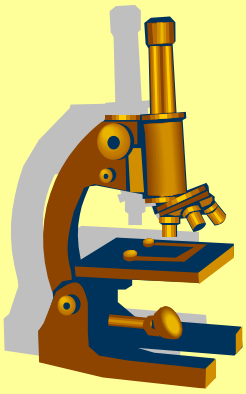
TELANGANA TRIBAL WELFARE RESIDENTIAL DEGREE COLLEGE (GIRLS), KHAMMAM

ACTIVITIES REPORT
DEPARTMENT OF MICROBIOLOGY

AY-2021-22



Science knows no country, because knowledge belongs to humanity, and is the torch which illuminates the world.

- Louis Pasteur

TEACHING THE TOPIC: DNA DAMAGE USING ICT- PPT ON 20-07-2021

INTRODUCTION:

As a part of teaching in the online mode on the lockdown period, the department of Microbiology has conducted the online class through ZOOM using PPT. As the topic is very importamt and student has to understand in depth, it was decided to teach using PPT.

OBJECTIVE:

- To make the students understand the topic more in depth.
- To show the 3D images and more visuals on the topic.
- To provide more information on the topic

KEY TOPICS COVERED:

1. Introduction to DNA Damage

   - Definition and significance

   - Overview of the structure of DNA

2. Types of DNA Damage

   - Single-strand breaks

   - Double-strand breaks

   - Base modifications

   - Cross-linking

3. Causes of DNA Damage

- Endogenous sources
  - Reactive oxygen species (ROS)
  - Replication errors
- Exogenous sources
  - UV radiation
  - Chemical mutagens
  - Ionizing radiation

4. Mechanisms of DNA Repair

- Direct repair
  - Photoreactivation
  - Alkyltransferases
- Excision repair
  - Base excision repair (BER)
  - Nucleotide excision repair (NER)
- Mismatch repair (MMR)
- Double-strand break repair
  - Homologous recombination (HR)
  - Non-homologous end joining (NHEJ)

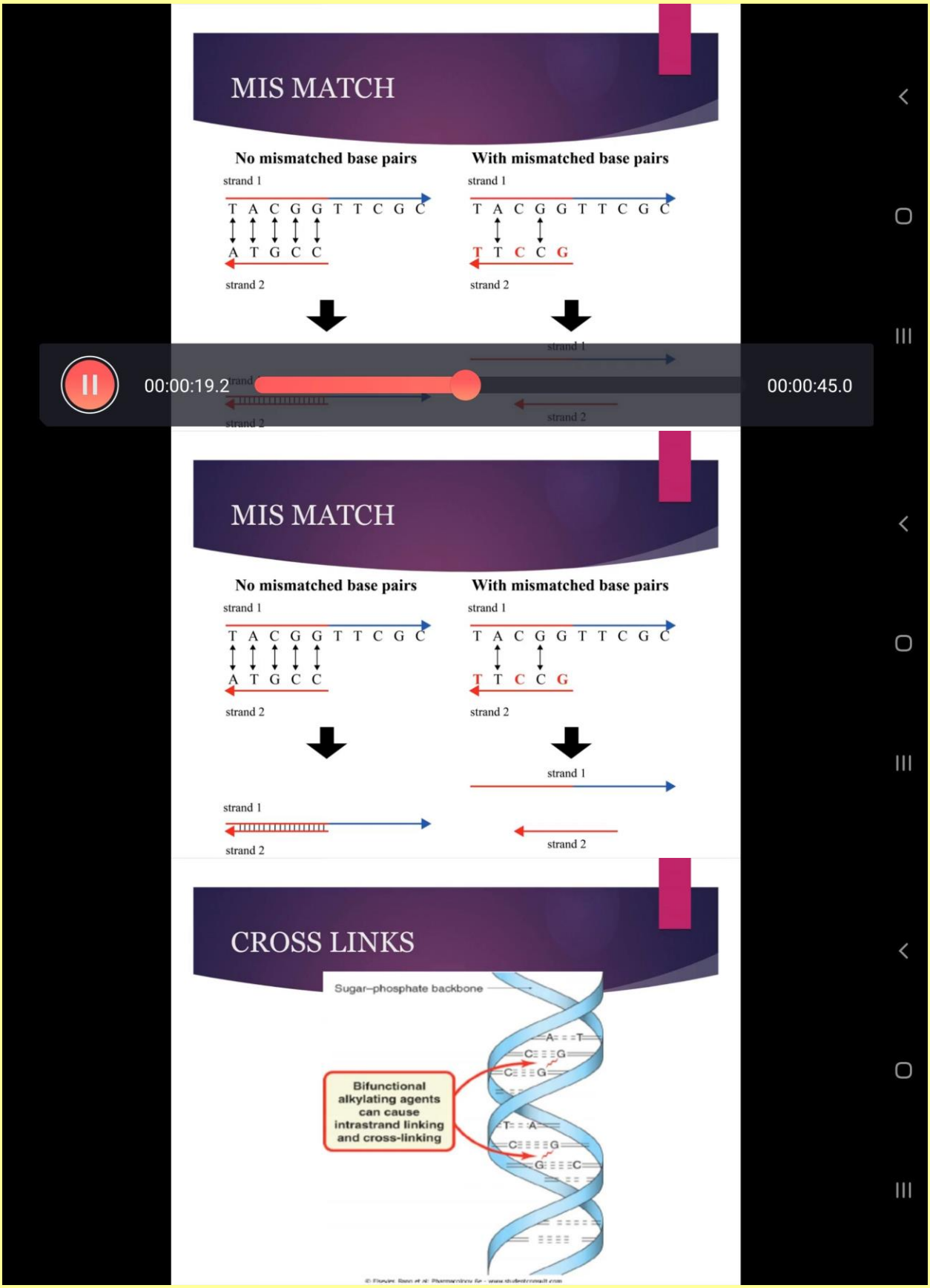
5. Consequences of DNA Damage

- Mutations

- Cancer
- Aging
- Genetic diseases

6. Detection and Measurement of DNA Damage
   - Comet assay
   - TUNEL assay
   - γ-H2AX foci formation

7. Research and Clinical Implications
   - DNA damage in cancer therapy
   - Role of DNA repair mechanisms in aging and longevity
   - Genetic engineering and CRISPR-Cas9 technology

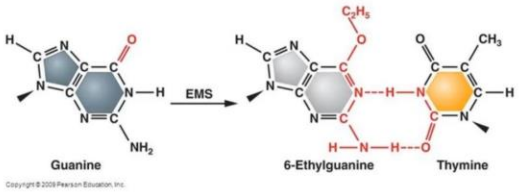

MIS MATCH
No mismatched base pairs
With mismatched base pairs
strand 1
T A C G G T T C G C
A T G C C
strand 2
T A C G G T T C G C
T T C C G
00:00:19.2
00:00:45.0
MIS MATCH
No mismatched base pairs
With mismatched base pairs
CROSS LINKS
Sugar–phosphate backbone
Bifunctional alkylating agents can cause intrastrand linking and cross-linking

DAMAGE DUE TO ALKYLATING AGENTS

15.3 Induced Mutations Arise from DNA Damage Caused by Chemicals and Radiation

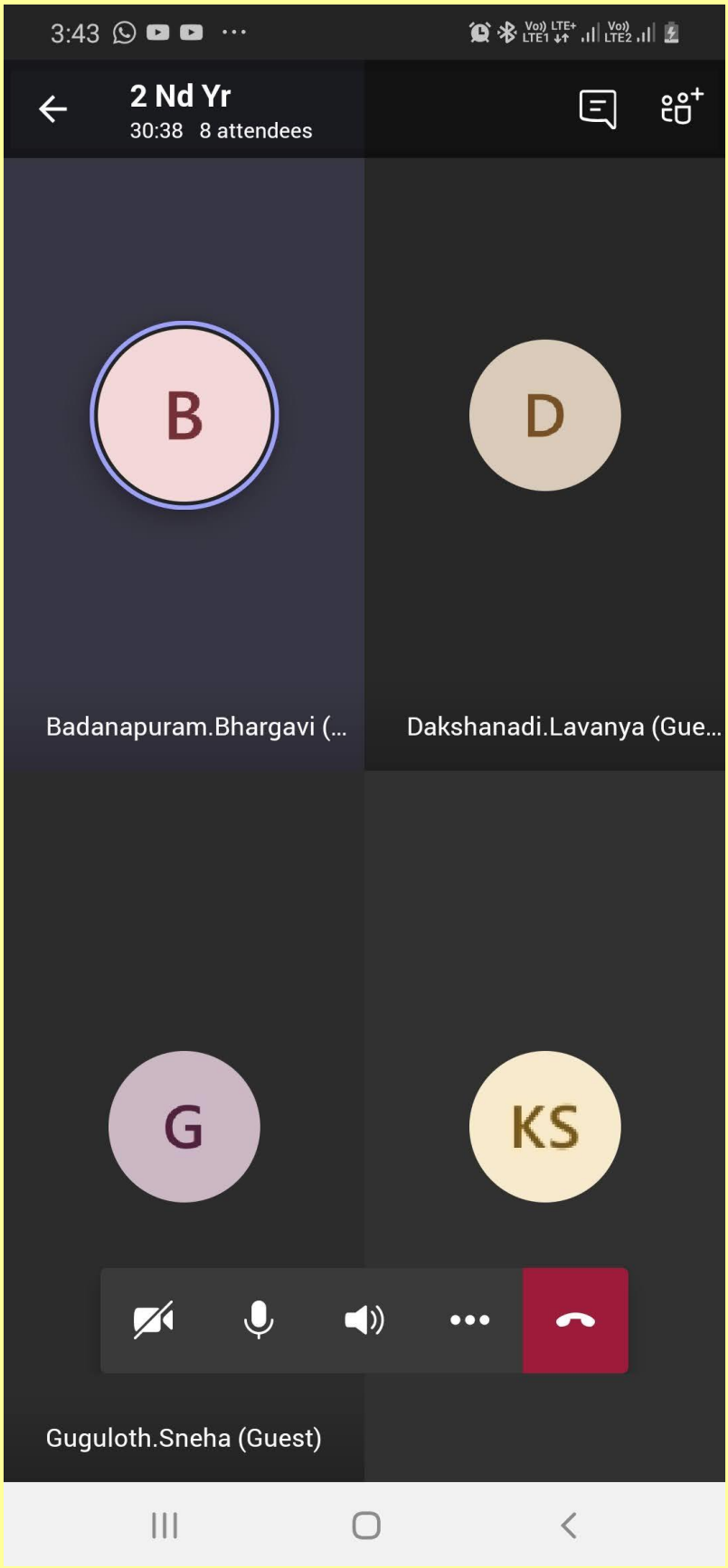
Alkylating Agents:

- Mustard gas is an example of an alkylating agent that adds alkyl groups to the purine or pyrimidine of the nucleotide.



WHAT IS DNA DAMAGE ???

- THE CHEMICAL ALTERATIONS OCCURRED ON DNA IS CALLED DNA DAMAGE.
- DNA DAMAGE MAY BE CAUSED NATURALLY DURING CELL DIVISION OR CAUSED INTENTIONALLY USING MUTAGENS.
- MOST DAMAGES ARE CORRECTED BY THE CELL ITSELF.
- RARE CASES UN TREATED DAMAGE BECOME AS THE MUTATION.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Guguloth.Sneha (Guest)

WORLD OZONE DAY CELEBRATIONS 16-09-2021

ABOUT THE PROGRAM:

Department of Microbiology in association with the Department of Botany and Zoology conducted World ozone day celebrations by conducting awareness program followed by Rally in the village.

OBJECTIVES:

- To educate students about the ozone layer and its significance.

- To bring awareness in the society in using of various electric devices releasing CFC.

- To promote actions that individuals and communities can take to protect the ozone layer.

PROGRAM OVERVIEW:

1. Awareness Class: Awareness class conducted on the Ozone layer depletion and concerned effects on the environment, Role of Microorganisms in safe guarding ozone layer.

2. Rally: A rally was conducted with more than 200 students in the village by giving slogans on awareness of the environmental issues.

STUDENT SEMINAR 24-09-2021 ON THE TOPIC BIOREACTOR

ABOUT THE PROGRAM:

As a part of encouraging the student's involvement in the class room, student seminar was conducted by the department of Microbiology on the Topic BIOEREACTOR , invited Interested students to participate. The student B. Venkatalaxmi from MZC 2nd Year came forward and gave the seminar.

OBJECTIVES:

- To involve the students in the subject.
- To implement experiential learning.
- To encourage the teaching skills in the students.

PROGRAM OUTLINE:

- The student prepared the material for the seminar with the help of the department and also by referring the books.
- On the Day of seminar the student gave the lecture by using black board.
- The topics covered in the seminar
- Design of a fermentor/ Bioreactor.
- Parts of Bioreactor
- Working Procedure
- Maintaining aeration and agitation
- Precautionary Measures to be taken while using Bioreactors.

TEACHING-LEARNING PRACTICES:

- **Active Learning-**Students involved in the program by making their own notes, PPTs and through Q &A session they have participated in the session.

Q & A SESSION:

- Students asked their doubts and the speaker cleared doubts and the faculty also helped to clear the student's doubts.

QUIZ COMPETITION ON THE TOPIC HISTORY OF MICROBIOLOGY ON 09-11-2021

INTRODUCTION

The Department of Microbiology organized a quiz competition on Spetember 11, 2021, focused on the topic of History of Microbiology. The competition aimed to enhance students' understanding of History of Microbiology and to encourage a healthy competitive spirit among them. This interactive event provided an engaging platform for students to showcase their knowledge and learn more about the History of microorganisms.

OBJECTIVES

- To reinforce students' knowledge of History of Microbiology.

- To encourage active learning and participation among microbiology students.

- To foster a spirit of healthy competition and teamwork.

PROGRAM SUMMARY

a. Preparation and Organization

The quiz competition was meticulously planned by the faculty members of the Department of Microbiology. The quiz content was designed to cover various aspects of History of Microbiology like Evolution of Microbiology, contributions of Scientists, and Different discoveries and inventions. Students were informed about the competition in advance and were encouraged to prepare thoroughly.

b. Participants

The competition was open to all 2 Years microbiology students participated. The participants were divided into 03 teams, each consisting of 4 members. This team-based approach encouraged collaboration and collective problem-solving.

c. Quiz Format

The quiz was structured into multiple rounds, each testing different aspects of the topic:

Quiz Rounds

- Round 1: Basic Concepts - Questions on the fundamental concepts of microbial nutrition.

- Round 2: Scientists and their Contributions

- Round 3: Chronological order of History of Microbiology

TEACHING-LEARNING PRACTICES:

- Collaborative Learning- As the students are participating as a team and discussing on the topic they are learning collaboratively.

- Peer learning and Active learning- by conducting the quiz we are enabling the peer learning and as well as active learning.

LOUIS PASTUER BIRTHDAY CELEBRATIONS ON 27-12-2021

INTRODUCTION

On the occasion of the Louis pastuer the father of Modern Microbiology Birth anniversary, The department of Microbiology was organised Celebrations by inviting Principal, Vice Principal, IQAC Coordinator, all the faculty and all the students.

PROGRAM SUMMARY:

On the occasion of the Louise pasture the father of Modern Microbiology Birth anniversary, the department of Microbiology was organised Celebrations by inviting Principal, Vice Principal, IQAC Coordinator, the entire faculty and all the students at Seminar Hall.

- Cake cutting was followed by the speeches of students about the great contributions of Louis pasture to the world.
- Lecturers also shared their views about the importance of scientific research and also encouraged students to select the research

- Finally Principal gave her views about the science world specially about the Microbiology, the contributions of Microbiologists to the entire world and also remembered the contributions of Louis pastuer.

STUDENT SEMINAR 24-03-2022 ON THE TOPIC TYPES OF IMMUNE CELLS

ABOUT THE PROGRAM:

As a part of encouraging the students involvement in the class room, student seminar was conducted by the department of Microbiology on the Topic TYPES OF IMMUNE CELLS which is a part of the Medical Microbiology & Immunology and invited Interested students to participate. The student M.Triveni from MZC 2rd Year came forward and gave the seminar.

OBJECTIVES:

- To involve the students in the subject.
- To implement experiential learning.
- To encourage the teaching skills in the students.

PROGRAM OUTLINE:

- The student prepared the material for the seminar with the help of the department and also by referring the books.
- On the Day of seminar the student gave the lecture by using black board.
- The topics covered in the seminar
- Introduction to immune cells
- Types of Immune cells
- Normal range within the body
- Importance of the Immune cells

TEACHING-LEARNING PRACTICES:

- **Active Learning-**Students involved in the program by making their own notes and through Q &A session they have participated in the session.

Q & A SESSION:

- Students asked their doubts and the speaker cleared doubts and the faculty also helped to clear the student's doubts.

TEACHING THROUGH ICT-PPT ON THE TOPIC HIV VIRUS STRUCTURE ON 02-04-2022

ABOUT THE PROGRAM

As a part of integrating technology on the academics for facilitating the easy understanding of the subject the Department of Microbiology conducted ICT – PPT class on HIV Virus for 1st year microbiology students. As the subject was complex in nature and needed visuals for understanding the topic to enable the students to understand the topic, the PPT class was taken to the students.

OBJECTIVES

- To educate students about the species of Mycobacterium

- To utilize ICT tools to make the learning process more engaging and effective.

- To highlight the staining procedure of tubercle bacilli, the symptoms of the disease, clinical significance, epidemiology, and prevention.

PROGRAM OUTLINE:

- The class prepared by the faculty Mrs.Swetha of the Department of Microbiology. A detailed PowerPoint presentation was created, incorporating images, charts, and diagrams of the Tubercle bacteria.

The class includes

- Introduction to the virus
- Classification
- Epidemiology
- Symptoms
- Pathogenesis
- Treatment
- Preventive Measures
- At the end of the class students asked the doubts and were clarified.

TEACHING-LEARNING METHOD INVOLVED:

- **Blended Learning-** By performing the test for number of times students experienced the topic by practicing it and understood very clearly.
- **Collaborative Learning-** As the Students performed the tests in a collective manner they have learned by discussing with each other.

THANK YOU