

K.K.SHAH JARODWALA MANINAGAR SCIENCE COLLEGE

Affiliated to Gujarat University, Ahmedabad



Activity Report

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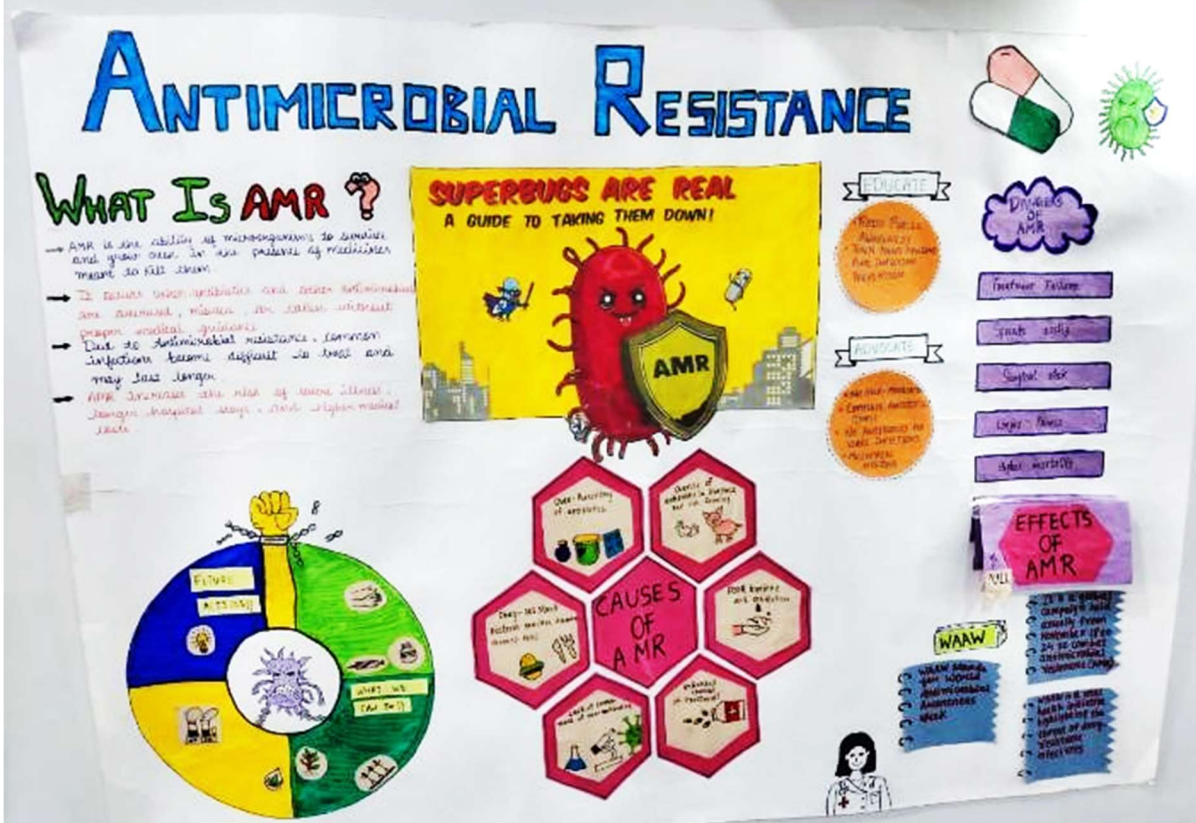
1. Emerging trends of Microbes

- An event under **MBSI (Microbiology Society of India)** was successfully conducted in the college by the Department of Microbiology with the active participation of students. The main objective of the event was to enhance students' understanding of microbiology concepts through creative and practical learning methods and to spread awareness about the importance of microbes in daily life and health.
- For the event, the students were divided into **three groups**, and each group was assigned different activities.
- The **first group** prepared **four informative posters** on important microbiological topics. The posters were based on:
 - **Bioremediation**
 - **AMR (Antimicrobial Resistance)**
 - **PGPR (Plant Growth Promoting Rhizobacteria)**
 - **Gut Microbiota**
- Along with the posters, the group also prepared a **model of a bacteriophage**, which helped in explaining the structure and function of bacteriophages in a simple and visual manner. The **second group** showcased their creativity by preparing **stone paintings of bacteria**. Different bacterial forms and structures were artistically painted on stones, making learning more engaging and visualizing. The **third group** prepared a **rangoli of bacteria**, representing various microbial shapes and forms. This activity beautifully combined traditional art with scientific knowledge and attracted the attention of students and visitors.

- All the groups **explained and presented their projects** to President sir **Himanshu Sir** and also to other school students who visited the college. The presentations helped in improving communication skills and spreading scientific awareness among students.
- Later, the students conducted a **Buttermilk Campaign** with the slogan **“Drink Buttermilk and Stay Healthy.”** As part of this campaign, the students brought and distributed buttermilk to promote healthy eating habits and awareness about probiotics.
- Overall, the MBSI event was informative, creative, and interactive. It provided a platform for **students** to learn, express creativity, and promote health awareness while strengthening their knowledge of microbiology.



Interaction with School students



Poster on: Antimicrobial Resistance (AMR)

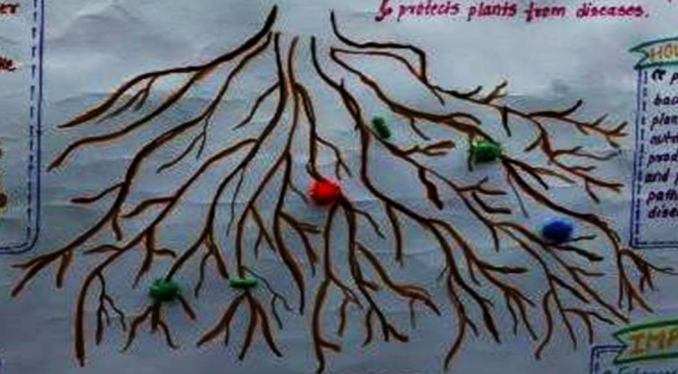
PLANT GROWTH PROMOTING RHIZOBACTERIA

HOW PGPR WORKS

- Fixing nitrogen content to soil.
- Solubilizing phosphorus & other minerals.
- Producing plant hormones like auxins, cytokinins, etc.
- Suppress plant pathogen
- Improving root growth & nutrient uptake.
- Induced systemic resistance (ISR)

WHAT IS PGPR?

PGPR are beneficial soil bacteria that colonize the rhizosphere and enhances plant growth directly or indirectly. These microorganisms improves soil fertility promote root development, increases crop productivity & protects plants from diseases.



HOW WE DEFINE THEM

"PGPR are a group of bacteria that stimulate plant growth by improving nutrient availability, producing growth hormone and protecting plant from pathogen which causes diseases to them."

EXAMPLES

- RHIZOBIUM
- AZOTOBACTER
- PSEUDOMONAS
- ASOSPIRILLUM
- ENTEROBACTER
- BACILLUS

CONCLUSION:

PGPR are natural biofertilizers that support Sustainable agriculture by promoting healthy plant growth and protecting crops naturally.

IMPORTANCE

- Enhances plant growth & fertility soil plant system.
- Reduces chemical fertilizers and Pesticides and Sustainable.
- Increases nutrient availability.

Poster on: Plant growth promoting Rhizobacteria (PGPR)

BIOREMEDIATION

Nature's Clean Up Crew

Introduction

Bioremediation is an eco-friendly technology that uses microorganisms to degrade, oxidize, or remove environmental pollutants from soil, water, or air.

Pollutants Treated

Hydrocarbon (gasoline, fuel, oil), Heavy metals (Pb, Hg, Cd), Pesticides and herbicides, Radioactive effluents, Organic and inorganic acids.

Microorganisms Involved

Bacteria: Pseudomonas, Bacillus, Rhodospirillum
Fungi: Aspergillus, Penicillium, Trichoderma
Protozoa: Amoeba, Paramecium

BIOREMEDIATION

Nature's Way to Clean Pollution

IN-SITU
✓ Skimming
✓ Dredging

EX-SITU
✓ Land Farming
✓ Bioreactors

Methods

Biopiles - treatment of the contaminated soil in the field, natural ground water treated structures.
Bioaugmentation - addition of selected & organic strains, microbes.
Bioaugmentation - addition of specific microbial degradation microbes.

Benefits

Eco-friendly and cost-effective
Cost effective compared to chemical methods
Generally less pollutants left behind
prevents ground governmental liabilities.

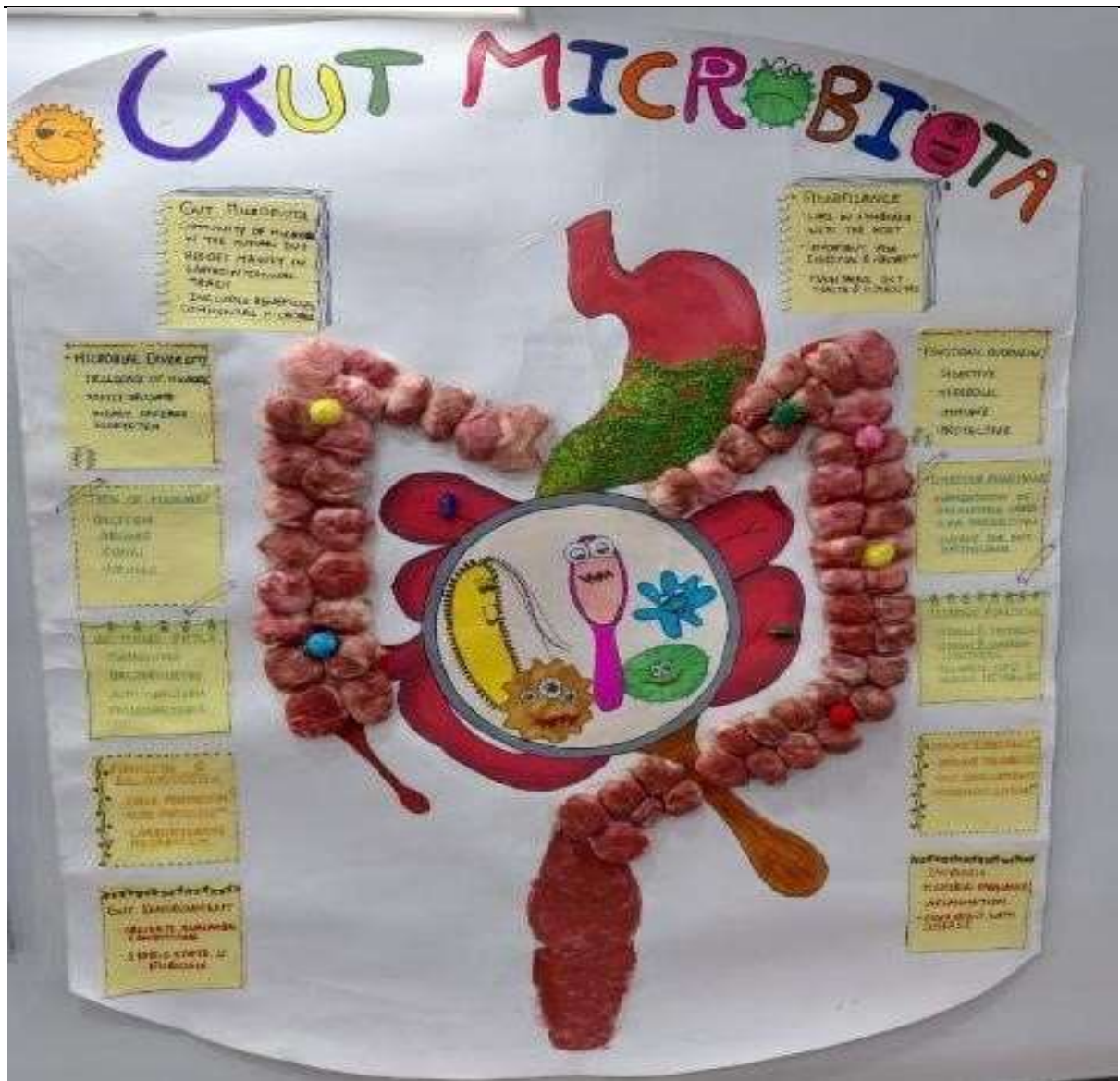
Limitations

Slow process
Site specific microorganisms
Requires regular monitoring and frequent maintenance
Not suitable for all pollutants.

Applications

Oil spill cleanup
Treatment waste industrial effluents & wastewater treatment
Soil decontamination (pesticides & herbicides)

Poster on: Bioremediation



Poster on: Gut Microbiota



Model Preparation: T2 Bacteriophage



Stone painting on Morphology of bacteria



Rangoli Design on Different Microbes



Buttermilk Campaign: Drink buttermilk and stay healthy