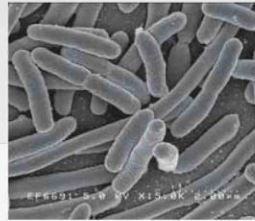


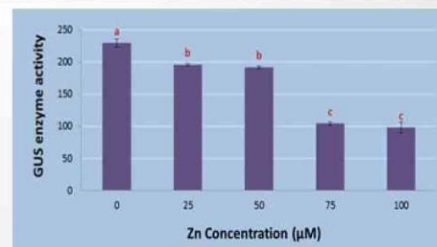
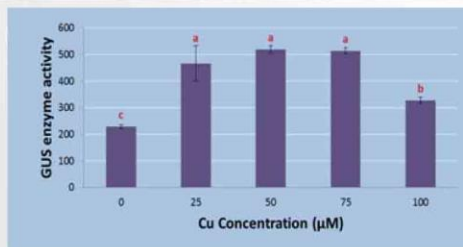
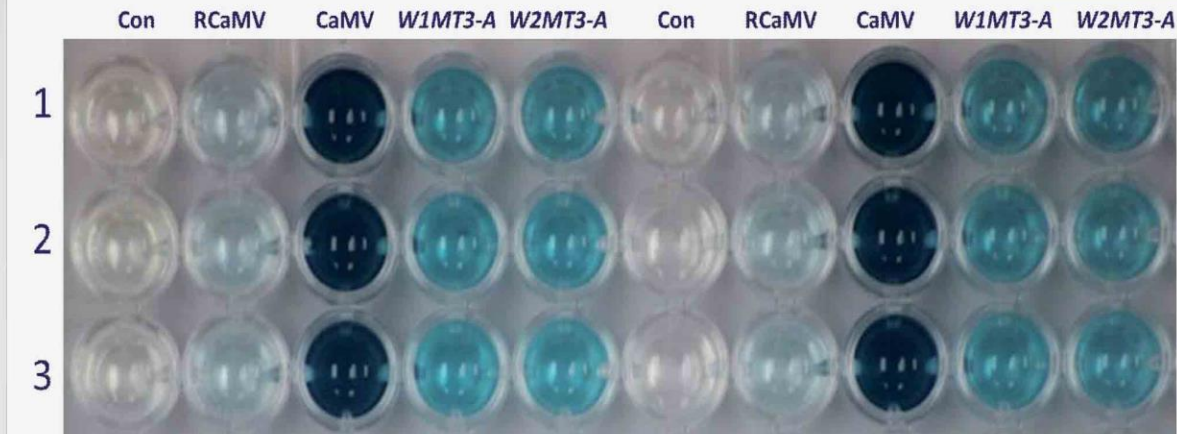
# BACTERIAL – METAL IONS BIOSENSOR (BACMIONS)



*E. coli*



*A. tumefaciens*



## INTRODUCTION

- Heavy metals may spread by fly ash industries, traffic, sewage sludge, usage of fertilizers and refuse dumps.
- Their spread as well as accumulation in the food web must be stopped to prevent negative effects on human health.
- Copper is an algacide that will affect the amount of food available for aquatic and marine animals

## INVENTION

- We report for the first time that the oil palm *MT3-A* promoter is fully operational in *Escherichia coli* and *Agrobacterium tumefaciens*.
- The promoter activity in both bacteria is inducible by  $\text{Cu}^{2+}$ .

## BENEFITS

### Activities of *MT3-A* promoter in bacteria :

- Potential application as biosensor and biomarker for  $\text{Cu}^{2+}$
- Potential use for bioremediation using bacterial and transgenic plants that are regulated by  $\text{Cu}^{2+}$

## COST COMPARED TO BENEFIT

- The bacteria can be stored and re-cultured
- Minimal cost without requiring expensive equipment
- The reporter gene assay is simple, fast, reliable and can be adapted for high throughput monitoring
- It can provide both qualitative and quantitative values

## POTENTIAL CONSUMER

- Industries involved in waste and sewage management
- Agencies involved in environmental monitoring



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