

RECORD OF INNOVATIVE / BEST PRACTICES

DEPARTMENT OF MICROBIOLOGY

ACTIVITY: QUESTION CORNER



**GOVERNMENT DEGREE COLLEGE,
GAJWEL, SIDDIPET DISTRICT,
TELANGANA STATE**

1. Title of the Practice: Question corner

Aim: To know about the general science doubts and awareness on the regularly observing surrounding problems and encouraging the students and teaching staff to reinforce Academic and Research pursuits.

2. Goal:

To inculcate the interest in science and research among the student community and encourage them think in novel way.

3. The Context:

The Department of Microbiology started this initiation to disseminate science culture and interest among the student community. It also has the motto of understanding the science in detail of our natural ecosystem developments and recent developments in the science to combat the society facing problems.

4. The practice:

Subject science is continuous observation and approach to human kind. To inculcate this objective Department of Microbiology taken an initiation to start a wall display entitled “**Question corner**” from the academic year 2018-19. Every Thursday question related to the general science placed on the notice board of the Microbiology Department. On Monday answer will be placed to question. The main objective of this initiation is know the reasons behind daily observing natural science phenomenon.

5. Evidence of success:

Majority of life science students visits the “**Question Corner**” wall display continuously on the notice board of the Microbiology department.

ఆడవాళ్లకు బట్టతల రాదేం? ,

Bald-head not seen in
women-Why?

పక్షు పాకే కొట్టదా? ,Birds will not be shocked?



Birds on Electric wires



Birds on Electric wires

ప్రశ్న: ఎందుకు పక్షులు తాకితే మనిషికి పాకే కొడుతుంది. కానీ పక్షులు కర్రంటు తీగపై కూర్చున్నా ఏమీ కాదు. ఎందుకు?

జవాబు: ఇక్కడ విద్యుత్ సరఫరా చేసే స్థంభాలకు పొడారణంగా నాలుగు తీగలు ఉంటాయి. అందులో మూడు తీగల్ని ఏజలు అని, ఒకదాన్ని న్యూట్రల్ అనీ అంటారు. ఒక ఏజ తీగకు, మరో ఏజ తీగకు మధ్య ఒక ఏజ తీగకు, న్యూట్రల్ తీగకు మధ్య విద్యుత్ పొటన్షియల్ ఉంటుంది. ఒక వ్యక్తిలోగానీ, పక్షువులో కానీ, ఐసువులోగానీ విద్యుత్ ప్రవహించాలంటే దానికి అటూ ఇటూ విద్యుత్ పొటన్షియల్ లేదా ఉండాలి. అంటే ఒక వ్యక్తికి పాకే కొట్టాలంటే వెకకాలంలో కనీసం రెండు తీగలతో అనుసంధానం ఉండాలి. అప్పుడు అదిక పొటన్షియల్ ఉన్న తీగలోకి, అల్ప పొటన్షియల్ ఉన్న తీగ నుంచి ఎలక్ట్రాన్లు ఆ వ్యక్తి ద్వారా ప్రయాణిస్తాయి. ఇలా ఎలక్ట్రాన్లు శరీరంలో ప్రవహిస్తే ప్రమాదం. మనుషులు కూడా కేవలం ఒక తీగను పట్టుకుని వేలాడితే ఏమీ కాదు. వేలను చెప్పుల్లకుండా తాకితేనే, లేదా రెండు ఫెర్లను వెకకాలంలో తగిలితేనే ప్రమాదం. పక్షుల విషయానికి వస్తే అవి ఒక సమయంలో రెండు తీగలపై చాలవు. కాబట్టి వాటి దేహం ద్వారా విద్యుత్ ప్రవహించదు. చొరపాటున అది అల్లొక కాలు, ఇల్లొక కాలు ఒకేపాతి పెడితే పాకుకీ గురవుతుంది. ఇలాంటి సంచుకునలు కూడా అదపొదడపా జరుగుతూ ఉంటాయి.

What is the advantage of sucking a cut finger?

వేలు తెగితే నోట్లో ఎందుకు పెట్టుకుంటారు. కారణాలు

ఏంటి?

Saliva which is secreted in the oral cavity contains many substances which have antibacterial and antiviral activity. These include immune globulins such as IgG, Ig A, Ig M which helps clump the bacteria. Saliva also contains lysozyme which kills the bacteria.

A protein lactoferrin found in the saliva also help in inhibiting multiplication of Bacteria by interfering with iron utilisation by the germs. The physical effect of sucking out the infecting material implanted during the cut also plays an important role. Forcibly bleeding the finger and flushing it with running water is equally effective in prevention of bacteria contamination.

లాలాజలంలో బాక్టీరియాలను నిరోధించే పదార్థాలు ఉంటాయి. లాలాజలంలో ప్రతిరక్షకాలు IgG, Ig A, Ig M బాక్టీరియాపై దాడిచేస్తాయి. అంతేకాకుండా లైసోజైము అనే ఎంజైము ఉండడం వల్ల బాక్టీరియాలు నిరోధింపబడతాయి. లక్టోఫెరిన్ అనే మూలకం ఐరన్ ను సంగ్రహణను నిరోధించి బాక్టీరియా పెరుగుదలను నియంత్రిస్తుంది.

Question corner display on notice board of Microbiology

RECORD OF INNOVATIVE / BEST PRACTICES

DEPARTMENT OF MICROBIOLOGY
ACTIVITY: SCIENCE FLASH CARDS



**GOVERNMENT DEGREE COLLEGE, GAJWEL,
SIDDIPET DISTRICT,
TELANGANA STATE**

1. Title of the Practice: Science Flash cards

Introduction:

Science flash cards are display of images which shows the interesting information related to the recent science and developments as well as trending matters. The science flash cards are like did you know concept. It is inspired from the CCMB open day Exhibition displays. It disseminates the new or novel information to the reader which drag their attention.

Aim: To know about the general science doubts and awareness on the regularly observing surrounding problems and encouraging the students and teaching staff to reinforce Academic and Research pursuits.

2. Goal:

To provide information of current and innovative subject matter present in the especially Life science field. In the present scenario, many breakthroughs are emerging in the research field which help the humans in variety of kinds. To present these innovations and research among the ultimate stake holders i.e students, the Microbiology department has planned to started the **Science flash cards**. This may attract or create interest towards the science and research among the student community and encourage them think in novel way.

3. The Context:

The Department of Microbiology started this initiation to acquire the interest on science. It also has the motto of understanding the science in detail of our natural ecosystem developments and recent developments in the science to combat the society facing problems.

4. The practice:

Subject science is continuous observation and approach to human kind. To inculcate this objective Department of Microbiology taken an initiation to start a “**Science flash Cards**”

from the academic year 2018-19. Every Wednesday “**Science Flash Cards**” placed on the notice board of the Microbiology Department. The main objective of this initiation is know the trends in science

5. Evidence of success:

The students of life science and others regularly visits the “**Science Flashcards**” which are displayed on notice board of the Microbiology department.

BIZZARE ICE-PLUS BACTERIA




- It is *Pseudomonas syringae*.
- It forms ice crystals from water
- Ice crystal proteins, INA creates ordered structures in the water & remove heat from the water
- Commercial trade name- **Snomax**

P. syringae

❑ Ice nucleation-active proteins found on the outer bacterial cell wall acts as the nucleating centers for ice crystals.

DEINOCOCCUS- STRANGE BACTERIA




Regulation:

protein protection	highly condensed nucleoid	DNA repair	Deinococcus-specific proteins
↓	↓	↓	↓
Radiation & oxidative stress resistance			


❖ *D. radiodurans* is an extremophilic bacterium, one of the most radiation-resistant organisms.

❖ Survives in cold, dehydration, vacuum, and acid. Hence known as **polyextremophile**.

FACTS OF DNA



DNA double helix
2.0 nanometers diameter

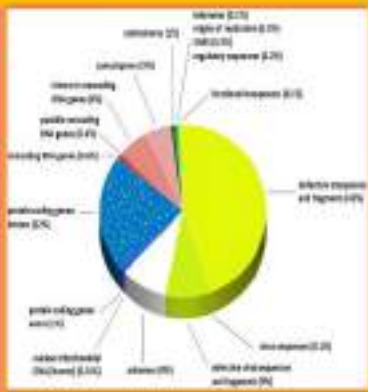


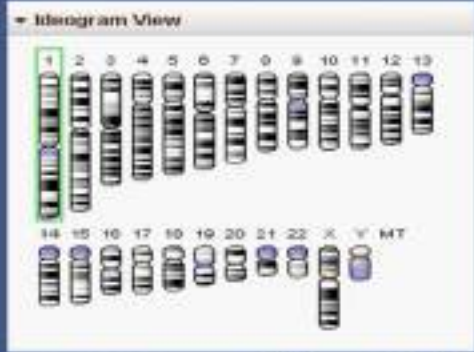
Human Hair

- ❑ You could fit 25,000 strands of DNA side by side in the width of a single adult hair.
- ❑ Average diameter of hair is 100 µm. DNA diameter is 2 nm

FACTS OF DNA

- ❖ Your DNA includes materials from at least 8 viruses.
- ❖ They help in important functions like cell division, regulation of immune system.





- ❑ The biggest molecule in nature resides in your body, it is chromosome 1
- ❑ Chromosome 1 contains 10 billion atoms and spans 8.5 cm

Giant squid has donut shaped brain that encircles the esophagus



13 METRES

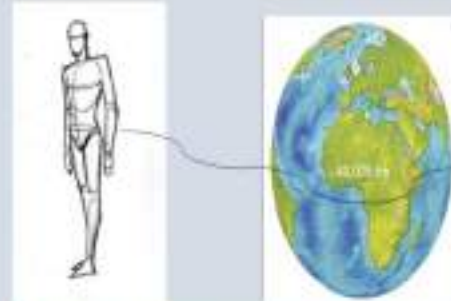
If it ingests anything too large, it risks brain injury

HONEY MUSHROOM FUNGUS



- Honey mushroom (*Armillaria mellea*) largest long-lived organism, > 2,400 yr old
- It covers > 8.8 km² in Oregon's Malheur National Forest
- Produces light via bioluminescence in mycelium results in fox fire.

The total DNA present in our body cells can stretch from the earth to sun hundreds of times



- ❖ Each cell has 2 metres (6 Feet) of DNA
- ❖ 37.2 trillion cells in human

DNA AS STORAGE DEVICE

STORAGE LIMITS

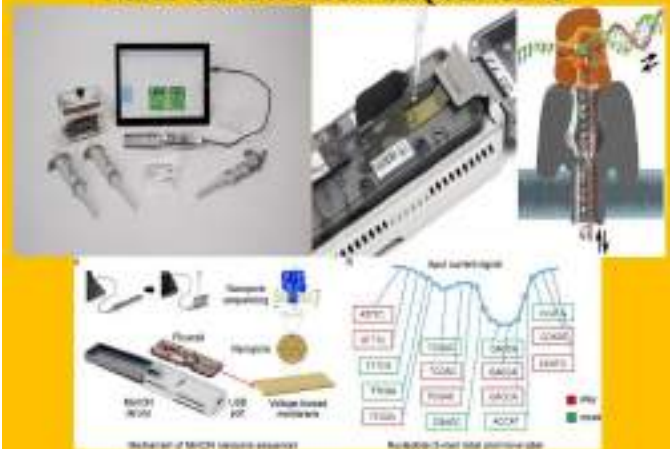
Estimates based on typical densities suggest that digital data could be stored in a gram of DNA.

	Hard disk	Flash memory	Optical DNA
Read/write speed (gs per sec)	~100-1000	~100	~1000
Data retention (years)	~10	~10	~1000
Power usage (watts per gigabyte)	~100	~100-1000	~1000
Data density (bits per cm ²)	~10 ¹⁰	~10 ¹⁰	~10 ²¹



ONE GRAM OF HUMAN DNA COULD STORE ALL OF GOOGLE AND FACEBOOK'S DATA

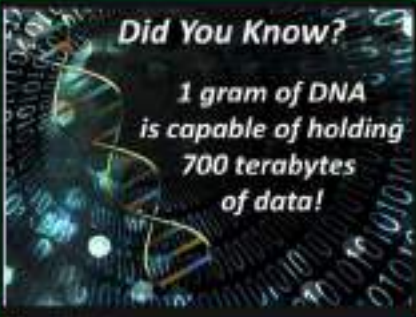
NEXT GENERATION SEQUENCING





@TheFACTSbiblio

**ONE GRAM OF HUMAN DNA
COULD STORE ALL OF GOOGLE
AND FACEBOOK'S DATA**



Did You Know?

**1 gram of DNA
is capable of holding
700 terabytes
of data!**

It is equivalent to

- ❖ 200000 movies
- ❖ 7 million songs
- ❖ 35 million high resolution pictures

DO YOU KNOW?

- ❑ Carrots are sweeter in the winter
- ❑ Sugars acts as natural anti-freezers and can lower the freezing point of water.
- ❑ Carrots increase their sugar content to defend against cold weather



Science Flash cards display on notice board of Microbiology



Autoclave



Centrifuge



Chromatography chamber



Cold centrifuge



Water bath



Spectrophotometer



Shaker incubator



pH meter



Microwave oven



Membrane filtration unit



LAF



incubaotor



Hot air oven



Distillation Unit



Colorimeter



Colony Counter