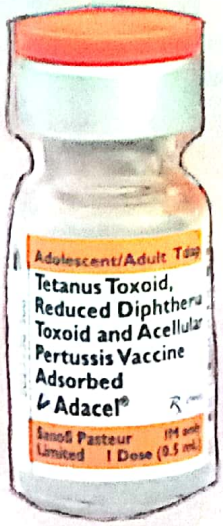
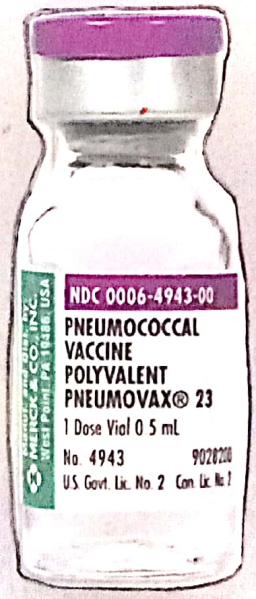
Understanding these ice making ability of P. syringae which on crops and other plants could help researchers protect these organisms from frost damage results formation of ice crystals inside the Plant tissue.



Electron micrograph of *Pseudomonas syringae*, which produces a surface protein that serves as nuclei around which ice crystals form at warmer temperatures than usual.

They are used in artificial snow making and involved climate processes.

VACCINE

Sr No	TYPES OF VACCINES	NAME OF VACCINES	DISEASES AND PATHOGEN	PHOTO
1]	Inactivated Vaccines	Polio Vaccine Dr. Albert Sabin [1961]	Poliomyelitis [Polio Virus]	
2]	Toxoid Vaccines	DTP Vaccine Dr. Emil Von Behring [1890]	Tetanus [Clostridium tetani]	
3]	Conjugate Vaccines	Pneumococcal Vaccine Dr. Oswald Avery's [1920]	Pneumonia [Streptococcus Pneumoniae]	

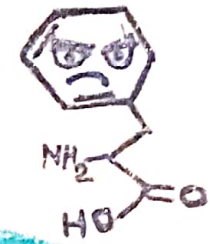
COMIC WORLD

party Karengey Kisi bacillus ko nai darenge !!

STREPTOCONGA

What do u call an acid with an Attitude?

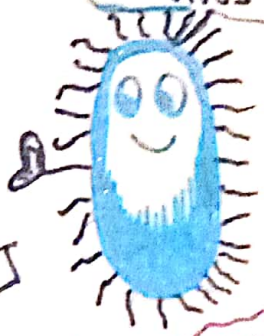
→ A-Mean-Oh acid



Cellular vs Acellular

microbes

Hey, Bacteria, may I plzz borrow ur Cell phone?



Sure thing. Virus

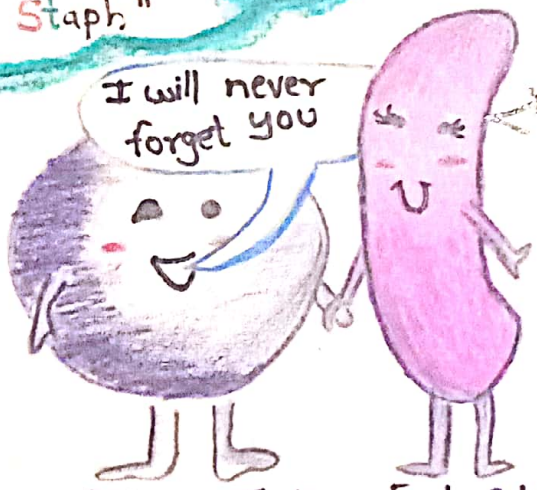
2 bacteria walk into a bar and the bartender says "Hey, we dont serve bacteria here you'll have to get out" The bacteria say "But we work here We're Staph."

Lets Swarm!

Weeee

U Smell funny

Proteus Mirabillis

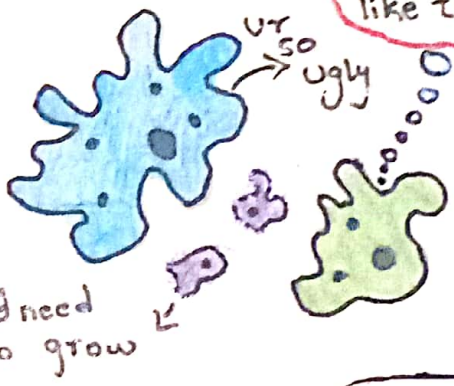


I will never forget you

So Sweet memo!

memory Tcell

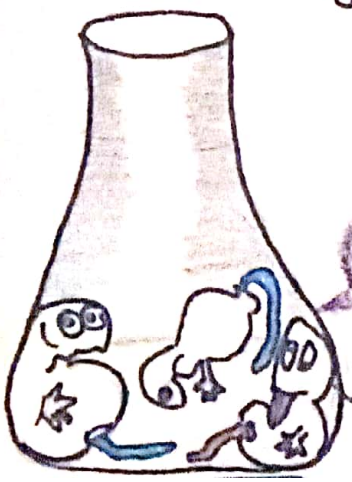
Escherichia Coli



Oh, I dunno, what would you like to evolve into?

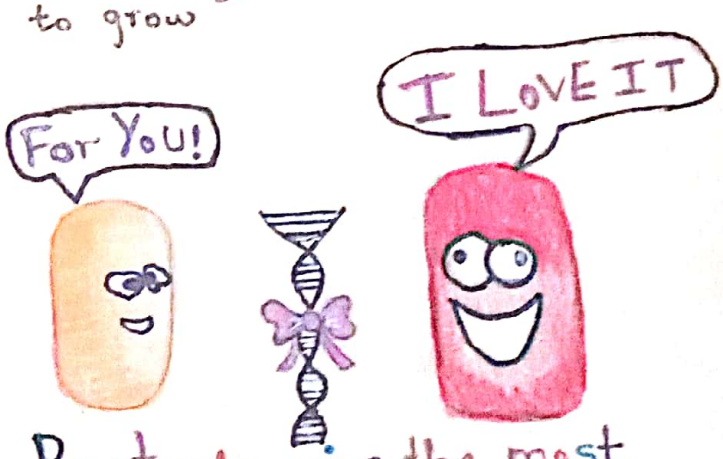
ur so ugly

I need to grow



SHAKER Effect

feeling Dizzy!!



For You!

I LOVE IT

Bacteria give the most thoughtful Gifts!!

YES its true Frog's Skin Secretion Kills H-1 Type Influenza Virus

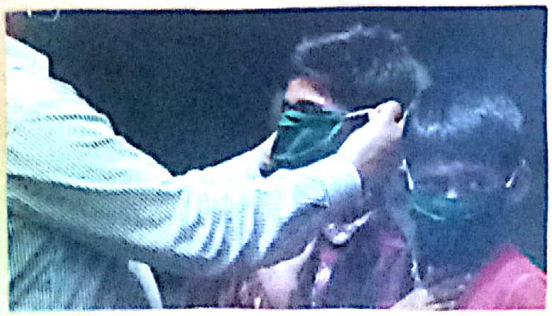
Frog | A Componant of the skin mucus secreted by South Indian Frogs kills the H-1 variety of Influenza virus. Reasearched from Emory vaccine center and "Rajiv Gandhi center" for biotechnology in India have discovered.

The frist author of the paper is graduate student 'David Holthaseh.

The skin mucus secretion of south Indian Frog's consist of antivirul peptides which is called "**Urumin**". The name was derived from "Urumin" which is the south Indian whipe like sword.

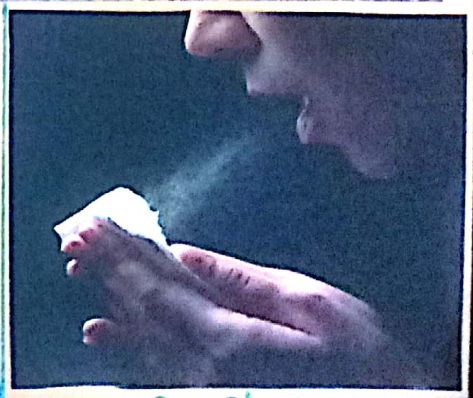
The Urumin is fristly found in skin secretion from south Indian Frog **Hydrophylax bhavistara.** which are collected after mild electrical stimulations. Some antivirul peptides from the Frogs were toxic but Urumin was not toxic. It only distrupt Intigrity of Flu virus. Urumin binds the stalk of hemaglutinin, a less veriable region of the Flu virus that is the target of praposed universal vaccines.

- Mucus secreting 'Frog'.-



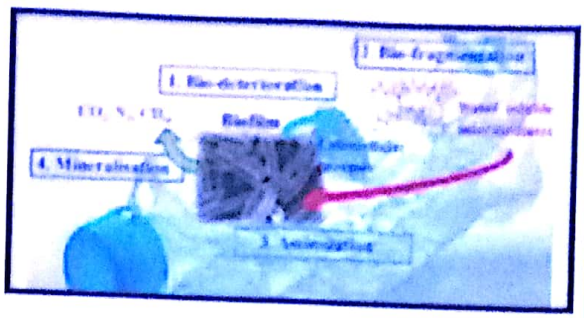
- Precaution-

- H-1 virus -



- Symptom -

PLASTIC EATING BACTERIA

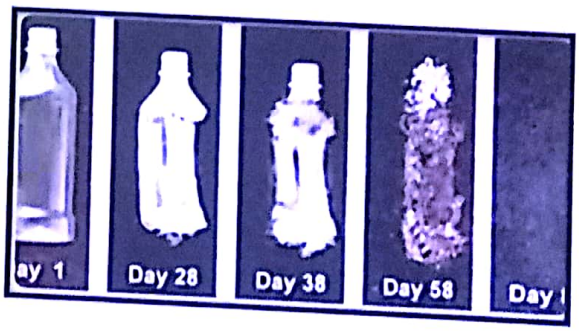


- Japanese researchers looked for microorganism that relied on PET film as a primary source of carbon for growth.
- They first identified a microbial consortium with a mixture of bacteria species that degraded the film surface at 30°c
- They researchers is Isolated a unique bacterium - Ideonella Sakaiensis 201-F6 - that eats the bacteria.

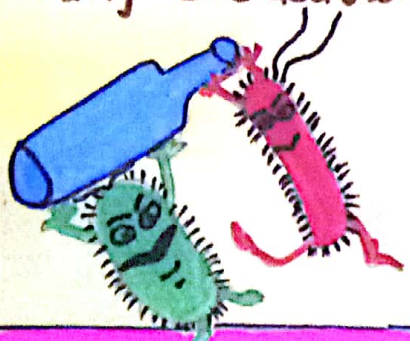
How it works:

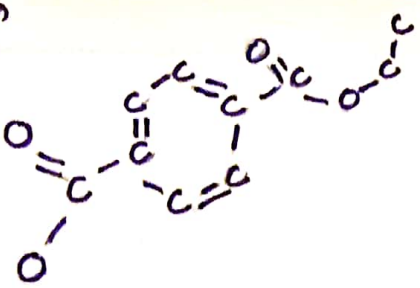
- First the bacterium adheres to PET & produces a substance through hydrolysis.
- The second enzyme works with water & acts on this. And finally it decomposes the plastic.

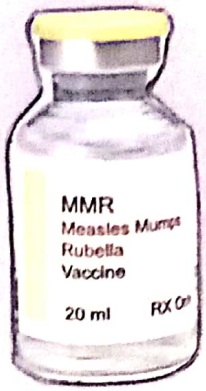
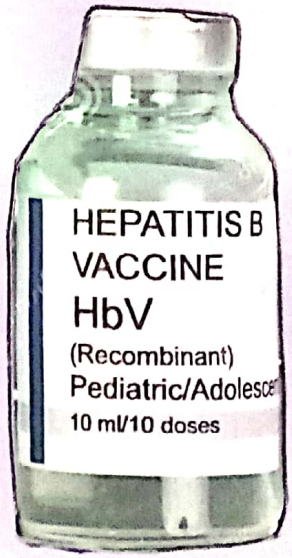
HOW DOES IT DEGRADAES PET?



- Ideonella sakaiensis 201-F6, a newly discovered bacterium that feed on PET.
- Bacteria that break down the plastic using two enzymes PETase & MHETase could breakdown both PET & another compound MHET mono (2-hydroxyethyl) terephthalic acid which forms during breakdown process.





Sr NO	TYPES OF VACCNES	NAME OF VACCINES	DISEASES AND PATHOGEN	PHOTO
1]	Recombinant Vector Vaccines	MMR Vaccine Dr. Maurice Hilleman [1998]	Measles Mumps Rubella [Rubeola virus]	
2]	Live Attenuated Vaccines	Influenza Vaccine Dr. Jonas Salk [1940]	Influenza Flu [Hemophilus influenza]	
3]	Subunit Vaccines DNA Vaccines	Hepatitis B Vaccines Dr. Baruch Blumberg [1965] Rotavirus Vaccines Dr. Wyeth [1998]	Hepatitis B [Hepatitis B Virus] Diarrhea [Rotavirus]	

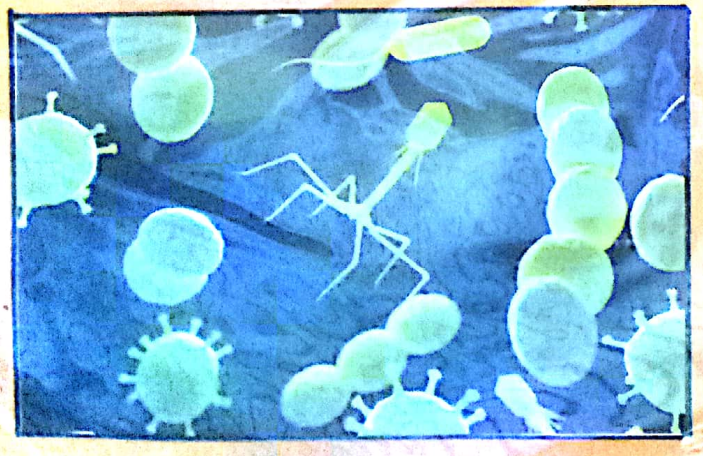
Highly Pathogenic H5N6 influenza A viruses recovered from wild birds

Since 2013, highly pathogenic H5N6 influenza A viruses (IAVs) have emerged in poultry in Asia, These viruses also caused sporadic infections in humans within the same geographic areas. These H5N6 IAV isolates posses the basic amino acid motif at the HA1-HA2 cleavage site i.e. associated with highly pathogenic IAVs infecting chickens

1) The HP H5N6 IAV isolates were recovered from three species of apparently healthy wild birds. 2) These isolates were apparently the first recoveries of HP H5N6 IAV For two of three species Natural history of HP H5N6 IAV infections in wild birds thereby demonstrating the value of active IAV surveillance in wild birds.

- Thank You

THANK YOU



Thank You