pGLO Transformation

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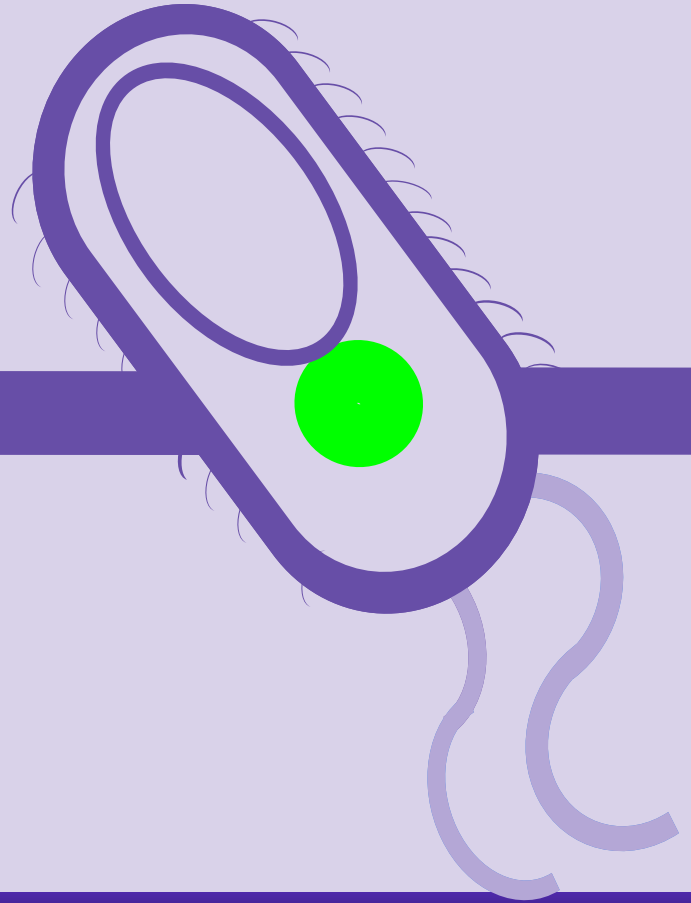
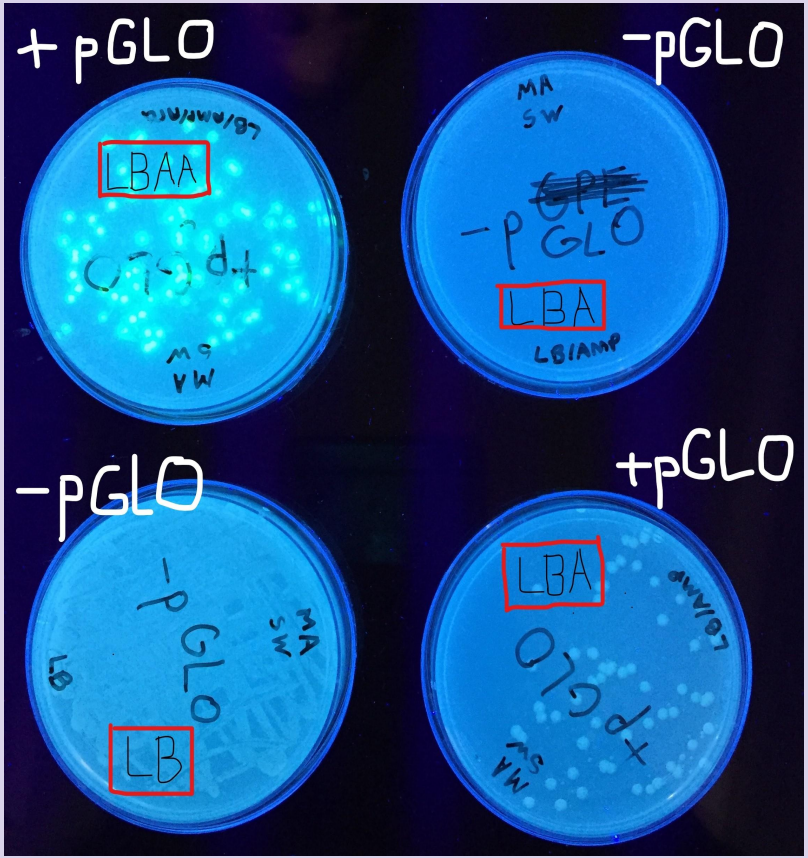


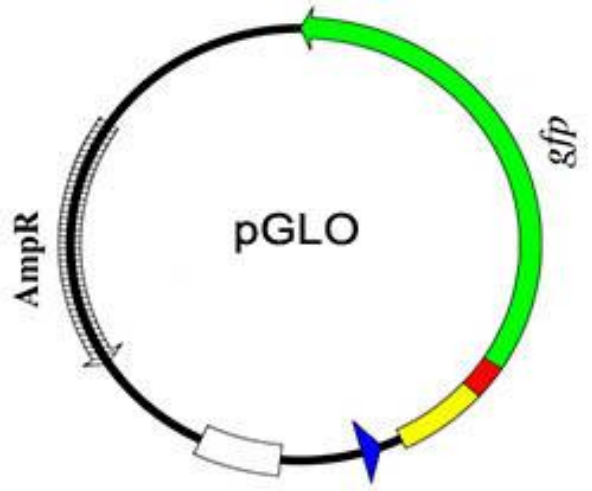
Purpose

- To understand transformation in bacteria by using the pGLO system and transforming bacteria to code for GFP.



Hypothesis

- The bacteria will transform and be resistant to ampicillin and express GFP with the introduction of plasmids.



Prediction

-pGLO LB/amp
No bacterial growth
No glowing

+pGLO LB/amp
Sparse bacterial colonies
No glowing

-pGLO LB
Film of bacterial growth
No glowing

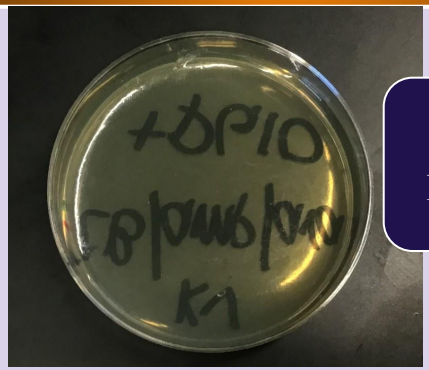
+pGLO LB/amp/ara
Sparse bacterial colonies
Glows

Data

+pGLO LB/amp

Very little bacteria growth

+pGLO LB/amp/ara

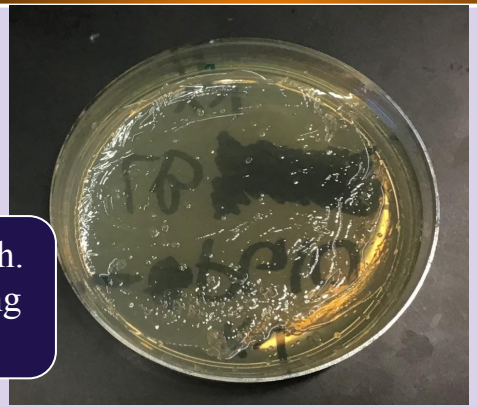


Nothing Happened

-pGLO LB/amp

Sparse colonies of bacteria

-pGLO LB

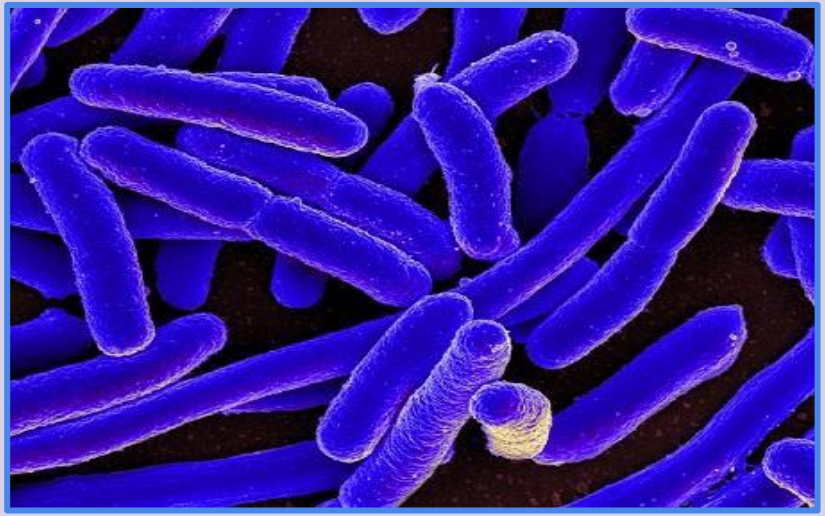


A lot of bacteria growth. Thick colonies covering the surface.

Transformation Efficiency = 6.5625×10^2 transformants/ug

Sources of Error

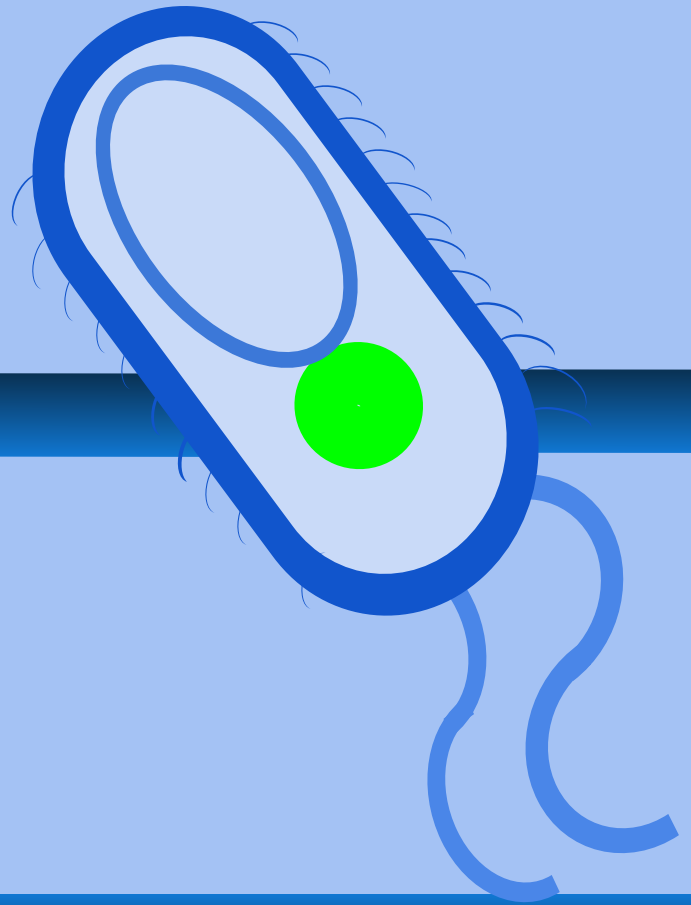
- Aged bacteria resulted in no transformation



Conclusion

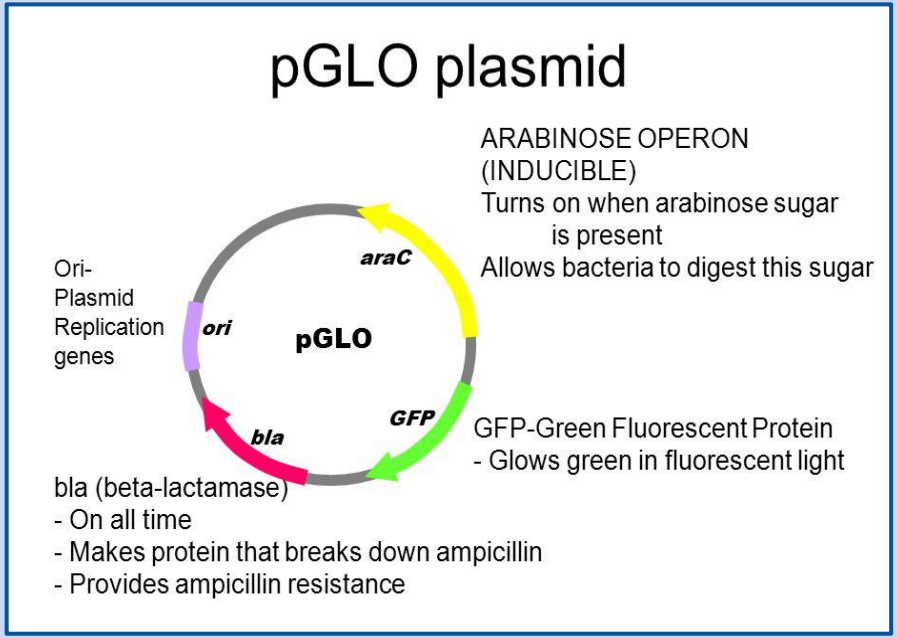
- Our transformation was unsuccessful
- The rate of transformation is low

The Effect of Arabinose On GFP Expression



Purpose

- To determine how bacterial growth can be impacted by the overexpression of a protein
- To test the importance of gene regulation



Hypothesis

Too much arabinose will kill cells

Too little arabinose means the gene will be expressed less

DIMMER GLOW

There is a Goldilocks level of arabinose concentration for pGLO expression

Prediction

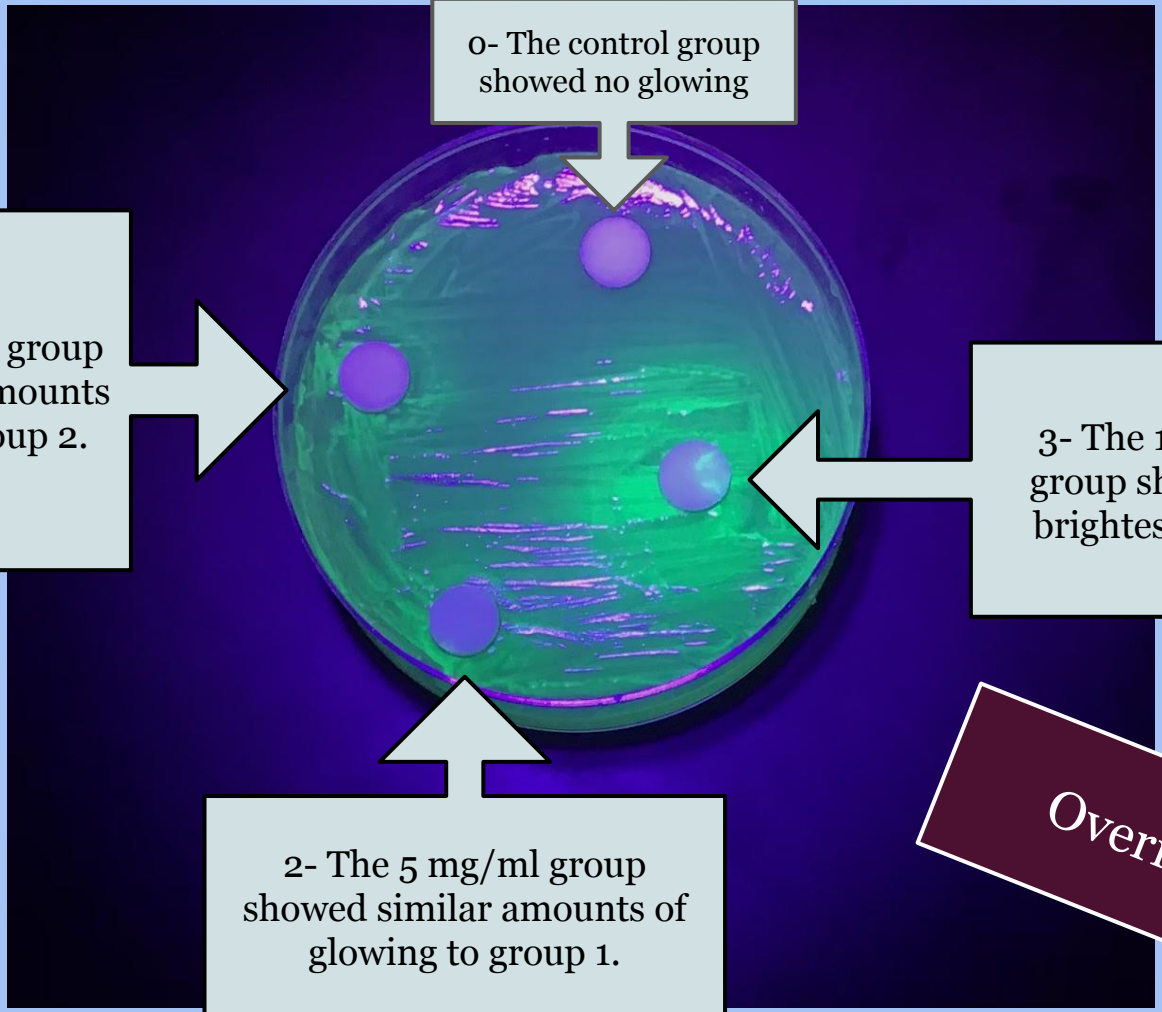
Concentrations of 2.5 mg/ml & 10 mg/ml of arabinose

Lower expression of the pGLO gene

5 mg/ml

the **optimal** concentration for GFP production

Data



0- The control group showed no glowing

1- The 2.5 mg/ml group showed similar amounts of glowing to group 2.

3- The 10 mg/ml group showed the brightest glowing

2- The 5 mg/ml group showed similar amounts of glowing to group 1.

Overnight

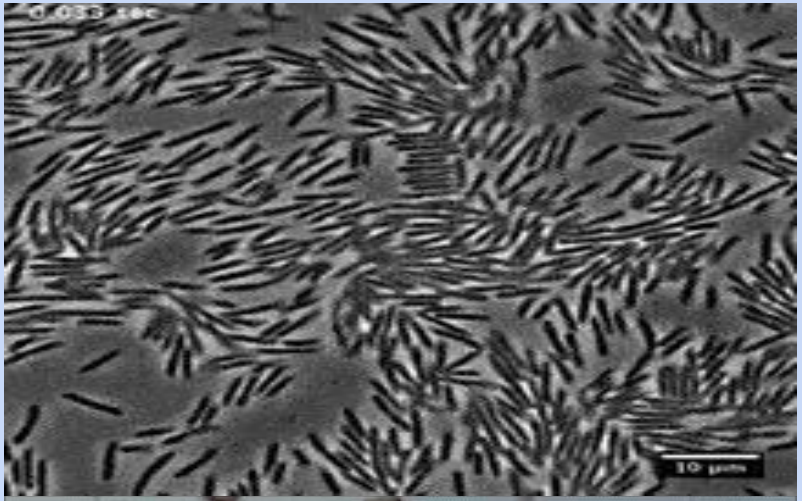
Sources of Error

- The bacteria could have mutated

Loss of the arabinose promoter

Or

Loss of the pGLO gene



Conclusion

- Arabinose affects the expression of pGLO
- 10 mg/ml is closer to the optimal level for GFP production than 5 mg/ml and 1 mg/ml
- Gene regulation makes sure that proteins are only expressed when they are needed