

# **Silent antibiotic resistance: A threat to antimicrobial therapy**

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**NITTE UNIVERSITY CENTRE FOR  
SCIENCE EDUCATION & RESEARCH**

# Background

**1**

**Bacterial resistance to drugs is an increasing threat to the human community**

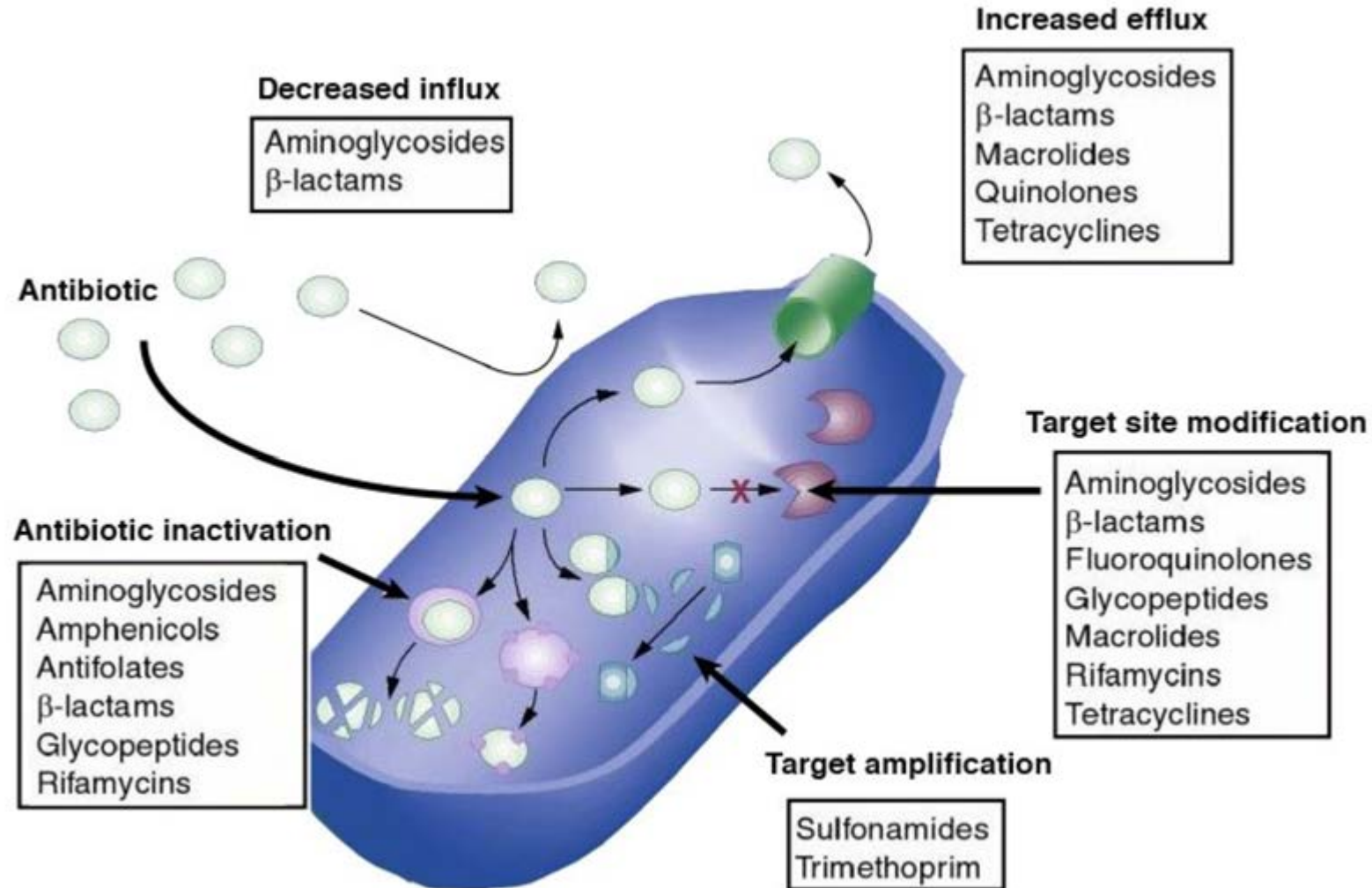
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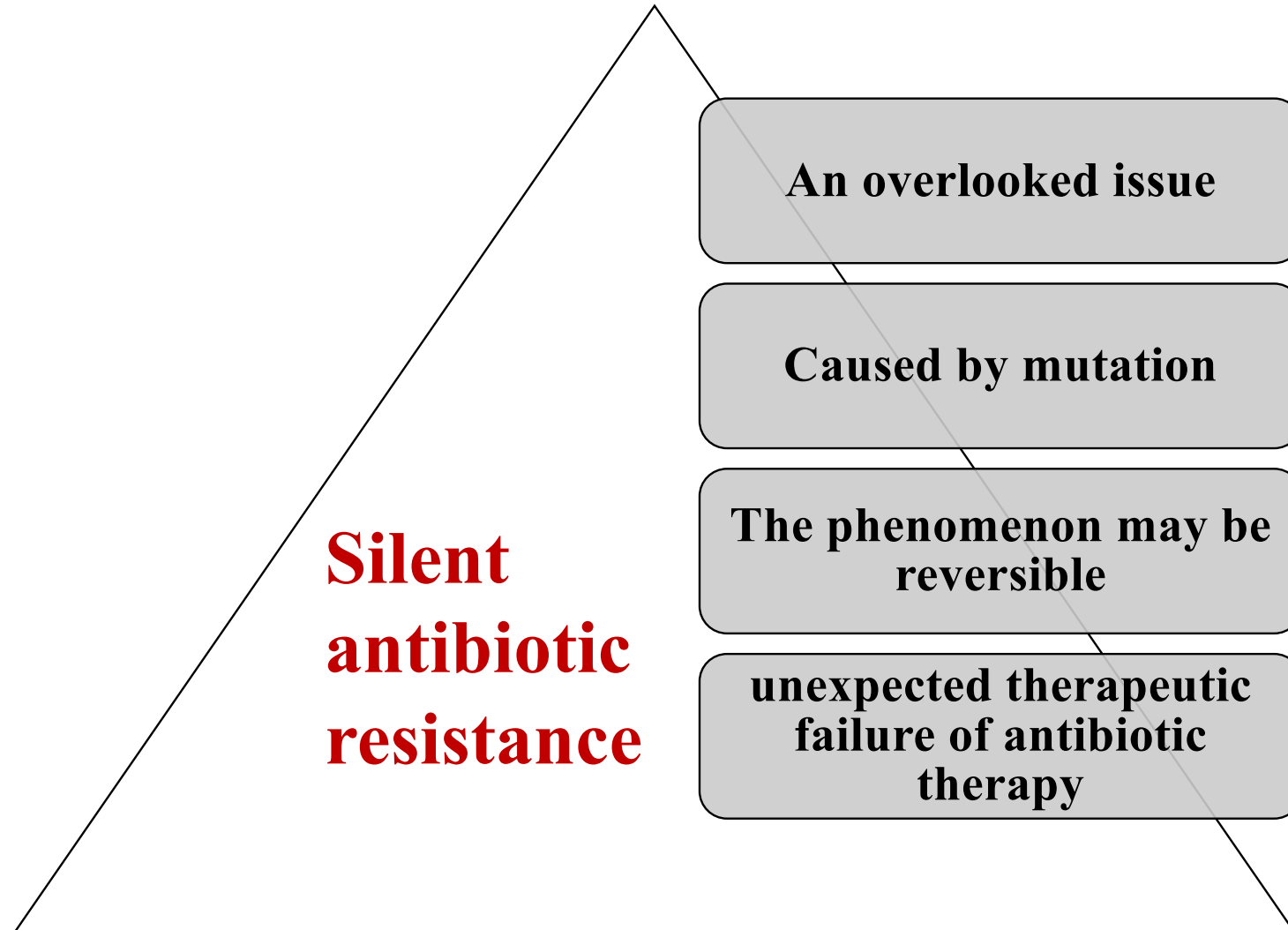
**Human gut is the reservoir of antibiotic resistance genes**

**3**

**Dense microbial load also influences antibiotic resistance gene transfer among bacterial groups in the gut**

# Mechanisms of Resistance





# Methods

**Antimicrobial susceptibility test**

**Identified some silent antibiotic resistance genes in *Salmonella* and *E. coli***

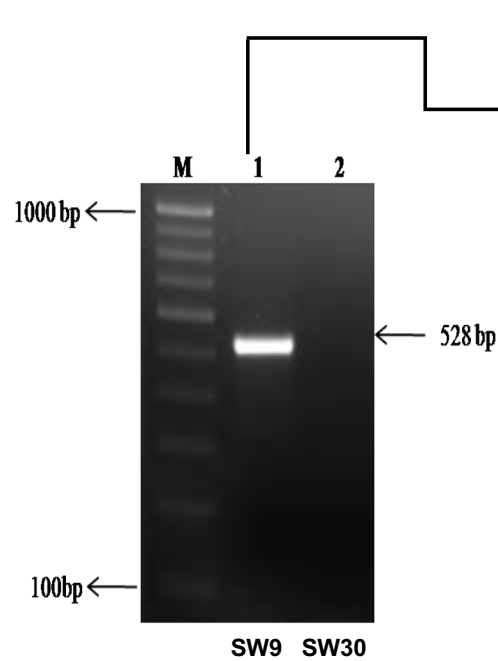
**DNA sequencing**

**Subjected to different *invitro* gut conditions**

**Minimum inhibitory concentration**

**Expression analysis of resistance gene**

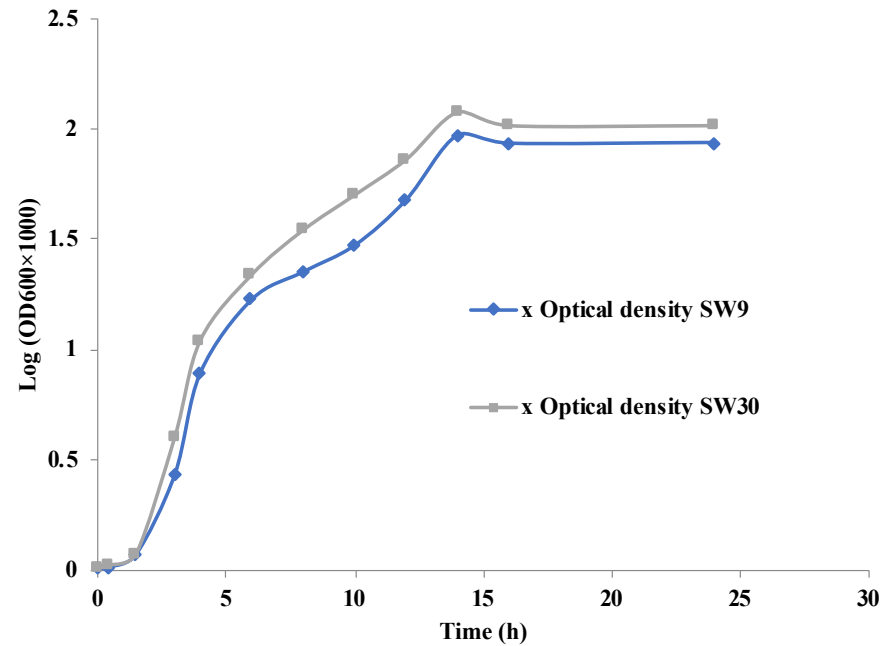
# Results



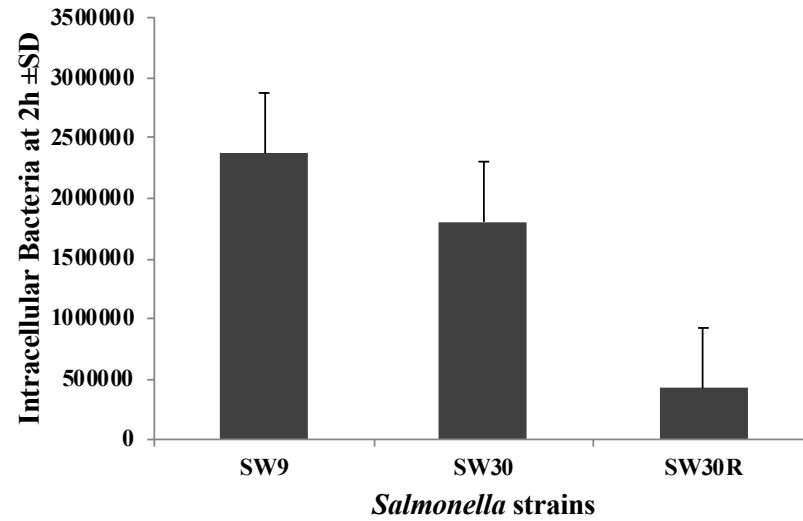
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```

Isolate : SW30

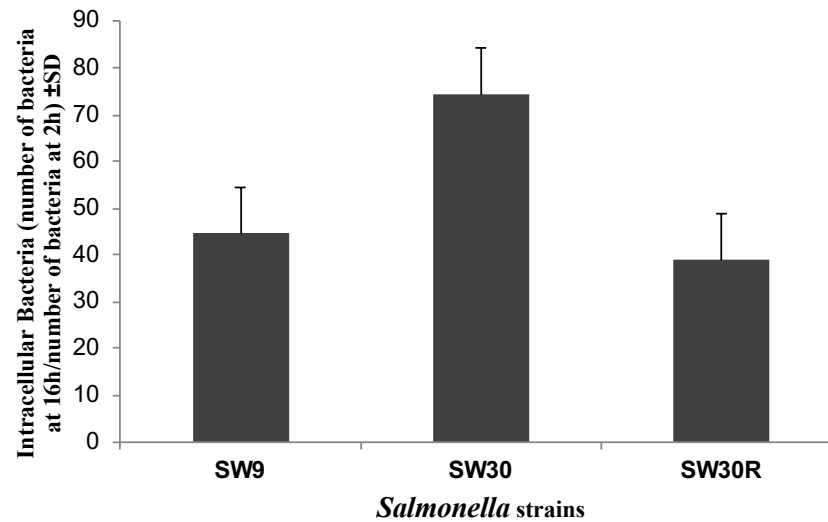
**Deletion of promoter region of *catA1* of *Salmonella*  
Weltevreden**



**Growth curve of *S. Weltevreden* strains:  
resistant (SW9), sensitive (SW30) and  
resistance induced (SW30R)**

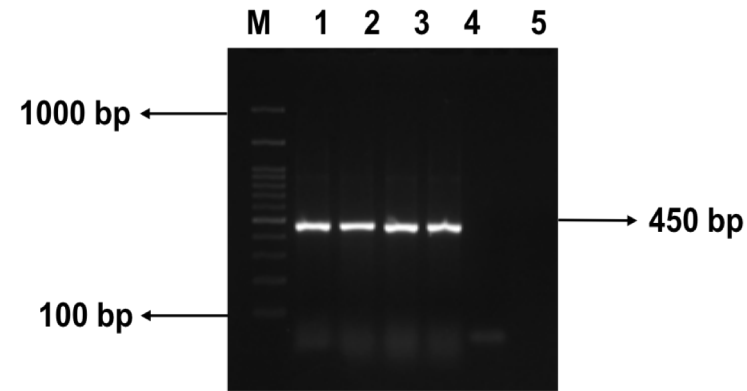


**Epithelial cell invasion by *S. Weltevreden*  
- 2h post infection**

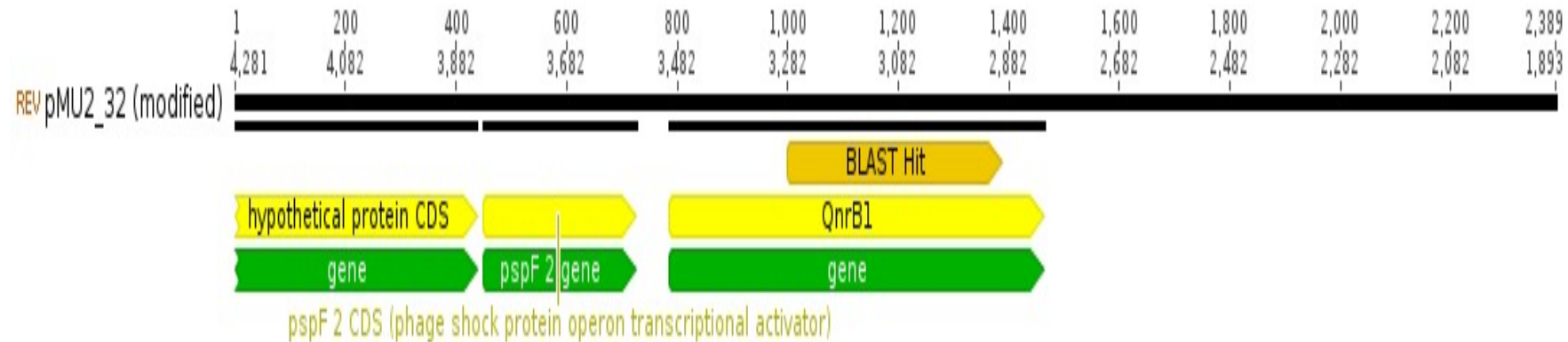


**Intracellular replication and survival of *S. Weltevreden* -16 h post infection**



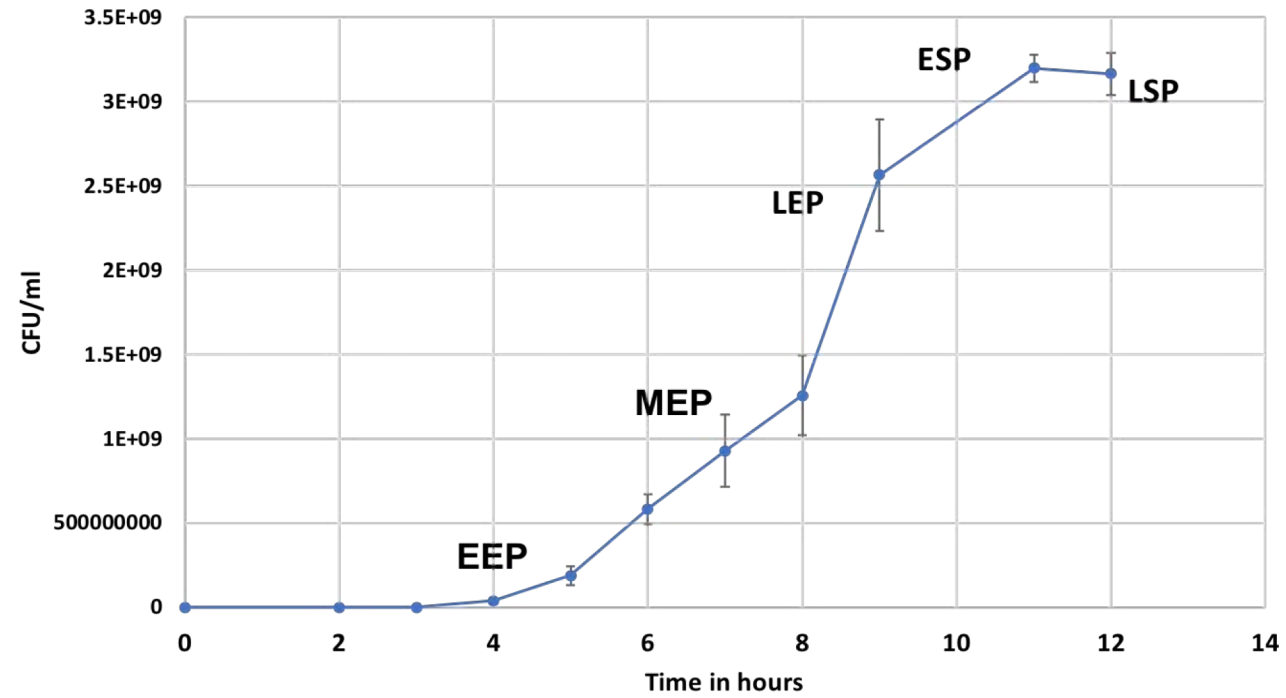


**Representative gel image showing presence of *qnrB1* in *E. coli*. Lane M: 100bp DNA ladder; Lanes 1-4: *qnrB1* gene of *E. coli*; Lane 5: negative control.**

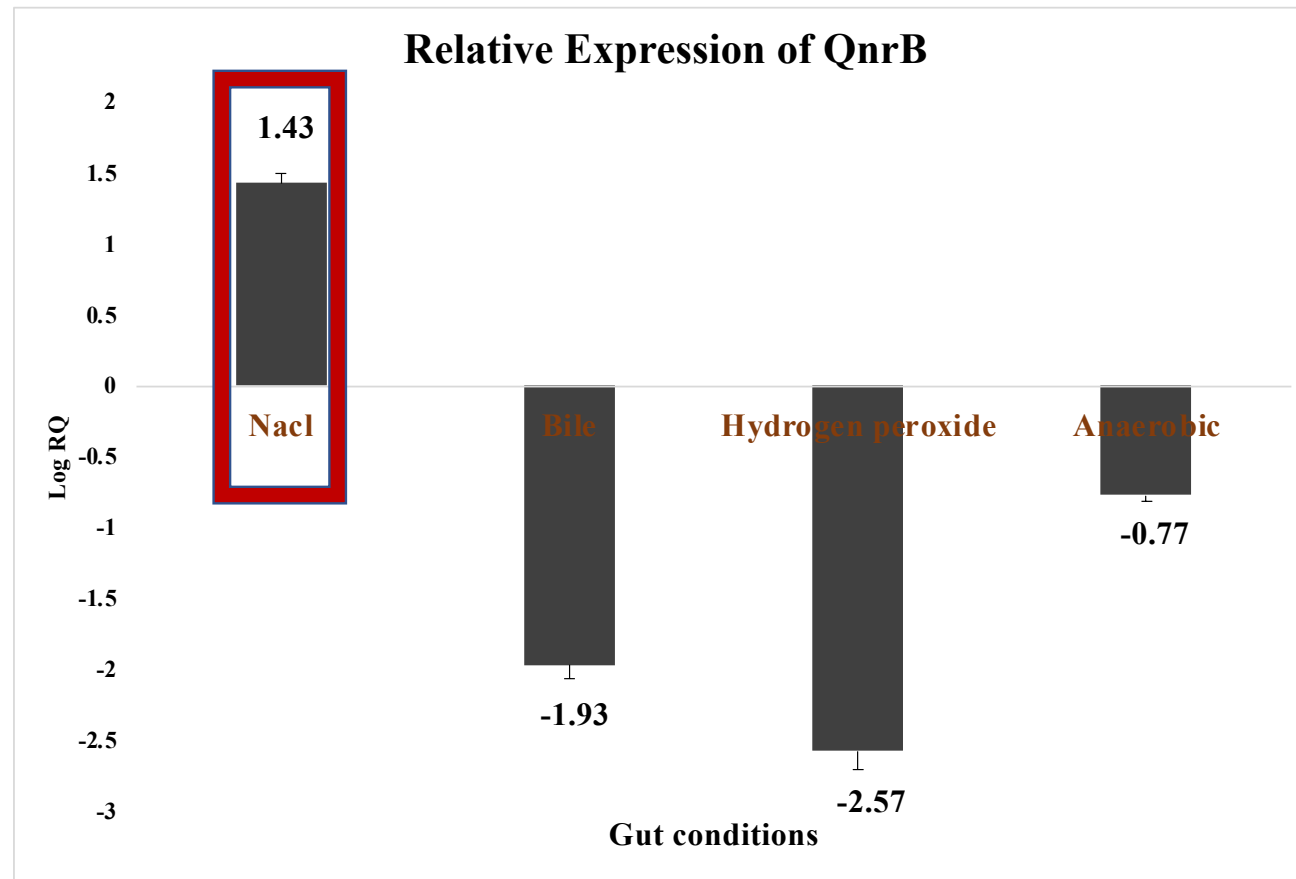


**Presence of pentapeptide protien on plasmid of MU2**

### Growth cuve ( MU2)



### Growth kinetics of MU2



## Concluding remarks

- Silent antibiotic resistance genes can revert back when subjected to infection related gut condition
- Can results in failure of antimicrobial therapy
- There is an urgent need to study the prevalence of silent resistance genes in bacterial pathogens

# Future work

- Conjugation ability of *qnrB1* carrying plasmid will be checked
- Its expression will be analyzed in other *E.coli* strains
- More isolates will be checked for the presence of silent resistance genes

# Acknowledgements



*Thank you*